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1. Study Kit Details

Dear Candidates,
The Complete Study Kit in Hard copy of for Tier -1 examination is now available.

Our Objectives:

- Firstly to cover 100% SSC Combined Graduate Level (CGL) examination syllabus.
- Secondly to compile all the required study materials in a single place, So to save the precious time of the aspirants. Further, in this study kit we have incorporated all the available study material in the market, we have also include the material of standard Books meant for SSC CGL preparation; like REASONING BY RS AGGARWAL, QUANTITIVE APTITUTE BY RS AGRRAWAL, MAGICAL BOOKS ON QUICKER MATHS BY M TYRA, GENERAL STUDIES SECTION based on MANORAMA YEAR BOOK etc. It is in the interest of candidate so that they need not to study separate books for every section

Our Strategy:

- Content of every section of the syllabus is developed after a thorough research of last year Question in Papers.
- Every section is covered with practice set.
- Full length Mock Test Papers will be sent to the candidates during the course of the preparation.

Implementation Aspects:

- You will Get 5 booklets of (i). General Intelligence and Reasoning, (ii) General Knowledge and Awarness(iii) Numerical Aptitude; (iv) Data Interpretation and (v) English Language and Comprehension
- Study Kit will be delivered to your postal Address after payment confirmation.
- After dispatching your kit we will provide you a DTDC courier tracking details.
- For any help we will provide Telephonic & Email Support to the candidates.

Contents of the Kit:

Booklet No	Subjects	Pages	MCQs
1	General Intelligence & Reasoning	176	1347+
2	General Knowledge & Awareness	332	950+
3	Numerical Aptitude	423	2496+
4	Numerical Aptitude (Data Interpretation)	157	
5	English Comprehension	147	860+
Total Booklets - 5		1235	5653+

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Himalika Building
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2. Contents Details of Each Section

Section 1: General Intelligence and Reasoning

- Analogy
- Classification
- Series
- Coding- Decoding
- Blood relations
- Direction sense test
- Logical Venn diagram
- Alphabet Test
- Sitting Arrangement
- Mathematical Operations
- Arithmetical Reasoning
- Asserting the Missing Characters
- Number, Ranking and Time Sequence
- Syllogism
- Logical Sequence of Words
- Alpha- numeric of Words
- Word Arrangement
- Puzzle test

Section 2: General Knowledge and Awareness

1. Conventional section

- Indian Polity
- Geography
- Indian Economy
- Indian History
- General Science
- Miscellany

2. Current Affairs

- Monthly events of national and international affairs.
- Last one year of focused current affairs for SSC exam.

Section 3: Numerical Aptitude

1. Section I

- Number system
- Fractions & Decimal Fractions
- Indices and dices
- Square Root & Cube Root

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- Simplification
- HCF & LCM
- Orders of Magnitude
- Unitary Method
- Problems on Ages
- Percentage
- Profit & Loss
- Ratio & Proportion
- Partnership
- Time & Work
- Pipes and Cisterns
- Problems on Train
- Boats & Streams
- Mixture
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- Compound Interest
- Area of Plane figure
- Volume & Surface Area
- Concepts of Geometry
- Coordinate Geometry
- Trigonometry
- Basic Algebra
- Sequence and Series
- Clocks and Calendar

2. Section II

- Introduction to Data Interpretation
- Approaches to Data Interpretation
- Tabulation
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- Data Sufficiency

Section 4: English Language & Comprehension

1. Part I

- Parts of Speech/ Sentence
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- Foreign Words and Phrases
- Cloze test or Numbered Gaps
- Commonly Misspelled Word

- Comprehension

3. SAMPLE CHAPTERS OF THE STUDY KIT

Section 1: General Intelligence and Reasoning

Coding-Decoding

What is Coding-Decoding?

For transmitting secret messages from one place to another, especially in defense services, Coding is used. Decoding is the ability to break the secret code. The codes are based on various principles or patterns. In CSAT, questions based on coding-decoding could be given to judge the intelligence and mental ability of the candidates.

The coded word itself does not make any sense unless we know the coding principle. For coding-decoding, following basic knowledge is required.

1. Forward Order of Letters

A	B	C	D	E	F	G	H	I
1	2	3	4	5	6	7	8	9
J	K	L	M	N	0	P	Q	R
10	11	12	13	14	15	16	17	18
S	T	U	V	W	X	Y	Z	
19	20	21	22	23	24	25	26	

2. Reverse Order of Letters

A	B	C	D	E	F	G	H	I
26	25	24	23	22	21	20	19	18
J	K	L	M	N	0	P	Q	R
17	16	15	14	13	12	11	10	9
S	T	U	V	W	X	Y	Z	
8	7	6	5	4	3	2	1	

3. Opposite Letters

A-Z, H-S, B-Y, I-R, C-X, J-Q, D-W, K-P, E-V, L-0, F-U, M-N, G-T.

The questions based on coding-decoding are broadly categorised into following categories

Type 1

Coding with Alphabet Letters: In such questions, the letters do not stand for themselves but are allotted some other values based on some logical patterns or analogies. By deciphering the principles or pattern involved the candidates are required to decode the coded word.

Example l: As 'COUNSEL' is to BITIRAK' So 'GUIDANCE' is to

(a) FOHYZJBB	(b) HOHYBJBA
(c) FPHZZKAB	(d) FORHYZJBB

Solution. (a) The pattern is

$$C - 1 = B$$
$$O - 6 = I$$
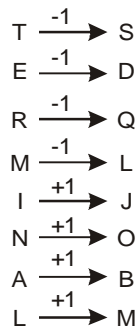$$U - 1 = T$$
$$N - 5 = I$$
$$S - 1 = R$$
$$E - 4 = A$$
$$L - 1 = K$$

G	U	I	D	A	N	C	E
-1	-6	-1	-5	-1	-4	-1	-3
F	O	H	Y	Z	J	B	B
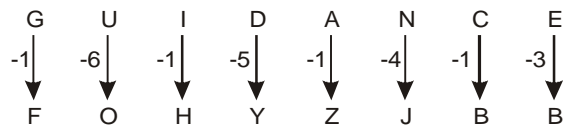
Example 2: In a certain code, TERMINAL is written as SDQLJOBM. How is CREDIBLI written in that code?

(a) BQDCJCMF	(b) BQDCHAKD
(c) DSFEJCMF	(d) DSFEHAKD

Solution. (a)

T	-1 →	S
E	-1 →	D
R	-1 →	Q
M	-1 →	L
I	+1 →	J
N	+1 →	O
A	+1 →	B
L	+1 →	M

On the basis of this rule CREDIBLE will be written as BQDCJCMF.

Type 2

Coding with Numbers: The principle of coding with numbers is similar to that of coding with letters except the use of digits.

Example 3: If in a certain language, E is coded as 2, H is coded as 1, N is coded as 7, P is codec as 5, A is coded as 0, T is coded as 8 and L is coded as 3, how is ELEPHANT coded in that language ?

(a) 23251078	(b) 32210587
(c) 23527801	(d) 22315078

Solution. (a) E = 2, L = 3, E = 2, P = 5, H = 1, A = 0, N = 7, T = 8 Hence, only (a) is valid.

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Example 4: In a certain language, 1 is coded as C, 6 is coded as E, 0 is coded as L, 2 is coded a; G and 3 is coded as O. How is 1300626 coded in that language ?

    (a) OLCGELE   (b) EGEOLEL

    (c) COLLGEE   (d) COLLEGE

Solution. **(d)**   1 = C, 3 = O,   0 = L

                                     0 = L, 6 = E,   2 = G, 6 = E

Hence, only **(d)** is valid.

Type 3

Mixed coding (Alphabets + Digits): In such questions, both letters and numbers are assigned as code The candidates are required to identify the analogy given in the questions.

Example 5: If 'INDIA' stands for 'I - 14 - D - 9 - A' and NEPAL' stands for N - 5 _ P _ 1 _ L, then how will you code the GIRL ?

    (a) G9R12   (b) G15R10

    (c) G10R9   (d) G9R11

Solution. **(a)** Assign the alphabetical number to the letters.

Example 6: If 'LOINESS' is coded as `≪ ? # @ $ $ $'and MEN' is coded as ↑φ@, then how will you code the MISSION'?

    (a) ↑ # $ $ # ? @   (b) # ↑ $? ≪ φ @

    (c) ↑ # $ ≪ φ @   (d) ↑ $ # ? ≪ φ @

Solution. **(a)** The intelligent deciphering of the two codes gives the following

<div align="center">

M I S O L E N

↑ # $? ≪ φ @

</div>

So, MISSION will be coded as ↑ # $ $ # ? @ .

Type 4

Miscellaneous types: In such questions, a careful deciphering is required to find out the patterns.

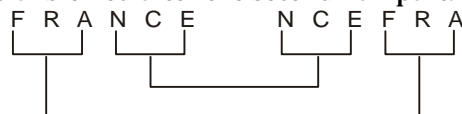**Example 7: If FRANCE' is coded as NCEFRA' and 'CANADA' is coded as ADACAN, then how will you code 'MEDICINE'?**

                               (a) CNIEMEDI(b)   CINEDEMI

                               (c) CINEMEDI(d)   CINEDEIM

Solution.(c) The first half part is transferred after the second half part. The coding is made as follows

<div align="center">

F R A N C E   N C E F R A

</div>

So, the code of MEDICINE will be coded as 'CINEMEDI'.

Some More Solved Examples

Example 8: If A = Z, B = Y, C = X and so on, then what will be the code of BLACK?

    (a) OYZXP   (b) YOZXP

    (c) YOZPX   (d) YOXZP

               Solution. **(b)** Now, the code of BLACK is YOZXP.

Example 9: If FOOD is coded as ENNC, then decode the code of SPEED.

    (a) RODDC   (b) RDOCC

    (c) RODCD   (d) ROCDC

Solution. **(a)** Here, each letters is allotted the value of its preceding letter in the sequence. So the code of SPEED is RODDC.

Example 10: If INLAND is coded as DNALNI, how will POSTED be coded?

    (a) DESTOP   (b) DETOPS

(c) DETSPO   (d) DETSOP

Solution. (a) Now, reverse the letters of the word. So, the code of POSTED will be DETSOP.

Example 11: If EXPORT is coded as USPQYF, then how will CAPITAL be coded?

    (a) MBJUQBD   (b) MBUJQBD
    (c) BMUJQBD   (d) MBUJQDB

    Solution. (b) Reverse the word and use next alphabet as code. So, the answer is MBUJQBD.

EXERCISE

1. In a certain code LAWN is written as JCUP. How will SLIT be coded in that code?
    (a) QNGV   (b) QJGV
    (c) QNVG   (d) NJGV

2. In a certain code SATELLITE is written as FUBHTLDSHK. How is LAUNCHING written in that code?
    (a) DOUBFMGHO   (b) OVBMCFMHG
    (c) OVMBCFMGH   (d) DOUBCFMHG

3. In a certain code LOUD is written as JOSF then which of the following English words shall be coded as PKQG?
    (a) RISE   (b) ROPE
    (c) ROAD   (d) RICE

4. In a certain code BREAKDOWN is written as BFSCJMVNC. How is ORGANISED written in that code?
    (a) PSHBMCDRH   (b) BHSPMCDRH
    (c) BHSPOCDRH   (d) BHSPNHRDC

5. In a certain code CONCISE is written as FTJBBNM. How is FISHERY written in that code?
    (a) ZSFIGJT   (b) ZSFGIHR
    (c) ZSFGEHR   (d) ZSFEHGR

6. In a certain code '59346' is written as $AD%F and '8173' is written as 'HB#D'. How is '9865' written in that code?
    (a) HAF$ (b) AFH$
    (c) ADF$ (d) None of these

7. In a certain code PRAISE is written as #@$27% and RESPIRE is written as @%7#2@%. How is REPAIR written in that code?
    (a) @%#2$@   (b) @%$#2@
    (c) @%#$2@   (d) @%$2#@

8. In a certain code LONG is written as 5123 and GEAR is written as 3748. How is LANE written in that code?
    (a) 5427   (b) 5247
    (c) 5847   (d) 5237

9. In a certain code READ is written as #5%6 and PAID is written as $%46. How is RIPE written in that code?
    (a) #4$5   (b) #6$5
    (c) $4#5   (d) $4#6

10. In a certain code GEAR is written as '5934' and RIPE is written as '4869'. How is PAGE written in that code?
    (a) 6359   (b) 6539
    (c) 4359   (d) 6459

Directions (Q. No. 11-20) : In each of these questions a group of letters is given followed by four combinations of digit/symbol numbered (i), (ii), (iii) and (iv). Letters are to be coded as per the scheme and conditions given below. You have to find out the serial number of the combination, which represents the letter group. Letter of that combination is your answer. If none of the combinations is correct, your answer is (5) i.e. 'None of these'.

Letters: F G A K M E S P L Q B U R I T

Digit/Symbol Codes: 9 % 2 $ * 7 @ 8 1 6 5 Ó 4 # 3

Conditions:

(i) If the first letter is a vowel and the last a consonant, both are to be coded as the code for the vowel.

(ii) If the first letter is a consonant and the last a vowel, the codes for the first and the last letters are to be interchanged,

(iii) If both the first and the last letters are consonants both are to be coded as 'd'

(iv) If more than two vowels are there in the group of letters, all vowels are to be coded as £.

11. TEFSUM
   - (a) δ79@©d
   - (b) 379@©*
   - (c) *79@©3
   - (d) δ79@δ©
   - (5) None of these

12. BSQEGU
   - (a) 5@67%©
   - (b) δ@67%δ
   - (c) ©@67%©
   - (d) None of these

13. KAGFUB
   - (a) $2%9©5
   - (b) 52%9©$
   - (c) $2%©95
   - (d) δ2%9©δ

14. AQUMTE
   - (a) 76©*32
   - (b) £6£*3£
   - (c) 26©*32
   - (d) 26©*23

15. IPKUSR
   - (a) #8$©@#
   - (b) 48$©@#
   - (c) #8$©@4
   - (d) #8$4©

ANSWERS:

1. (a) 2. (b) 3. (a) 4. (b) 5. (c) 6. (d) 7. (c) 8. (a) 9. (a) 10. (a) 11. (a) 12. (d) 13. (d) 14. (b) 15. (a)
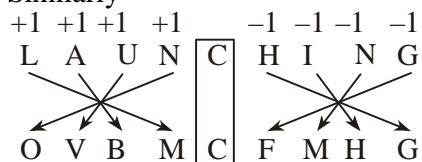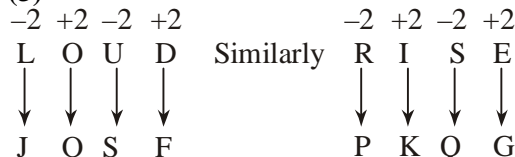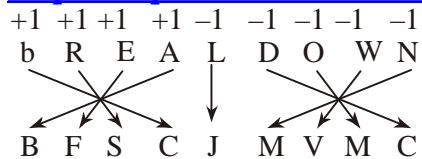
EXPLANATIONS:

(1)
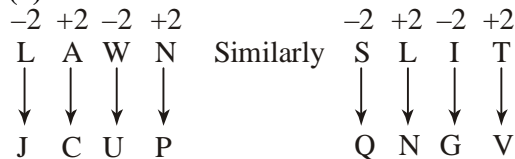
```
–2 +2 –2 +2              –2 +2 –2 +2
L  A  W  N   Similarly   S  L  I  T
↓  ↓  ↓  ↓                ↓  ↓  ↓  ↓
J  C  U  P                Q  N  G  V
```
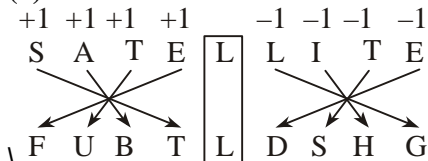
(2)

```
+1 +1 +1  +1      –1 –1 –1  –1
 S  A  T  E  [L]  L  I  T  E
      ✕        [L]    ✕
\F  U  B  T  [L]  D  S  H  G
```

Similarly

```
+1 +1 +1  +1      –1 –1 –1  –1
 L  A  U  N  [C]  H  I  N  G
      ✕        [C]    ✕
 O  V  B  M  [C]  F  M  H  G
```

(3)

```
–2 +2 –2 +2              –2 +2 –2 +2
L  O  U  D   Similarly   R  I  S  E
↓  ↓  ↓  ↓                ↓  ↓  ↓  ↓
J  O  S  F                P  K  Q  G
```

(4)

```
+1  +1 +1  +1 –1  –1 –1 –1  –1
 b   R   E   A   L   D   O   W   N



 B   F   S   C   J   M   V   M   C
```
Similarly
```
+1  +1 +1  +1      –1 –1 –1  –1
 O   R   G   A   N   I   S   E   D



 B   H   S   P   M   C   D   R   H
```
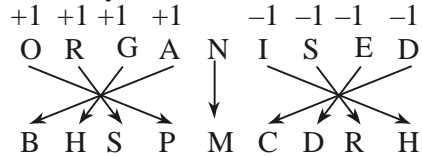
6. Here,

Number :   5 9 3 4 6 8 1 7
Code : $ A D % F H B #
Therefore, the code for 9895 ⇒ AHF$

7. P R   A   I   S   E
     # @ $ 2   7   %

   Similarly
     R   E   P   A   I   R
     @ %   # $ 2   @

8.   L   O   N   G   E   A   R
5   1   2   3   7   4   8

   Similarly,
     L   A   N   E
     5   4   2   7

9. R   E   A   D   P   I
     #   5   %   6 $ 4
   So, RIPE → $4$5

11. T E F S U M
     δ 7 9 @ © δ   [condition iii]

12. B S Q E G U
     © @ 6 7 % 5 [condition ii]

13. K A G F U B
     δ   2 %   9 © δ [condition iii]

14. A Q U M T E
     £ 6 £ * 3 £ [condition iv]

15. I P K U S R
     # 8 $ ©   @ #   [condition i]

Syllogism

The word 'Syllogism' is also referred to 'Logic'. Syllogism is an important section of logical reasoning and hence, a working knowledge of its rules is required on the part of the candidate. Hence, it can be expressed as the 'Science of thought as expressed in language'. The questions based on syllogism can be solved by using Venn diagrams and some rules devised with the help of analytical ability.

With this unique characteristic, this test becomes an instrument of teaching the candidates to follow the rules and work as per the instructions without an error. Here, only the basic concept and rules, which have a bearing on reasoning faculty could alone help. There are some terminology which are used in syllogism.

Proposition

It is also referred to as 'Premises'. It is a sentence which asserts that either a part of, or the whole of, one sets of objects-the set identified by the subject term in the sentence expressing that sentence either is included in, or is excluded from, another set-the set identified by the predicate term in that sentence.

Types of Proposition

Categorical Proposition There is relationship between the subject and the predicate without any condition.

Example :   I. All beams are logs.
           II. No rod is stick.

Hypothetical Proposition: There is relationship between subject and predicate which is asserted conditionally.

Example :   I. If it rains he will not come.
           II. If he comes, I will accompany him.

Disjunctive Proposition In a disjunctive proposition the assertion is of alteration.

Example :   I. Either he is brave or he is strong.
           II. Either he is happy or he cannot take revenge.

Parts of Proposition

It consists of four parts.

1. **Quantifier:** In quantifier the words, 'all', 'no' and 'some' are used as they express quantity. 'All' and 'no' are universal quantifiers because they refer to every object in a certain set. And quantifier 'some' is a particular quantifier because it refers to at least one existing object in a certain set.
    2. **Subject:** It is the word about which something is said.

3. **Predicate:** It is the part of proposition which denotes which is affirmed or denied about the subject.
    4. **Copula:** It is the part of proposition which denotes the relation between the subject and predicate.

Example :   All   boys   are   brilliant
                ↑   ↑   ↑   ↑
              Quantifier   Subject   Copula   Predicate

Hence, the standard form of proposition is

Quantifier + Subject + Copula + Predicate

Four-fold classification of categorical proposition: On the basis of quality and quantity of proposition we can classify them in four categories. To draw valid inferences it is necessary to have a clear understanding of the A, E, I, O relationship as given in the table.

| Symbol	Proposition	Quantity	Quality
A	All A are B	Universal	Affirmative
E	No A is B	Universal	Negative
I	Some A are B	Particular	Affirmative
O	Some A are not B	Particular	Negative

Rules for Deriving the Conclusions from Two Given Premises

1. **Universal affirmative or A-type proposition.**
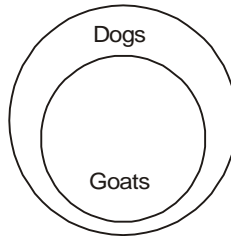
Take an example : All goats are dogs This is A type proposition: We can see it by graphical representation of the above proposition we observe that goats are distributed in dogs. Hence. we can conclude that in A type proposition only subject is distributed.

2. **Universal negative or E-type proposition.**
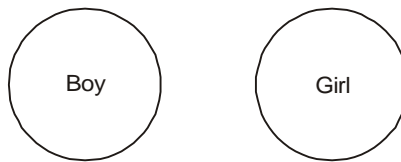
Take an example : No girl is boy In this type of proposition both subject and predicate are denial of each other. This can also be seen in the diagram representing boy Girl and girl. They have nothing in common. Hence, both subject and predicate are distributed.

3. **Particular affirmative or I-type proposition.**
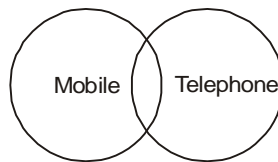
Take an example : Some mobiles are telephones. In this type of proposition subject and predicate have something in common. This implies that in I-type neither subject nor Mobiles Telephones predicate is distributed. We can see it graphically as given in figure.

4. **Particular negative or O-type proposition.**
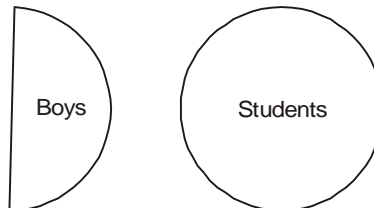
Take an example : Some boys are not students. In O-type propositions some of the category represented by boys subject is not students, which means that a section of boys is denied with the entire category of students. It is, therefore, deduced that in O-type proposition only predicate is distributed. On account of different logical approach required to be applied for drawing each type of inference, a clear understanding of this difference becomes more important.

Rules for Mediate Inference

First introduced by Aristotle, a syllogism is a deductive argument in which conclusion has to be drawn from two propositions referred to as premises.

Now consider an example.

Statement: I. Vinay is a boy. II. All boys are honest.

Conclusion I. Vinay is honest.

First two sentences I and II are called propositions and the sentence I is called conclusion. This conclusion is drawn from above given two propositions.

Types of Questions Asked in the Examination

There are mainly two types of questions which may be asked under this

1. When premises are in specified form Here premise is in specified form. Here mainly two propositions are given. Propositions may be particular to universal; universal to particular; particular to particular; universal to universal.

2. When premises are in jumbled/mixed form Here at least three or more than three proposition are given. Here pair of two propositions out of them follow as same as in specified form.

Type 1 Premises in Specified Forms

Case 1: The conclusion does not contain the middle term Middle term is the term common to both the premises and is denoted by M. Hence, for such case, conclusion does not contain any common term belong to both premises.
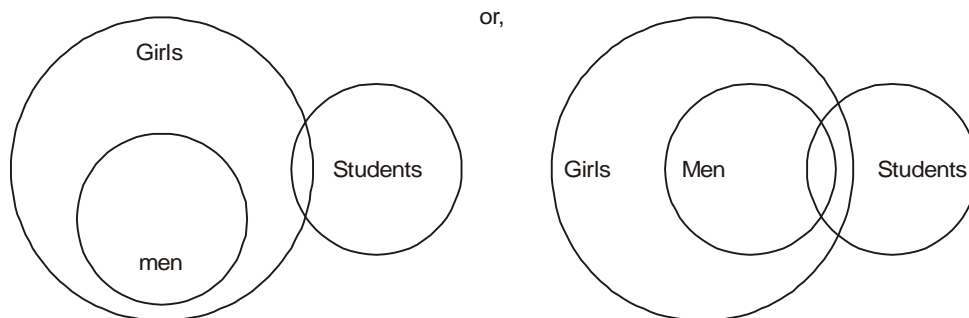
Example 1

Statement: I. All men are girls.

II. Some girls are students.

Conclusions I. All girls are men.

II. Some girls are not students.

Solution. Since, both the conclusions I and II contain the middle term 'girls' so neither of them can follow.

Venn diagram Representation: All possible cases can be drawn by using Venn diagram.

By using both representation (a) and (b) it is clear all girls cannot be men as well as (a) shows some girls are students, here no man is included but at the same time (b) shows some girls are students have some men are also students as all men are girls. Hence, we cannot deduce conclusion II.

So, neither of them can follow.

Example 2

Statement: I. All mangoes are chairs.

II. Some chairs are tables.

Conclusions I. All mangoes are tables.

II. Some tables are mangoes.
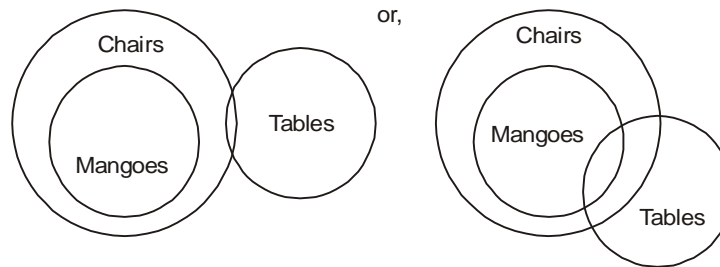
III. No mango is a table.

Solution. Here, the term chair is common to both the **statement** and hence, is the middle term. **Statement** (I) is A type proposition and in A-type proposition, only subject is distributed, hence, chair being the predicate in the **statement** (I) is not distributed in the second **statement**. Thus, none of the conclusions following **statement** is a valid inference.

Venn diagram representation: All possible cases can be drawn as

 (i) All mangoes are table-this inference is definitely false neither (a) nor (b) shows this conclusion.
 (ii) Some tables are mangoes, this inference is uncertain or doubtful.
 (iii) No mango is a table, this inference is also uncertain or doubtful. Though it can be concluded from the above discussion that no valid inference can be drawn between mango and table.
Case 2: No term can be distributed in the conclusion unless it is distributed in the premises.
If case 1 is compiled with by a pair of **statement**, it is confirmed that valid mediate inferences can be drawn
from such pair of **statement**. But every mediate inference drawn cannot be valid. Therefore, case 2 is applied to
check as to the conclusions drawn from a pair of **statement** in which middle term is distributed, is valid.
Example 3
     Statement: I. Some boys are students.
                     II. All students are teenagers.
     Conclusions   I. All teenagers are students.
                    II. Some boys are teenagers.
Solution. Statement I is an I-type proposition which distributes neither the subject nor the predicate. Statement II is an A type proposition which distributes the subject 'students'. Conclusion I is an A-type proposition which distributes the subject 'teenagers' only.

Since. the term teenagers is distributed in conclusion I without being distributed in the premises. So, conclusion I cannot follow. In second conclusion, where it is asked that some boys are teenagers. But from statement I it is clear that some students are not students. These students may not be teenagers.

Venn diagram representation: All possible cases can be drawn as follows
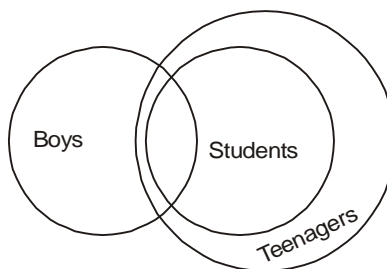
We have given that all students are teenagers so, its reverse cannot be possible. Hence, conclusion I is false. As we are also given that some boys are students and all students are   teenagers. So, some boys which are students must be teenagers. Hence, conclusion II follows.

Case 3: If one premises is particular, conclusion is particular. Take an example which explains this case Example 4

    Statement: I. Some boys are thieves.

                      II. All thieves are dacoits.

    Conclusions   I. Some boys are dacoits.

                      II. All dacoits are boys.

    Solution. Since, one premise is particular, the conclusion must be particular. So, conclusion II cannot follow.

    Venn diagram representation: All possible cases can be drawn as follows
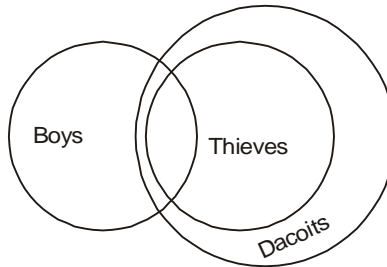
    Here conclusion I follows but the conclusion II cannot follow.

    Case 4 If the middle term is distributed twice, the conclusion cannot be universal Take an example which explains such case.
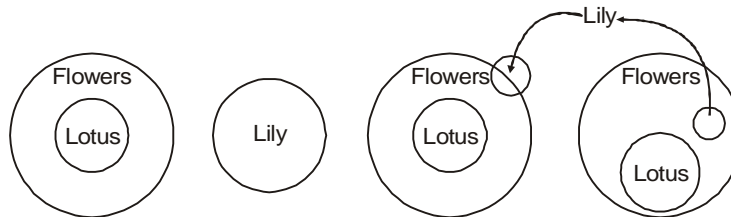
Example 5

    Statement: I. All Lotus are flowers.

                      II. No Lily is a Lotus.

    Conclusions   I. No Lily is flowers.

                      II. Some Lilies are flowers.

    Solution. Here, the first premise is an A proposition and so, the middle term 'Lotus' forming the subject is distributed.The second premise is an E proposition and so, the middle term 'Lotus' forming the predicate is distributed. Since, the middle term is distributed twice, so the conclusion cannot be universal.

    Venn-diagram representation: All possible cases can be drawn as follows

    It is clear from the given Venn-diagrams either conclusion I or II must be followed.

    Case 5 If both the premises are affirmative, the conclusions must be affirmative. Take an example which follows such case:

Example 6

    Statement: I. All gardens are schools.

                      II. All schools are colleges.

    Conclusions   I. All gardens are colleges.

                      II. Some gardens are not colleges.

    Solution. Since, both the premises are affirmative, the conclusion must be affirmative, so conclusion II cannot follow.
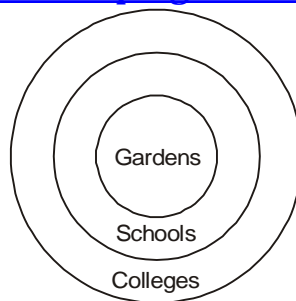
    Venn diagram representation: All possible cases can be drawn as follows.

Now, taking conclusion I, it is clear that all gardens are also colleges. But taking conclusion II, we cannot that derive second conclusion is true. Hence, only the first conclusion must be true.

Case 6 No conclusion follows. There are three types of such cases.
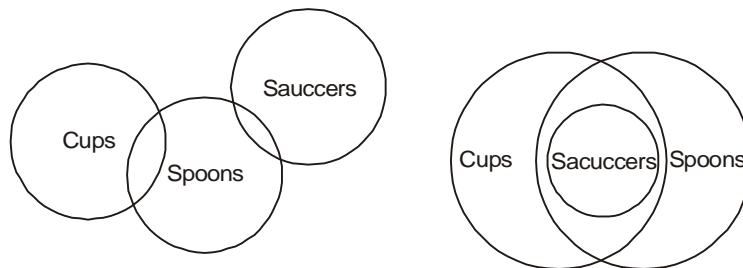
(a) If both the premises are particular

Example 7

    Statement: I. Some cups are spoons.

                      II. Some spoons are sauccers.

    Conclusions   I. All cups are sauccers.

                      II. Some sauccers are cups.

Solution. Since both the premises are particular, so no definite conclusion follows.

Venn diagram representation

It is clear from both given Venn-diagrams that no conclusion is followed.

(b) If both the premises are negative

Example 8

    Statement: I. No flower is mango.

                      II. No mango is cherry.

    Conclusions   I. No flower is cherry.

                      II. Some cherries are mangoes.

Solution. Since, both the premises are negative hence, neither conclusion follows.

Venn diagram representation: It is clear from both Venn-diagrams that neither conclusion follows.

(c) I f the major premise is particular and the minor premise is negative

Major premise is the predicate of the conclusion and minor premise is the subject of the conclusion.

Example 9

    Statement: I. Some pubs are cows.

                      II.   No kitten are pubs.

 Conclusions   I. No pubs are kitten.

                      II. Some cows are kitten.

Solution. Here, the first premise containing the middle term 'Kitten' as the subject is the major premise and the second premise containing the middle term 'Kitten' as the predicate is the minor premise. Since, the major premise is particular and the minor premise is negative. So, no conclusion follows.
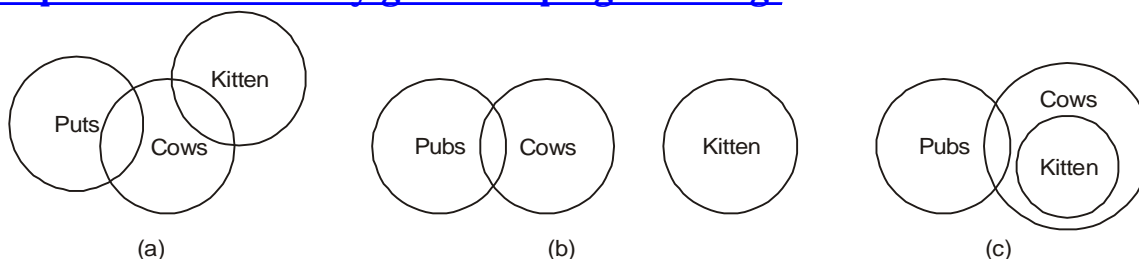
Venn diagram representation: All possible cases are given

It is clear from the Venn-diagram representation that conclusion I follows.

Complementary pair of conclusions

In drawing mediate inferences from given statement, students are required to be more attentive in selecting complementary pair of conclusion where neither of the conclusions is definitely true but a combination of both makes a complementary pair. As we have already discussed in case number 1 that in the statement where middle term is not distributed, no valid mediate inference can be drawn but there still exists a possibility that a complementary pair of conclusions follows from the statement.

Example 10

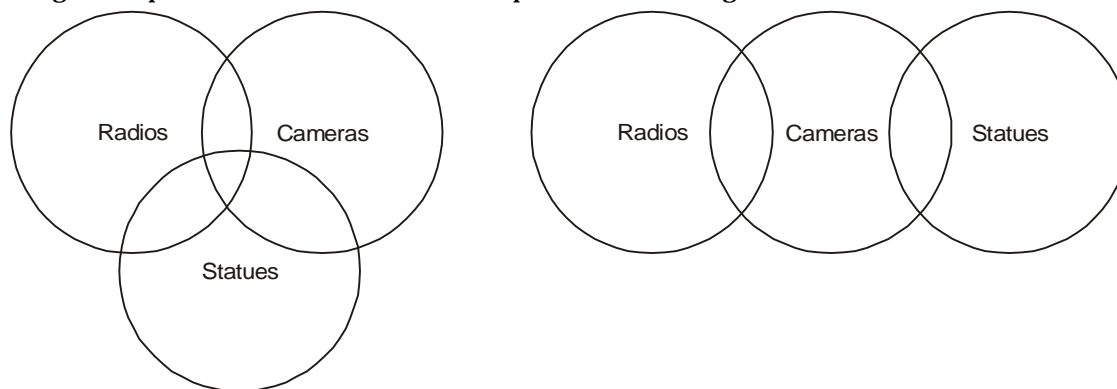**Statements**   I.   Some cameras are radios.
           II.   Some statues are cameras.
Conclusions   I.   Some ratios are statues.
           II.   No radio is statue.

Solution. Either 'some radios are statues' or 'No radio is statue' follows, as I and E-type proposition form a complementary pair.

Venn diagram representation We can draw all possible cases as given below

Hence, using both diagrammatical representation we can conclude either some radios are statues or 'no radio' is statue. Hence, at least one of the conclusions must be true.

Special Cases

Facts

Combinations (Conclusion)	Conclusion
A + E	Either I or II follows
E + I	Either I or II follows
I + O	Either I or II follows
E + O	Either I or II follows

Example 11

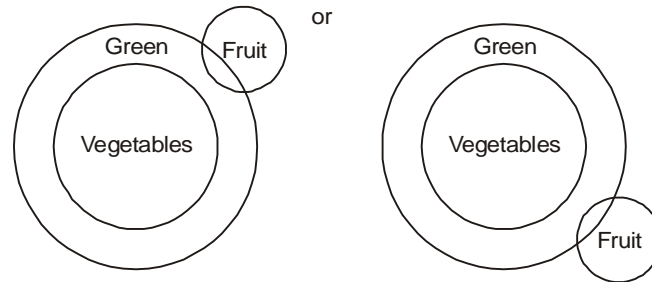| Statements	I. All vegetables are green.
	II. Some greens are fruits.
Conclusions	I. Some fruits are vegetables.
	II. No fruit is vegetable.

Solution. Here, conclusion I is particular affirmative and conclusion II is universal negative proposition. Hence, either conclusion I or conclusion II follows.

Alternatives

Conclusion: If we follow Venn-diagram (a) then we can say no fruit is vegetable. Conclusion II but if we that follow Venn diagram (b) then we can say some fruits are vegetables (conclusion I).

Here, either Venn diagram (a) or Venn-diagram (b) is possible. Hence, conclusion I or conclusion II must be followed.

Minimal Possibilities

We can represent statements by keeping in mind our conclusions It' we follow that our two conclusions belong to special case, then either one of them is true.

We can represent minimum possibilities as given directly in the statement, we don't need to think about parameters.

Example 12

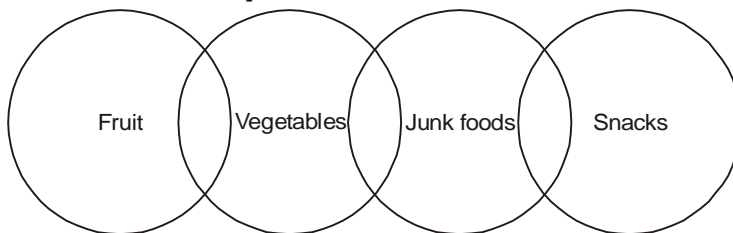| Statements	I. Some fruits are vegetables.
	II. Some vegetables are junk food.
	III. Some junk foods are snacks.
Conclusions	I. Some junk foods are vegetables.
	II. Some junk foods are fruits.

Solution. Minimal possibilities

It is clear from the above diagrams that only conclusion I follows.

Type 2 Mixed/jumbled Problems

In such type of problem there is a constitution of mixed problems of universal and particular premises.

Directions (Q. Nos. 13 to 16) In each of the questions given below there are three statements followed by three conclusions numbered I, II and III, you have to take the given statements to be true even if they seem to be at variance from commonly known facts. Read all the conclusions and then decide which of the given conclusions logically follows from the given statements disregarding commonly known, facts.

Example 13

Statements	All halls are tyres.
	Some tyres are wheels.
	All wheels are cars.
Conclusions	I. Some cars are wheels.
	II. Some cars are tyres.
	III. Some wheels are halls.

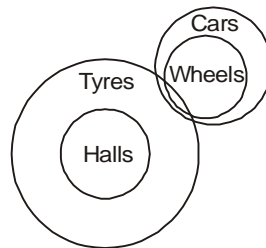(a) None follows   (b) Only I follows
(c) Only I and II follow   (d) Only III follows

Solution. (c)

Conclusions

       I. Some cars are wheels. It can be seen from Venn-diagram.
      II. Also, some cars are tyres (as shown in Venn-diagram).
    III. It is not clear from the Venn-diagram. Hence, only I and II follow.

Example 14

Statements	Some pictures are frames.
	Some frames are idols.
	All idols are curtains.
Conclusions	I. Some curtains are pictures.
	II. Some curtains are frames.
	III. Some idols are frames.

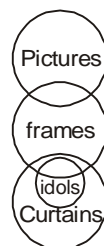(a) Only I and II follow   (b) Only II and III follow
(c) Only I and III follow   (d) All follow

Solution. (b)

Conclusions

       I. Does not follow.
      II. Follows (clear from the Venn-diagram)
    III. Follows (clear from the Venn-diagram)
Hence, only II and III follow.

Example 15

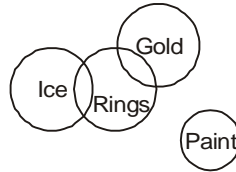|	
Statements	Some ice are rings.
	No ring is paint.
	Some rings are gold.
Conclusions	I. No gold is paint.
	II. No ice is gold.
	III. Some rings are paints.
	IV. All golds are rings.

(a) Only I and III follow   (b) Only I and II follow
(c) Only III and IV follow   (d) None follows

Solution. (d) Hence, none of the conclusions follows.

Example 16

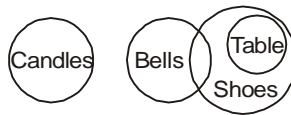|	
Statements	No candle is bell.
	Some shoes are bells.
	All tables are shoes.
Conclusions	I. Some tables are bells.
	II. No table is bell.
	III. Some shoes are candles.
	IV. No shoes are candles.

(a) Only I and IV follow   (b) Only I and II follow
(c) Only III and IV follow   (d) None of these

Solution. (d)

Solution. (d) Here conclusion I is particular affirmative and conclusion II is its universal negative. Hence, either conclusion I or II follows. Also conclusion III is particular affirmative and conclusion IV is its universal negative. Hence, either III or conclusion IV follows. Finally, either conclusion I or II follows and either conclusion III or conclusion IV follows.

EXERCISE:

Directions (Q. Nos. 1 to 13) In each question given below are two Statements followed by two conclusions numbered I and II. You have to take the two given Statements to be true even if they seem to be at variance from commonly known facts and decide which of the given conclusions logically follows from the the given two Statements, disregarding commonly known facts.

Give answer as

(a) If only conclusion I follows
(b) If only conclusion II follows
(c) If neither I nor II follows
(d) If both I and II follow

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1. **Statement:**   I. All jungles are tigers.
                          II. Some tigers are horses.
   Conclusions   I. Some tigers are jungles.
                          II. All horses are jungles.
2. **Statement:**   I. All birds are tall.
                          II. Some tall are hens.
   Conclusions   I. Some birds are hens.
                          II. Some hens are tall.
3. **Statement:**   I. All artists are smokers.
                          II. Some smokers are drinkers.
   Conclusions   I. All smokers are artists.
                          II. Some drinkers are not smokers.
4. **Statement:**   I. Some hens are cows.
                          II. All cows are horses.
   Conclusions   I. Some horses are hens.
                          II. Some hens are horses.
5. **Statement:**   I. All buses are cars.
                          II. Some cars are roads.
   Conclusions   I. Some cars are buses.
                          II. Some buses are roads.
6. **Statement:**   I. Some pastries are toffees.
                          II. All toffees are chocolates.
   Conclusions   I. Some chocolates are toffees.
                          II. Some toffees are not pastries..
7. **Statement:**   I. Some players are singers.
                          II. All singers are tall.
   Conclusions   I. Some players are tall.
                          II. All players are tall.
8. **Statement:**   I. All stones are water.
                          II. Some water are clean.
   Conclusions   I. Some water are stones.
                          II. All clear are water.
9. **Statement:**   I. Some phones are watches.
                          II. All watches are guns.
   Conclusions   I. All guns are watches.
                          II. Some guns are phones.
10. **Statement:**   I. All umbrellas are aeroplanes.
                          II. Some aeroplanes are birds.
    Conclusions   I. Some umbrellas are aeroplanes.
                          II. All birds are umbrellas.
11. **Statement:**   I. Some scooters are trucks.
                          II. All trucks are trains.
    Conclusions   I. Some scooters are trains.
                          II. No truck is a scooter.
12. **Statement:**   I. All tigers are ships.
                          II. Some ships are cupboards.
    Conclusions   I. Some ships are tigers.
                          II. Some cupboards are not ships.
13. **Statement:**   I. All books are pencils.
                          II. Some pencils are cycles.
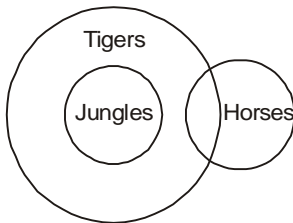
Conclusions   I.   Some cycles are pencils.
              II. Some cycles are books.

ANSWERS:

1. (a) 2. (b) 3. (b) 4. (d) 5. (a) 6. (d) 7. (a) 8. (a) 9. (b) 10. (c) 11. (a) 12. (d) 13. (a)
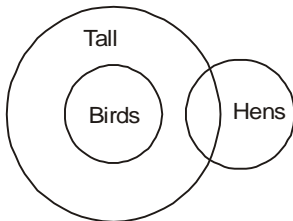
EXPLAINATIONS:

(1)

Hence, only I follows.

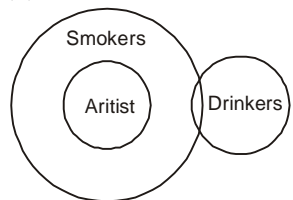**(2)**

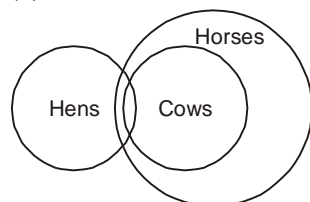**Hence, from both Venn-diagram conclusion II follows.**

(3)

Hence, conclusion I follows.

(4)

Hence, both conclusions are true.
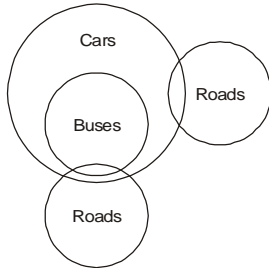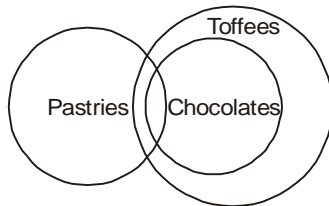
(5)

Hence, only I follows.

(6)

Hence, both I and II are true.

(7)
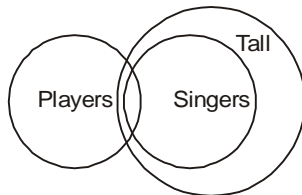
Hence, some players are tall, only I follows.

(8)
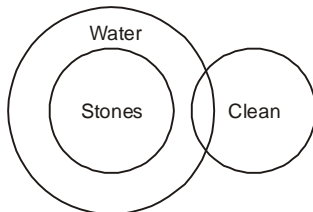
Hence, only I follows.

(9)
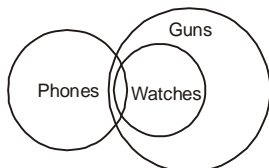
Hence, only II follows.

(10)
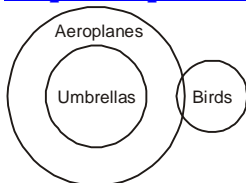
Hence, none follows.

(11)
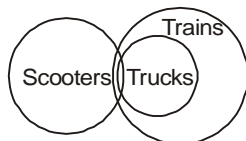
Hence, only I follows.

(12)
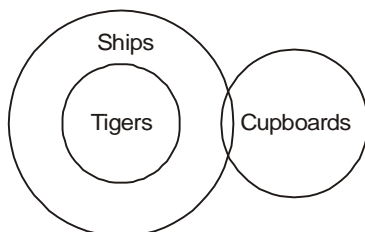
Hence, both follow.

(13)
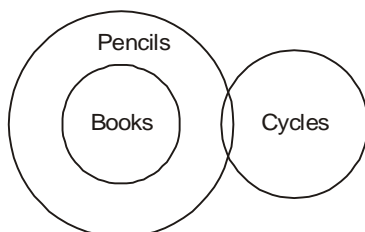
Hence, only I follows.

Section 2: General Knowledge & Awareness

Indian Polity

• Although the skeleton of the constitution was derived from Government of India Act 1935, many provisions were imported from other constitution,, of the world. Some of them are listed below:

  • *Government of India Act 1935:* Federal scheme, office of Governor, power of Federal judiciary, emergency powers etc.

  • *Constitution of Britain:* Law making procedures, rule *of* law, provision for single citizenship, Parliamentary system of government, office of CAG.

  • *Constitution of USA:* Independence of judiciary. judicial review, fundamental rights, removal of Supreme Court and High Court judges, preamble and functions *of* Vice-president.

  • *Constitution of Canada:* Federation with strong Centre, to provide residuary powers *to* the centre.

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- *Constitution of Ireland:* Directive Principles *of* State policy, method of presidential elections, and the nomination of members to Rajya Sabha by the President,
- *Constitution of Germany:* Provisions concerning the suspension of fundamental rights during emergency.
- *Constitution of Australia:* Idea of the Concurrent list.
- *Constitution of South Africa:* Amendment with 2/3rd majority in Parliament and election of the Members of Rajya Sabha on the basis of proportional representation.

- The 42nd Amendment (1976) added the words Secular' and 'Socialist' end now the Preamble reads as follows:
- "We, the people of India having solemnly resolved to constitute India into a Sovereign, Socialist, Secular, Democratic Republic and to secure to all its citizens: Justice, social. economic and political; Liberty of thought, expression, belief, faith and worship Equality of status and of opportunity: and to promote among them all Fraternity assuring the dignity of the individual and the unity and integrity of the Nation. In our Constituent Assembly on this twenty-sixty day November, 1949, we do hereby, Adopt, Enact and Give Ourselves this Constitution."

• Part I/Articles 1-4	: Territory *of* India, admission, establishment or formation of new states
• Part II/Articles 5-11	: Citizenship
• Part III/Articles 12-35	: Fundamental Rights
• Part I V/Articles 36-51	: Directive Principles of State Policy
• Part I V-A/Article 51A	: Duties of a citizen of India
• Part V/Articles 52-151	: Government at the Union level
• Part VI/Articles 152-237	: Government at the State level
• Part VII/Article 238	: Repeated by 7th Amendment 1956
• Part VIII/Articles 239-241	: Administration of Union Territories
• Part IX/Articles 242-243	: The Panchayats
• Part IX-A/Articles 243P-243 ZG	: The Municipalities
• Part X/Articles 244-244	: A Scheduled and tribal areas
• Part XI/Articles 245-263	: Relations between the Union and States
• Part XMI/Articles 263-300	: A Finance, property, contracts and suits
• Part XIII/Articles 301—307	: Trade, commerce and travel within territory of India
• Part XIV/Articles 308-323	: Services under the Union and States
• Part XIV-A/Articles 323A-323B	: Deals with administrative tribunals
• Part XV/Articles 324-329	: A Election and Election Commission
• Part XVI/Articles 330-342	: Special provision to certain classes SCs/STs, OBCs and Anglo Indians
• Part XVII/Article 343-351	: Official languages
• Part XVIII/Articles 352-360	: Emergency provisions
• Part XIX/Article 361-367	: Miscellaneous provisions
• Part XX/Article,68	: Amendment of Constitution
• Part XXI/Articles X69-392	: Temporary, transitional and special provisions

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First Schedule	• It deals with the territories of th, 28 states and 7 union, territories of the Indian Union.
Second Schedule	• Deals with salaries, allow a cesn etc., payable to the President of India, Governors of States, Chief Justice of India, judges of the Supreme Court and High Courts and the Comptroller and editor General of India. There revised salaries now are:

President of India   Rs 1.50,000 pm
Vice-President   Rs 1.20.000 pm
Governor of a state   Rs 1,10,000 par
                         (varies from state to state)

Chief Justice of India   Rs 1,00.000 pm
Judges of the Supreme Court   Rs 90,000 pm
Chief Justice of a High Court   Rs 90,000 put
Judges of a High Court   Rs. 80.000 put

Third Schedule	• It prescribes the various forms of oath or affirmation, which various incumbents have to take before assuming a public office.
Fourth Schedule	• Allocates seats to each state and union territory in the Rajya Sabha. Contains provisions as to the administration and control of Scheduled Areas.
Fifth Schedule	• It deals with the administration and control of the Scheduled Areas.
Sixth Schedule	• Deals with provisions regarding administration of tribal areas in the states of Assam, Meghalaya and Mizoram. This Schedule in the Constitution, amended in 1988 by the Act 67 of 1988, received the assent of the President on 16 December 1988, and was applied to the states of Tripura and Mizoram w.e.f. 16 December 1988.
Seventh Schedule	• Gives three lists of powers and subjects to be looked after by the Union and the states as follows:

      (i) Union List—Comprises subjects of all-India importance like Defence. International Affairs. Railways. Post and Telegraph, Income tax, etc. The Parliament has the exclusive power to legislate on these subjects. It contains 97 subjects:

      (ii) State List-Contains subjects of local importance. Normally, the State Legislature alone legislates on these subjects. It contains 66 subjects.

      (iii) Concurrent List-Contains subjects on which the Parliament as well as the State Legislature enjoy authority. According to the 88th amendment, service tax is to be levied, collected and appropriated by the union and the states.

Eighth Schedule	• Gives a list of 22 regional languages recognised by the Constitution; Originally there were only 14 languages in the schedule and the l5th language 'Sindhi' was added by the list amendment in 1967, and three languages-Konkani, Manipuri and Nepali were added by the 71st amendment in 1992. In 2003, the 92nd amendment added four more languages to the list-'Bolo', 'Dogri', 'Maithali' and 'Santhali'. The language' are as follows:

    1. Assamese   2. Bengali   3. Bndo
    4. Dogri   5. Gujarati   6. Hindi,
    7. Kanada   8. Kashmiri   9. Malayalam
    10. Maithali   11. Marathi   12. O, it a,
    13. Punjabi   14. Sanskrit   15. Sindhi,
    16. Tamil   17. Telugu   18. Santhali
    19. Urdu   20. Konkagi   21. Manipuri
    22. Nepali.

Ninth Schedule	• Contains certain Acts and regulations of the State Legislature dealing with and reforms and abolition of the zamindari system. it contains 284 Acts. This Schedule was added to the Constitution in 1951, by the First Constitution (Amendment Act.
Tenth Schedule	• Contains certain provisions -regarding disqualification of members on grounds of defection.
Eleventh Schedule	• It lists 29 subjects on which the panchayats have been given administrative control. It was added to the Constitution on 20 April 1992, by the 73rd Amendment in 1992.
Twelfth Schedule	• It lists 18 subjects on which the municipalities are given administrative control. It was added to the Constitution on 20 April 1992 by the 74th Amendment in 1992.

CITIZENSHIP

Part II (Articles 5-11): The Constitution provides for only single citizenship and there is no separate citizenship of states. Citizenship can be acquired (Citizenship Act, 1955) by birth, descent, registration, naturalization or when India acquires new territories. Citizenship can be lost by renunciation, termination or deprivation. Parliament can, by law, deprive any person of his citizenship if it is satisfied that citizenship was acquired by fraud, false representation, or concealment of material facts.

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Dual Citizenship, 2005

Under the Citizenship Act 2003, those eligible to become citizen of India as on 26 January 1950, could apply for dual Indian citizenship. The government has extended dual citizenship to all those who were holding the Person of Indian Origin Card (PIOC) and who had migrated from India after the formation of the Indian Republic. Persons of Indian origin who were citizens of Australia, Canada, Finland, France, Greece, Ireland, Israel, Italy, the Netherlands, New Zealand, Portugal, Cyprus, Sweden, Switzerland, the United Kingdom and the United States of America were eligible to apply for dual citizenship. A person who has been at any time a citizen of Pakistan, Bangladesh or any other country that the government may notify n future is not entitled to dual citizenship.

PIO Card

Person of Indian Origin card was launched in 1999. It was revised in 2002. Any person, who at any time held an Indian passport or citizen of his parents or grandparents or great grandparents was born in Indian and was permanently resident in India, is entitled to have PIO card. All nations except Afghanistan, Bangladesh, Butane, China, Nepal, Pakistan and Sri Lanka are eligible for this PIO card. PI0 card holder can visit India without visa for 15 years from the date of issue of PI0 card.

OCI (Overseas Citizenship of India)

It is operational from Dec 2005. A foreign national who, (i) was eligible to become a citizen of India on 26-01-1950, or (ii) was a citizen of India on or at any time after 26-01-1950, or (iii) belonged to a territory that became part of India after 15-08-1947 or (iv) his children or grand children or (v) miner children of such children. PI0 of all countries national except Pakistan and Bangladesh can obtained OCI.

- Part III (Articles 12-35): Originally seven Fundamental Rights were listed in the Constitution. However, after the 44the Amendment 1978, there are now only six Fundamental Rights, they are:
  1. **Right of Equality (Article 14-18)**
  2. **Right of Freedom (Article 19) It guarantees:**
     (i) Freedom of speech and expression.
     (ii) Freedom to assemble peacefully and without arms.
     (iii) Freedom to form associations and unions.
     (iv) Freedom of movement throughout India.
     (v) Freedom to practice any profession or to carry on any occupation trade or business.
  3. **Right to Freedom of Religion (Articles 25-28)**
  4. **Cultural and Educational Rights (Articles 29-30)**
  5. **Right Against Exploitation (Articles 23-24)**
  6. **Right to Constitutional Remedies (Articles 32-35)**

Right to property used to be a Fundamental Right but has now become only a legal right. The Janata Government on 20 June 1978, omitted the Right to Property by Constitution (44th) Amendment Act, 1978.

Fundamental Rights are:-

12.	Definition of state
13.	Laws inconsistent with or in derogation of the fundamental rights
14.	Equality before law
15.	Prohibition of discrimination on grounds of religion. race, caste, sex or place of birth
16.	Equality of opportunity in matters of public employment
17.	Abolition of untouchability
18.	Abolition of titles
19.	Protection of certain rights regarding freedom of speech, etc.
20.	Protection in respect of conviction for offences
21.	Protection of life and personal liberty
21.A	Right to elementary education

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22.   Protection against arrest and detention in certain cases
23.   Prohibition of traffic king in human beings and forced labour
24.   Prohibition of employment of children in factories, etc.
25.   Freedom of conscience and free profession, practice and propagation of religion
26.   Freedom to manage religious affairs
27.   Freedom as to payment of taxes for promotion of any particular religion
28.   Freedom as to attendance at religious instruction or religious worship in certain educational institutions
29.   Protection of interests of minorities
30.   Right of minorities to establish and administer educational institutions
31.   (Repeated) Saving of laws providing for acquisition of estates, etc.
31A.   Validation of certain acts and regulations
31B.   Saving of laws giving effect to certain directive principles
31C.   (Repeated)
32.   Remedies for enforcement of fundamental rights including writs
32A.   (Repeated)
33.   Power of Parliament to modify the fundamental rights in their application to forces, etc.
34.   Restriction on fundamental rights while martial law is in force in any area
35.   Legislation to give effect to some of the provisions of fundamental rights

OFFICES UNDER GOVERNMENT OF INDIA

President of India

Dr. Rajendra Prasad	1950-1962
Dr. S. Radhakrishnan	1962-1967
Dr. Zakir Hussain	1967-1969 (Died)
Varahagiri Venkata Giri	1969-1969 (Acting)
Justice Md. Hidayatullah	1969-1969 (Acting)
Varahagiri Venkata Giri	1969-1974
Fakhruddin Ali Ahmed	1974-1977 (Died)
B. D. Jatti	1977-1977 (Acting)
Neelam Sanjiva Reddy	1977-1982
Giani Zail Singh	1982-1987
R. Venkataraman	1987-1992
Dr. Shankar Dayal Sharma	1992-1997
K. R. Narayanan	1997-2002
Dr. A.P.J. Abdul Kalam	2002-2007
Smt. Pratibha Devi Singh Patil	2007-Till Date

Vice-Presidents of India

Dr. S. Radhakrishnan	1952-1962
Dr. Zakir Hussain	1962-1967
Varahagiri Venkata Giri	1967-1969

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Gopal Swarup Pathak	1969-1974
B. D. Jatti	1974-1979
Justice Md. Hidayatullah	1979-1984
R. Venkataraman	1984-1987
Dr. Shanker Dayal Sharma	1987-1992
K. R. Narayanan	1992-1997
Krishan Kant	1997-2002 (Died)
Bhairon Singh Shekhawat	2002-2007
Md. Hamid Ansari	2007 -Till Date

Prime Ministers of India

Jawaharlal Nehru	1947-1964 (Died)
Gulzari Lal Nanda	1964-1964 (Acting)
Lal Bahadur Shastri	1964-1966 (Died)
Gulzari Lal Nanda	1966-1966 (Acting)
Indira Gandhi	1966-1977
Morarji Desai	1977-1979
Charan Singh	1979-1980
Indira Gandhi	1980-1984 (Died)
Rajiv Gandhi	1984-1989
V. P. Singh	1989-1990
Chandra Shekhar	1990-1991
P. V. Narasimha Rao	1991-1996
Atal Bihari Vajpayee	1996-1996 (For 16 Days)
H. D. Deve Gowda	1996-1998
I. K. Gujral	1997-1998
Atal Bihari Vajpayee	1998-1999
Atal Bihari Vajpayee	1999-2004
Dr. Manmohan Singh	2004-2009
Dr. Manmohan Singh	2009-till date

EXERCISE:

1. **The constitution assembly adopted the constitution on.**
    (a) Twenty sixth day of January, 1950
    (b) Twenty sixth day of November, 1949
    (c) Twenty sixth day of January, 1949
    (d) None of the above.
2. **Who adopted the constitution of India on 26th November 1949.**
    (a) People of India
    (b) Parliament of India
    (c) Representative of the people of India in constituent Assembly

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    (d) Cabinet

3.   **Consider the following**

    (i)   Socialist

    (ii) Democratic

    (iii) Sovereign

    (iv) Secular

    Choose the words in the order that they appear in the Preamble

    a)   iii, i, iv, ii

    b)   iii, iv, i, ii

    c)   iii, iv, ii, i

    d)   iv, i, iii, ii

4.   **What represents thought, expression, belief faith and worship**

    (a) Justice

    (b) Liberty

    (c) Fraternity

    (d) Equality

5.   **Which of the following Ammendment acts amended the Preamble?**

    (a)   44th Amendment

    (b)   42 Amendment

    (c)   56th Amendment

    (d)   It has never been amended

6.   **The Union territories are specified in the _____ schedule**

    (a) 2nd

    (b) 1st

    (c) 3rd

    (d) 4th

7.   **Sikkim was associated with the Union. Rep. by the Constitutions**

    (a) 36th Amendment Act

    (b) 44th Act

    (c) 42nd Act

    (d) 56th Act

8.   **Which of the following are correct regarding the formation of states and its alterations, The parliament by law**

    (i)   Form a new State by separation of territory from any State or by uniting two or more State

    (ii) diminish the area of any State;

    (iii) alter the boundaries of any State

    (iv) alter the name of any State

    (a) i, ii and iv

    (b) i, ii, iii,

    (c) ii and iv

    (d) all of the above

9.   **The Union of India consists of**

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    i)   States

    ii)   Union territories

    iii) Acquired territories

    (a) i

    (b) ii

    (c) i and ii

    (d) i, ii and iii

10. **Which of the following are correct?**

    i)   The territory and the units of the Indian federation may be altered by Parliament by a single majority

    ii)   The consent of the state legislature is necessary before the parliament redistributes its territory

    iii) The presidents recommendation is necessary for introducing in parliament a bill on redistributing territory of any state

    (a) i and ii

    b) ii and iii

    (c) i and iii

    d) None

ANSWERS:

1. (b) 2. (a)   3. (a) 4. (a) 5. (c)   6. (b) 7. (a) 8. (d) 9. (d)   10. (c)

Geography

PHYSICSL GEOGRAPHY

Structure of the Earth

The Earth is an oblate spheroid. It is composed of a number of different layers as determined by deep drilling and seismic evidence. These layers are:

- The core which is approximately 7000 kilometer in diameter (3500 kilometer in radius) and is loc<.ted at the Earth's center.
- The mantle which surrounds the core and has a thickness of 2900 kilometer.
- The crust floats on top of the mantle. It is composed of basalt rich oceanic crust and granitic rich continental crust.

The core is a layer rich in iron and nickel that is composed of two layers: The inner and outer cores. The inner core is theorized to be solid with a density of about 13 gram per cubic centimeter and a radius of about 1220 kilometer. The outer core is liquid and has a density of about 11 gram per cubic centimeter. It surrounds the inner core and has an average thickness of about 2250 kilometer.

The mantle is almost 2900 kilometer thick and comprises about 83% of the Earth's volume. It is composed of several different layers. The upper mantle exists from the base of the crust downward to a depth of about 670 kilometer. This region of the Earth's interior is thought to be composed of peridotite, an ultramafic rock made up of the minerals olivine and pyroxene. The top layer of the upper mantle, 100 to 200 kilometer below surface, is called the asthenosphere. Scientific studies suggest that this layer has physical properties that are different from the rest of the upper mantle. The rocks in this upper portion of the mantle are more rigid and brittle because of cooler temperature and lower pressures. Below the upper mantle is the lower mantle that extends from 670 to 2900 kilometer below the Earth's surface. This layer is hot and plastic. The higher pressure in this layer causes the formation of minerals that are different from those of the upper mantle.

The lithosphere is a layer that includes the crust and the upper most portion of the asthenosphere. This layer is about 100 kilometer thick and has the ability to glide over the rest of the upper mantle. Because of increasing

temperature and pressure, deeper portions of the lithosphere are capable of plastic flow over geologic time. The lithosphere is also the zone of earthquakes, mountain building, volcanoes, and continental drift. The topmost part of the lithosphere consists of crust. This material is cool, rigid, and brittle. Two types of crust can be identified: Oceanic crust and continental crust. Both of these types of crust are less dense than the rock found in the underlying upper mantle layer. Ocean crust is thin and measures between 5 to 10 kilometer thick.

It is also composed of basalt and has a density of about 3.0 gram per cubic centimeter. The continental crust is 20 to 70 kilometer thick and composed mainly of lighter granite. The density of continen-tal crust it about 2.7 gram per cubic centimeter. It is thinnest in areas like the Rift Valleys o1 East Africa and in an area known as the Basin and Range Province in the westerr United States (centered in Nevada this area is about 1500 kilometer wide and runs about 4000 kilometer North/South). Continental crust is thickest beneath mountain range: and extends into the mantle. Both of these crust types are composed of numerous tectonic plates that float on top of the mantle. Convection currents within the mantle cause these plates to move slowly across the asthenosphere.

•	The total surface area of the earth	510,067,2000 sq. km.
•	Total area covered by water or sea	70.92%
•	The land area	29.08%
•	The equatorial circumference of the earth	40,075,03 km.
•	The meridional circumference	40,007,89 km.
•	The total world's population	6.25 billion (Approximately)
•	The average daily increase in the world's population	263,000 (182 per minute)
•	The crude birth rate	27.1 per 1000
•	The crude death rate	9.8 per 1000
•	The most populous country	China
•	The least populous country	Vatican city
•	Most densely populated country	The Portuguese province of Macau
•	Total number of countries	253
•	The largest country in area	Russia
•	The smallest country in area	Vatican city
•	The most populous city	Mexican city
•	The largest City	Mount Isa, Queensland, Australia

WORLD GEOGRAPHY

Continents

There are seven continents in the world as mentioned below:

- Asia : is the largest continent, covering one third of the land surface of the earth. (Area-43,999,000 sq. km. and population-3,257,000,000 approx.)
- Africa : is the second largest continent of the world (Area-29800,000 sq. km. and population-677,000,000)
- Europe : Area 9,700,000 sq. km. and population-513,000,000
- North America : Area is 24,320,000 sq. km. and population is 44,000,000
- South America : Area is 17,599,000 sq. km. and population is 305,000,000
- Australia : Area is 7,682,300 sq. km. and population is 17,800,000

IMPORTANT FACTS ABOUT

Africa

- **Mouth of River** Congo—Dio go kao (Portuguese) —1483
- **Cape of Good hope**—Barto Lamen Diag—1488 (Portuguese)
- **Niger River**—Munge Park (Scotland)—1795
- **Sahara Desert**—Dixan-Danlam and Huge Clepraton (England)—1822-23

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- **Zambegi River**—David Living Stone (Scotland)—1851
- **Sudan**—Hienerich Barth (Germany)—1852-53
- **Victoria fall**—Livingstone (Scotland)—1855
- **Taganika Lake**—Richard Bartan and John Spake (England)—1858
- **Congo River (entire)**—Sir Hanery Stanley—1877

Asia

- **China**—Marcopolo, (Italy)—1272
- **South China**—(Nikalo-de-Conte (Venis)—1440
- **India**—Vasco-de-gama—1498
- **Japan**—St. Francis Xavier (Spain)—1549
- **Arab**—Carstai Nibur (Germany)—1762
- **Mongolia Prajhe**—Valaski (Russia)—1870-73

Europe

- **North Cape**—Ottar (Norway)—1870

North America

- **Greenland**—Robet Riary (America)—1892
- **Laborodav**—Erricksan (Norway)—1000
- **West-Indies**—Colombus (Italy)—1492
- **Pacific Ocean**—Vasco-Nunej-de-Valvoa (Spain) —1513
- **St. Lawrence River**—Jaques Cartier - (France)—1534
- **Colorodo River—Hernando-de-Allarkar** (Spain)—1540
- **Mississippi**—Hernandu-de-Sotto (Spain)—1541
- **Hundsan Bay**—Henery Hundsan (En land)—1610
- **Alaska**—Beering (Denmark)—1741

South America

- **Brazil**—Pedro-Elvarej (Portuguese)—1500

Australia

- **Papua newguinea**—George-de-Manjeeg (Portuguese) —1526
- **Australia**—Tasman (Dutch)—1642
- **New Zealand**—Tasman (Dutch)—1642
- Antartica-Arctic
- **Galapagose Island**—Revede Neriya (spaw)—1535
- **Spitsburgen**—Willem Berents (Dutch)—1 1596
- **Antartica**—Nethaned Palmer (America)—1820
- **North pole**—Robert Piyare-(America)— 1909
- **South pole**—Amend sea-(Norway)—1911
- **First man who reached the South pole**—Roald. Embdsav (Norway)—1911
- **First in the world to sail the sea**—Magellen—1512-22

SOME MESCELLENOUS FACTS

- **Sandwich or Hawai** Island—Capt. Cook (Brilismo)—1770
- **Victoria fall**—David Livingstone and Crim (Scotish)—1859
- **Conquest of Mt. Everest, to reach South Pole via** land—Edmand Hailery —1958
- **Conquest of Suez canal**—Fernandiz-de-lasapes—1869
- **Exploration of India, China and Tibetean border**—Francis young Husband-1600
- **First solo light from Paris to New York**—Lindburg-1927
- **World tour, exploration from South Atlantic to Pacific Ocean**—Magellen—1519

- **Journey from South Atlantic to China, India and South**—East Asian countries—Marcopolo
- **Greenland and hilly area of North pole**—Fitze off-Nansen—1888
- **First woman to climb over Mt. Everest**—Tawi Smt. Junco (Japan)—1975

Geography of India

Geographical Location

India is the seventh largest country in the world in terms of area-accounting for about 2.4 per cent of total world area and also ranks second in terms of population. It lies in the northern hemisphere between 8°0' N and 37°6' N parallels of latitude and between 68'7'E and 97°25' E meridians, of longitude, and is part of the Asian continent.

Dimensisons

Distance from north to south	3214 km
Distance from east to west	2933 km
Length of coastline	7516.6 km
Length of land frontier	15,200 km
Total geographic land area	32,87,263 km^2
Percentage of earth's surface covered by India	2.4 per cent

Frontiers

North: The Himalayan range and Nepal separate India from Tibet. The boundary line between India and China is called the McMahon Line.

East: Myanmar (Burma) and Bangladesh

West: Pakistan and the Arabian Sea

South: Indian Ocean and Sri Lanka: Gulf of Mannar and Palk Straits separate India from Sri Lanka.

Facts About India

- Uttar Pradesh borders maximum number of States-8 (Eight) States: Uttarakhand. Himachal Pradesh; Haryana, Rajasthan, MP Chhattisgarh, Jharkhand and Bihar.
- Tropic of Cancer passes through 8 (Eight) States: Gujarat, Rajasthan, MP, Chhattisgarh, Jharkhand, West Bengal, Tripura and Mizoram.
- Indian Standard Meridian (82°30' E meridian) passes through UP, MP, Chhattisgarh, Orissa and Andhra Pradesh.
- Mainland India has a coastline of 6,100 km. Including the Lakshadweep and Andaman and Nicobar, the coastline measures about 7516.6 km
- In India, of the total land mass: Plains: 43.3%, Plateaus: 27.7%, Hills: 18.6%, Mtns: 10.7%
- In the South, on the eastern side, the Gulf of Mannar & the Palk Strait separate India from Sri Lanka.
- Total land neighbours: 7 (Pakistan, Afghanistan, China, Nepal, Bhutan, Bangladesh and Myanmar).
- India's Islands include the Andaman and Nicobar Islands in Bay of Bengal and Lakshadweep, Minicoy and Amindive Islands in the Arabian Sea.

Bordering Pakistan	Jammu and Kashmir, Punjab, Rajasthan, Gujarat.
Bordering China	Jammu and Kashmir, Himachal Pradesh, Uttarakhand, Sikkim, Arunachal Pradesh.
Bordering Nepal	Bihar, Uttarakhand, UP, Sikkim, West Bengal.
Bordering Bangladesh	West Bengal, Mizoram, Meghalaya, Tripura, Asom.
Bordering Bhutan	West Bengal, Sikkim, Arunachal Pradesh, Asom.
Bordering Myanmar	Arunachal Pradesh, Nagaland, Manipur, Mizoram.

Bordering Afghanistan Jammu and Kashmir (Pakistan-occupied area).

EXERCISE:

1.   Consider the following, which of these are correct?

a) Siachen, Baltoro, Biafo and Hisper are glaciers in the Karakoram Range

b) The highest peak of Ladhak range is Mt Rakaposhi which is the steepest peak in the world

    a) i and ii   b) ii and iii

    c) i and iii   d) all of the above

2. **Consider the following, which of these are correct?**

i) Nanga Parbat is the second highest peak of Himalayan Range in India

ii) Eastern continuation of the Nanga Parbat is located in Nepal

    a) i and ii   b) i

    c) ii   d) none

3. **Match the following**

    Name   **Location**

i) Punjab Himalaya a) Between Kali and Tista

ii) Kumaon Himalaya b) Between Satluj and Kali

iii) Nepal Himalaya   c) Between Tista and Dihang

iv) Assam Himalaya   d) Between Indus and Satluj

    a) i- d, ii- b, iii-a, iv-c

    b) i-a, ii-b, iii-c, iv-d

    c) i-b, ii-c, iii-d, iv-a

4. **Consider the following, which of these is incorrect?**

i) Mishmi Hills is the highest range of Purvanchal Hills

ii) Mizo Hills were previously known as Lushai Hills

iii) Lohtak Lake is situated in the Manipur hills

    a) i and ii   b) ii and iii

    c) none of the above d) i and iii

5. **Yamuna, Ghagra, Gomti, Kosi and Son are tributaries of**

    a) Ganga   b) Brahmaputra

    c) Indus   d) Yamuna

6. **Consider the following are incorrect?**

i) Vindhyan range is the example of Relict mountain

ii) The Aravalli range is an example of block mountain

iii) Guru Shikhar is the highest peak on the Abu hills

    a) i and ii   b) ii and iii

    c) i and iii   d) None

7. **Match the following**

    Hill   **Highest Peak**

i) Nilgiri Hill   a) Amarkantak

ii) Maikal range   b) Doda Beta

iii) Anamalai Hills c) Kalsubai

iv) Sahyadri   d) Ana Mudi

    a) i- a, ii-b, iii-d, iv-c

    b) i- c, ii-d, iii-a, iv-b

    c) i-b, ii-a, iii-d, iv-c

8. **Consider the following, which of these are true**

i)   Chota Nagpur is described as the Ruhr of India

ii)   Pat lands are a chief characteristic of Chota Nagpur plateau

iii) It is poor in mineral resources

    a)   i and ii   b)   ii and iii

    c)   i and iii   d)   iii

9. **Match the following**

i)   Gulf of Kachchh   a) Asia's first Marine biosphere reserve

(ii) Gulf of Cambay   b) Region with highest potential of tidal Energy

(iii) Gulf of Mannar   c) Tapi, narmada, Mahi and Sabarmati drain into this gulf

    a)   i- b ,ii- a, iii-c

    b)   i-a, ii-b, iii-c

    c)   i-b, ii-c, iii-a

10. **Match the following**

    Lake   **Location**

i)   Nakki   a)   Orissa

ii)   Vembnad   b)   Rajasthan

iii) Chilka   c)   Kerala

a)   i-b, iii-a, iv-c

b)   i- a, ii-b, iii-c

c)   i-b, ii-c, iii-a

ANSWERS:

1. (d)   2. (a)   3. (b)   4. (c)   5. (a)   6. (a)   7. (c)   8. (a)   9. (a)   10. (c)

Indian Economy

HISTORY OF PLANNING IN INDIA

- First attempt to initiate economic planning in India was made by Sir M.Visvesvarayya, a noted engineer and politician in 1934 through his book 'Planned Economy For India'.
- In 1938 'National Planning Commission' was set-up under the chairmanship of J.L. Nehru by the Indian National Congress. Its recommendations could not be implemented because of the beginning of the Second World War and changes in the Indian political situation.
- In 1944 'Bombay Plan' was presented by 8 leading industrialists of Bombay.
- In 1944 'Gandhian Plan' was given by S. N. Agarwal.
- In 1945 'People's Plan' was given by M. N. Roy.
- In 1950 'Sarvodaya Plan' was given by J. P. Narayan. A few points of this plan were accepted by the Government.

THE PLANNING COMMISSION

- The Planning Commission was set up on March 15, 1950 under the chairmanship J.L. Nehru, by a resolution of Union Cabinet.
- It is an extra-constitutional, non-statutory body.
- It consists of Prime Minister as the ex-officio Chairman, one deputy-Chairn appointed by the PM and some full time members.

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- The tenure of its members and deputy chairman is not fixed. There is no defi definition of its members also. They are appointed by the Government on its c discretion. The number of members can also change according to the wishes of Government.

Functions

- Assessment of material, capital & human resources of the country.
- Formulation of plans for the most effective & balanced utilization of country's resources.
- To determine the various stages of planning and to propose the allocation of resources on the priority basis.
- To act as an advisory body to the Union Government.
- To evaluate from time to time the progress achieved in every stage of the plan and also to suggest remedial measures.
- To advise the Centre and the State Governments from time to time on special matters referred to the Commission.

NATIONAL DEVELOPMENT COUNCIL

- All the plans made by the Planning Commission have to be approved by National Development Council first. It was constituted to build co-operation between the States and the Planning Commission for economic planning.
- It is an extra-constitutional and extra-legal body.
- It was set up on August 6, 1952, by a proposal of the Government. The PM is the ex-officio chairman of NDC. Other members are Union Cabinet ministers, Chief' Ministers & Finance Ministers of all States, Lt. Governors of Union Territories and Governors of Centrally Ruled States.

State Planning Boards

- Apex planning body at State level is generally a State Planning Body comprising the Chief Minister as Chairman, Finance and Planning ministers of that State and some technical experts.
  - •District Planning Committee is also there comprising both official and non-official members.

FIVE YEAR PLANS IN INDIA AT A GLANCE

Plan	Period	Model	Main Objectives	Growth Rate	Special Features
1st	1951-56	Harold Domar	Development of Agriculture	3.6%	It was the lst Plan onsocial development i.e. Community Develop-ment (CDP)-1952
IInd	1956-61	Mahalnovis	Rapid Industrialisation	4.2%	Started Industrialization
			(These two Plans were most successful plans in India)		
IIIrd	1961-66	John Sandy and S.Chakravarty	Self-Reliance and self sustained economy	2.7% (5-6 was target)	1st official declared fail plan in India. Causes two wars-1962
	1966-69	Plan Holiday or Annual Plan			1. Green Revolution-1966-67 2. Devaluation of Currency-(2nd devalution in India of currency) 1st was in 1949. 2nd was in 1991.
IVth	1969-74	Allen S.e Mann and Ashok Rudra	Self-reliance and growth with stability	3.3% (target was 5.7%)	Causes-1971war,1972-73 oil crisis. Important events related with Policy change.

					1. Nationalization of Banks in 1969 by Indira Gandhi. 2. MRTP Act - 1969 (Aggressive socialism) 3. J.P. Movement-Indira hatao followed by Garibi hatao by Congress Govt.
Vth	1974-79	Planning Commission	Eradication of Poverty "The concept of Rolling Plan" was given by Janta Government	4.8% (target was 4.4%	1. National Emergency-25th June 1975. 2. 1st Non – Congress govt. at the Centre 1977 (Janta Govt.) 3. 1st food for work programme by Janta party - 1978; it was 1st nationwise programme rather than region wise. 4. 1979 - Congress back on Power. Janta Party stopped the plan.
	1979-80	Plan Holiday-Annual Plan			
VI	1980-85	Planning Commission (emphasis on structural change	Employment Same Objective as Vth Plan	5.5%	1. No. of employment schemes were started. (1st serious attempt towards employment generation) 2. 1st time the word "Perspective Plan" was used (i.e. long term perspective).
VII	1985-90	Planning Commission (emphasis on Iiberalization)	"Modernization of our existing sector and to promote the Modern sector. "Towards 21st Century" slogan was given by PM Rajiv Gandhi - i.e. A Modern Economy	6.0%	1st time the share of public sector in plan outlay was less than 50%. Economic reforms started in India -1991
	1990-92	Annual Plan			1. Bofors issue 2. Economic crisis-1990 3. 3rd devaluation of Curreny-1991 4. New Industrial Policy on 24th July, 1999 by declaring the liberalisation in Indian Economy.
VIII	1992-97	John W. Miller (Rao-Manmohan) Model)	Human Resources Development (Compe tition)within the country and outside the world) Due to this policy, India is leading in IT Sector.	6.7% (highest till the 8th	1. Highest growth rate 2. The base year was Plan) Changed to 1991-92
IX	1997-02	Planning Commission	Equitable distribution and growth with equality	5.4% (it was due to external factors)	1. Pokahran 2. South East Asia Crisis 3. Kargil war 4. 2001-02 major recession in the world economy.

CENSUS-2011 (Provisional Data)

The 15th Indian National census was conducted in two phases, houselisting and population enumeration. Houselisting phase began on April 1, 2010 and involved collection of information about all buildings. Information for National

Population Register was also collected in the first phase, which will be used to issue a 12-digit unique identification number to all registered Indians by Unique Identification Authority of India. The second population enumeration phase was conducted between 9 to 28 February 2011. Census has been conducted in India since 1872 and 2011 marks the first time biometric information was collected. According to the provisional reports released on March 31, 2011, the Indian population increased to 1.21 billion with a decadal growth of 17.64%. Adult literacy rate increased to 74.04% with a decadal growth of 9.21%.

INDIA AT A GLANCE

Area :

Area of India :		3,287,240 Sq km.*
Largest State	Rajasthan	342,239 Sq km
Smallest State Goa		3,702 Sq km
Largest Union Territory	Andaman & Nicobar Islands	8,249 Sq km
Smallest Union Territory	Lakshadweep	32 Sq km
Largest District	Kachchh (Gujarat)	45,652 Sq km
Smallest District	Mahe (Pondicherry)	9 Sq km

* The area figure exclude 78,114 sq. km. under the illegal occupation of Pakistan, 5,180 sq. km. Illegally handed over by Pakistan to China and 37,555 sq.km. under the illegal occupation of China in Ladakh district.

Administrative Divisions

No. of States	28
No. of Union Territories	7
No. of Districts	593
No. of Sub-districts	5,463
No. of CD Blocks (as per map profile)	6,374
No. of Urban Agglomerations / Towns	4,378
No. of Urban Agglomerations	384
No. of Towns	5,161
No. of Inhabited Villages (as per PCA TAS)	593,732
No. of Uninhabited Villages	44,856

Top Ten Population Countries - World Population and India

Country	Percent (%) of World Population
China	19.4
India	17.5
USA	4.5
Indonesia	3.4
Brazil	2.8
Pakistan	2.7
Bangladesh	2.4
Nigeria	2.3
Russia Federal	2.0
Japan	1.9
Others	41.2

EXERCISE:

1. **Match the following**
    (i) Planned Economy

(a) characterized by an economy private sector is given substantial role and state turns its role into a facilitator.

(ii) Mixed Economy

(b) is the one in which state owns and directs and eco-nomy.

(iii) Indicative
(c) combines feature of
Economy both capitalist mar-ket economics & socialist command economic

	(a)	(b)	(c)
(i)	1	2	3
(ii)	3	1	2
(iii)	2	3	1

2. **Consider the following statements?**

(1) The state is called the Laissez faire state i the Market Economy. The French word Laissez faire means "Let do".

(2) Command economy do not create wealth sustainably and are not conducive for innovation & efficiency.

(3) The Bombay plan was made by J.L. Nehru.

Which of the above is / are correct.

(a) none of the above (b) 1 & 2 only

(c) all of the above.

3. **Which of the following countries is still command economy?**

(a) USA   (b) China

(c) Cuba   (d) Japan.

4. **Who wrote the Book titled "Planned Economy of India"?**

(a) M.N. Roy

(b) Dr. Manmohan Singh

(c) Sir Mokshagundam Visvesvarayya

(d) Sir Purshotamdas Thakurdas.

5. **Consider the following statements?**

(1) The INC established National Planning Commission under the chairmanship of J.L. Nehru.

(2) A Plan of Economic Development of India was put forwad by leading Businessmen and Industrialists in 1944 was also called as the 'Bombay Plan'.

(3) Indicative plan is operated under & planned economy but not command economy.

(a) all the statements are correct

(b) only 2 is correct

(c) only 1 & 3 are correct.

6. **Match the following**

(i) Bombay Plan   (a)   S.N. Aggarwal

(ii) People's Plan   (b)   J.R.D. Tata, G.D. Birla etc.

(iii) Gandhian Plan   (c)   M.N. Roy

	(a)	(b)	(c)
(i)	1	2	3
(ii)	2	3	1
(iii)	3	1	2

7. **Consider the following statements?**

(1) Economic Growth is measured as the percent rate of increas in real gross domestic Product.

(2) Economic Growth is not only necessary for the development but also sufficient.

(3) Growth measures quantitative increase in goods and services.

   (a) all the above are correct

   (b) only 1 and 3 are correct

   (c) none of the above are correct.

8. **Match the following**

   (i) First Plan   (a) based on Nehru Mohalanobis Model.

   (ii) Second Plan (b) Based on Rao-Manmohan Singh Model.

   (iii) Eight Plan   (c) K.N. Raj was one of the Main architects.

	(a)	(b)	(c)
(i)	2	3	1
(ii)	1	2	3
(iii)	3	1	2

7. **Consider the following statements?**

(1) Modernization is improvement in technoloyg and is driven by innovation & investment in Research & Development.

(2) Self Reliance means relying on the resources of the country & the MNCs for investment & grwoth.

(3) Self sufficiency means that the country has all resources it needs.

   (a) only 3 is correct.

   (b) None of the is correct.

   (c) All of the above are correct.

10. **Consider the following statements?**

(1) During the sixth plan (1980-1985), India for the first time resorted to borrow from IMF.

(2) With the seventh saw the beginnings of liberalization of Indian Economy.

(3) The Eight Plan was the indicative plan for the first time.

   (a) only 2 and 3 are correct.

   (b) all the above are correct.

(c) none of the above are correct.

ANSWERS:

1. (ii) 2. (b) 3. (c) 4. (c) 5. (a) 6. (iii) 7. (b)   8. (i) 9. (c)   10. (a)

Indian History

The Indian History is perhaps the oldest in the world, and the sources of Indian History are the verbal history, because our ancients never did bother about putting things down on paper and archaeological evidences. Based on the evidences available today, Indian History, like the history of every ancient culture in the world, is broadly divided into four periods as mentioned below:

Pre-History

From the big bang, the primeval swamp to the Indus Valley civilization. Though Indus Valley civilization is included in pre-historical period. However, technical evidences shows that Indus Valley civilization did have a script, although it has not been decoded yet. So, it is generally included in Ancient History nowadays.

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Ancient History

It begins from the Indus Valley civilization (for which the date is a matter of hot debate, but historians have agreed to disagree on 3000 BC) to just after the king Harsha Vardhana, which is around 700-800 BC.

Medieval History

It begins from 800 BC to mid-18th century AD.

Modern History

From mid-18th century to the independence of India, which is on August 15, 1947. The history of Modern India is further sub-divided into two major periods:

1. The British Period.
   2.   The Indian Freedom Struggle and Partition of India.

INDIAN HISTORY : IMPORTANT DATES

I. ANCIENT

BC

2300–1750	Indus Valley Civilization.
From 1500	Coming of the Aryans.
1200–800	Expansion of the Aryans in the Ganga Valley.
600	Age of the 16 Mahajanapadas of northern India.
563–483	Buddha's Life-span.
540–468	Mahavir's Life-span.
362–321	Nanda dynasty.
327–326	Alexander's invasion of India. It opened a land route between India and Europe.
322	Accession of Chandragupta Maurya.
305	Defeat of Seleucus at the hands of Chandragupta Maurya.
273–232	Ashoka's reign.
261	Conquest of Kalinga.
145–101	Regin of Elara, the Chola king of Sri Lanka.
58	Beginning of Vikram era.

AD

78	Beginning of Saka era.
78-101	Kanishka's reign.
319–320	Commencement of Gupta era.
380	Accession of Chandragupta II 'Vikramaditya'
405–411	Visit of Chinese traveller Fahien.
415	Accession of Kumargupta I.
455	Accession of Skandagupta.
606–647	Harshavardhan's reign.

II. MEDIEVAL

712	First invasion in Sindh by Arabs (Mohd. Bin Qasim).
836	Accession of King Bhoja of Kannauj.
985	Accession of Rajaraja, the Chola ruler.
998	Accession of Sultan Mahmud Ghazni.
1001	First invasion of India by Mahmud Ghazni who defeated Jaipal, ruler of Punjab.
1025	Destruction of Somnath Temple by Mahmud Ghazni.
1191	First battle of Tarain.

1192	Second battle of Tarain.
1206	Accession of Qutubuddin Aibak to the throne of Delhi.
1210	Death of Qutubuddin Aibak.
1221	Chengiz Khan invaded India (Mongol invasion).
1236	Accession of Razia Sultana to the throne of Delhi.
1240	Death of Razia Sultana.
1296	Accession of Alauddin Khilji.
1316	Death of Alauddin Khilji.
1325	Accession of Muhammad-bin-Tughlaq.
1327	Transfer of capital from Delhi to Devagiri (Daulatabad) in Deccan by the Muhammad-in-Tughlaq.
1336	Foundation of Vijaynagar empire in the South.
1351	Accession of Firoz Shah Tughlaq.
1398	Timur's invasion of India.
1469	Birth of Guru Nanak.
1494	Accession of Babur in Farghana.
1497–98	First voyage of Vasco da Gama to India (discovery of sea route to India via the Cape of Good Hope)
1526	First Battle of Panipat; Babur defeated Ibrahim Lodhi; foundation of Mughal dynasty by Babur.
1527	Battle of Khanwa-Babur defeated Rana Sanga.
1530	Death of Babur and accession of Humayun.
1539	Sher Shah Suri defeated Humayun in the battle of Chausa and became India's emperor.
1555	Humayun recaptured the throne of Delhi.
1556	Second Battle of Panipat (Bairam Khan defeated Hemu).
1556	Battle of Talikota (Rakshasa-Tangadi).
1576	Battle of Haldighati-Rana Pratap was defeated by Akbar.
1582	Din-i-Ilahi founded by Akbar.
1600	English East India Company established.
1605	Death of Akbar and accession of Jahangir.
1606	Execution of Guru Arjun Dev, the 5th Guru of Sikhs.
1611	Jahangir marries Nurjahan.
1615	Sir Thomas Roe visits Jahangir.
1627	Birth of Shivaji and death of Jahangir.
1628	Shahjahan becomes emperor of India.
1631	Death of Mumtazmahal.
1634	The English permitted to trade in India (in Bengal).
1659	Accession of Aurangzeb, Shahjahan imprisoned.
1665	Shivaji imprisoned by Aurangzeb.
1666	Death of Shahjahan.
1675	Execution of Guru Teg Bahadur, the 9th Guru of Sikhs.
1680	Death of Shivaji.
1707	Death of Aurangzeb.
1708	Death of Guru Gobind Singh, the 10th Guru of Sikhs.
1739	Nadir Shah invades India.
1757	Battle of Plassey, establishment of British political rule in India at the hands of Lord Clive.
1761	Third battle of Panipat.

III. MODERN

1764	Battle of Buxar.
1765	Clive appointed Company's Governor in India.
1767–69	First Angle-Mysore War.
1780	Birth of Maharaja Ranjit Singh.
1780-84	Second Anglo-Mysore War.
1784	Pitt's India Act.
1790-92	Third Anglo-Mysore War.
1793	The Permanent Settlement of Bengal.
1799	Fourth Anglo-Mysore War;Death of Tipu Sultan.
1802	Treaty of Bassein.
1809	Treaty of Amritsar.
1829	Practice of Sati prohibited.
1830	Raja Rammohan Roy visits England.
1833	Death of Raja Rammohan Roy at Bristol, England.
1839	Death of Maharaja Ranjit Singh.
1839–42	First Anglo-Afghan War.
1845–46	First Anglo-Sikh War.
1852	Second Anglo-Burmese War.
1853	First Railway line opened between Bombay and Thane and a Telegraph line in Calcutta.
1857	The Sepoy Mutiny or First War of Independence.
1861	Birth of Rabindranath Tagore.
1869	Birth of Mahatma Gandhi.
1885	Foundation of Indian National Congress.
1889	Birth of Jawaharlal Nehru.
1897	Birth of Subhash Chandra Bose.
1903	Tibet Expedition.
1905	Partition of Bengal by Lord Curzon.
1906	Foundation of Muslim League.
1911	Delhi Darbar, King George V and Queen visit India; Delhi becomes the capital of India.
1914	World War I begins.
1916	Lucknow Pact signed by Muslim League and Congress, Foundation of BHU, Home Rule League founded.
1918	World War I ends.
1919	Montague-Chelmsford Reforms introduced, Jallianwala Bagh massacre at Amritsar.
1920	Khilafat Movement launched, first meeting of All-India Trade Union Congress, Hunter Commission Report on Jallianwala Bagh Massacre Published First Non-cooperation movement launched by Gandhi.
1922	Violent incidents at Chaura Chauri Gandhi calls of Non-cooperation movement.
1925	Communist Party of India organised at Kanpur.
1927	Boycott of Simon Commission, Broadcasting started in India.
1928	Death of Lala Lajpat Rai, Nehru Report.
1929	Resolution of 'Poorna Swaraj' (complete independence) passed at Lahore Session of INC.
1930	Civil disobedience movement launched, Dandhi March by Mahatma Gandhi (April 6, 1930) First round table conference held in London.
1931	Gandhi-Irwin Pact, Civil Disobedience movement suspended Second round table conference held.

1932	MacDonald announces communal award (modified by Poona Pact, September 24).
1935	Government of India Act.
1937	Provincial Autonomy, Congress forms ministries.
1938	All India Kishan Sabha formed.
1939	World War II begins (September 3), Resignation of Congress Ministries in Provinces.
1941	Escape of Subhash Chandra Bose from India and death of Rabindranath Tagore.
1942	Arrival of Cripps Mission in India, Quit India movement launched (August 8).
1943–44	SC Bose forms Provisional Government of Free India and Indian National Army in Singapore; Bengal famine.
1945	Trial of Indian National Army at Red Fort, Shimla Conference; World War II ends.
1946	British Cabinet Mission visits India; Interim government formed at the Centre. The Muslim league decides on "Direct Action" for winning Pakistan.

1947   Division of India; India and Pakistan form separate independent dominions.

Important National Activities During Modern India

The Indian National Congress

- Formed in 1885 by A.O. Hume, an Englishman and a retired civil servant.
- First session in Bombay under W.C. Banerjee in 1885 (72 delegates attended it).
- In the first two decades (1885-1905), quite moderate in its approach and confined in British justice and generosity.
- But the repressive measures of the British gave rise to extremists within Congress like Bipin Chandra Pal, Bal Gangadhar Tilak and Lala Lajpat Rai (Lal, Bal, Pal).

Partition of Bengal

- By Lord Curzon on October 16,1905, through a royal proclamation, reducing the old province of Bengal in size by creating East Bengal and Assam out of rest of Bengal.
- The objective was to set up a communal gulf between Hindus and Muslims.
- A mighty upsurge swept the country against the partition. National movement found real expression in the movement against the partition of Bengal in 1905.

Swadeshi Movement (1905)

- Lal, Bal, Pal, and Aurobindo Ghosh played the important role.
- Indian national congress took the Swadeshi call first at the Banaras Session, 1905, presided over by Gopal Krishan Gokhale.
- Bonfires of foreign goods were conducted at various places.

Formation of Muslim League (1906)

- Setup in 1906 under the leadership of Aga Khan, Nawab Salimullah of Dhaka and Nawab Mohsin-ul-Mulk.
- It was a loyalist, communal and conservative political organization which supported the partition of Bengal, opposed the Swadeshi movement, demanded special safeguards to its community and a separate electorate for Muslims.

Demand for Swaraj

- In December 1906 at Calcutta, the Indian National Congress and adopted 'Swaraj' (Self-government) as the goal of Indian peo

Surat Session of Indian National Congress (1907)

- The INC split into two groups-The extremists and The moderates, at the Surat session in 1907, extremists were led by Bal, Pal, Lal while the moderates by G.K. Gokhale.

Indian Councils Act or Minto Morley Reforms (1909)

- Besides other constitutional measures, it envisaged a separate electorate for Muslims.

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- Aimed at dividing the nationalist ranks and at rallying the Moderates and the Muslims to the Government's side.

Ghadar Party (1913)

- Formed by Lala Hardayal, Taraknath Das and Sohan Singh Bhakna.
- Head Quarter was at San Francisco.

Home Rule Movement (1916)

- Started by Bal Gangadhar Tilak (April, 1916) at Poona and Annie Besant and S.Subramania Iyer at Adyar, near Madras (Sept, 1916).
- Objective: Self-government for India in the British Empire.
- Tilak linked up the question of Swaraj with the demand for the formation of Linguistic States and education in vernacular language. He gave the slogan: *Swaraj is my birth right and I will have it.*

Lucknow Pact (1916)

- Happened following a war between Britain and Turkey leading to anti-British feelings among Muslims.
- Both INC and Muslim League concluded this (Congress accepted the separate electorates and both jointly demanded for a representative government and dominion status for the country).

August Declaration (1917)

- After the Lucknow Pact, a British policy was announced which aimed at "increasing association of Indians in every branch of the administration for progressive realization of responsible government in India as an integral part of the British empire". This came to be called the August Declaration.

Rowlatt Act (March 18, 1919)

- This gave unbridled powers to the government to arrest and imprison suspects without trial for two years maximum. This law enabled the Government to suspend the right of Habeas Corpus, which had been the foundation of civil liberties in Britain.
- Caused a wave of anger in all sections. It was the first country-wide agitation by Gandhiji and marked the foundation of the Non-Cooperation Movement.

Jallianwala Bagh Massacre (April 13, 1919)

- People were agitated over the arrest of Dr. Kitchlu and Dr. Satyapal on April 10, 1919.
- General O' Dyer fires at people who assembled in the Jallianwala Bagh, Amritsar.
- As a result, hundreds of men, women and children were killed and thousands injured.
- Rabindranath Tagore returned his Knighthood in protest. Sir Shankaran Nair resigned from Viceroy's Executive Council after this.
- Hunter Commission was appointed to enquire into it.
- On March 13, 1940, Sardar Udham Singh killed O'Dyer when the later was addressing a meeting in Caxton Fall, London.

Khilafat Movement (1920)

- Muslims were agitated by the treatment done with Turkey by the British in the treaty that followed the First World War.
- Two brothers, Mobil. Ali and Shaukat Ali started this movement.

Non-cooperation Movement (1920)

- It was the first mass-based political movement under Gandhiji.
- Congress passed the resolution in its Calcutta session in September 1920.

Chauri-Chaura Incident (1922)

- A mob of people at Chauri-Chaura (near Gorakhpur), clashed with police and burnt 22 policemen on February 5,1922.
- This compelled Gandhiji to withdraw the Non-Cooperation movement on Febuary 12, 1922.

Simon Commission (1927)

- Constituted under John Simon, to review the political situation in India and to introduce further reforms and extension of parliamentary democracy.

- Indian leaders opposed the commission, as there were no Indians in it.
- The Government used brutal repression and police attacks to break the popular opposition. At Lahore, Lala Lajpat Rai was severely beaten in a lathi charge. He succumbed to his injuries on October 30, 1928.

Lahore Session (1929)

- On December 19, 1929 under the Presidentship of J. L. Nehru, the INC, at its Lahore Session, declared Poorna Swaraj (Complete Independence) as its ultimate goal.
- On December 31, 1929, the newly adopted tai-colour flag was unfurled and an 26 November, 1930 was fixed as the First Independence Day, was to be celebrated every year

Dandi March (1930)

- Also called the Salt Satyagraha.
- Along with 78 followers, Gandhiji started his march from Sabarmati Ashram on March 12, 1930 for the small village Dandhi to break the salt law.
- He reached the seashore on Apr. 6, 1930.
- He picked a 'handful of salt and inaugu-rated the Civil Disobedience Movement.

Revolultionary Activities

- The, first political murder of a European was committed in 1897, at Pune by the Chapekar brothers. Damodar and Balkishan. Their target was Mr. Rand, President of the Plague Commission, but Lt. Ayerst was accidentally shot.
- In 1907, Madam Bhikaiji Cama, a Parsi revolutionary, unfurled the flag of India at Stuttgart Congress (of Second international).
- In 1908, Khudiram Bose and Prafulla Chaki threw a bomb on the carriage of kingford, the unpopular judge of Muzaffapur. Khudiram, Kanhaiyalal Dart and Satyendranath Bose were hanged. (Alipur Case).
- In 1909, M.L. Dhingra shot dead CH. William Curzon Whyllie, the political advisor of "India Office in London-
- In 1912, Rashbihari Base and Sachindra Nath Sanyal threw a bomb at Lord Hardinge at Delhi. (Delhi Conspiracy Case).
- In October 1924, a meeting of revolutionaries from all parts of India was called at Kanpur. They setup Hindustan Socialist Republic Association/Army (HSRA).
- They carried out a decoity on the Kakori bound train on the Saharanpur-Lucknow railway line on August 9, 1925.
- Bhagat Singh, with his colleagues, shot dead Saunders (Asst. S. P. of Lahore, who ordered lathi charge on Lala Lajpat Rai) on December 17, 1928.
- Then Bhagat Singh and Batukeshwar Dutt threw a bomb in the Central Assembly on April 8, 1929. Thus, he, Rajguru and Sukhdev were hanged on March, 23, 1931 at Lahore Jail (Lahore Conspiracy Case) and their bodies cremated at Hussainiwala near Ferozepur.
- In 1929 only Jatin Das died in Lahore jail after 63 days fast to protest against horrible conditions in jail.
- Surya Sen, a revolutionary of Bengal, formed the Indian Republic Army in Bengal. In 1930, he masterminded the raid on Chittagong armoury. He was hanged in 1933.
- In 1931, Chandrashekhar Azad shot himself at Alfred Park in Allahabad.

First Round Table Conference (1930)

- It was the first conference arranged between the British and Indians as equals. It was held on November 12, 1930 in London to discuss Simon commission.
- Boycotted by INC, Muslim League, Hindu Mahasabha, Liberals and some others were there.

Gandhi Irwin Pact (1931)

- Moderate Statesman, Sapru, Jaikar and Srinivas Shastri initiated efforts to break the ice between Gandhiji and the government.
- The two (government represented by Irwin and INC by Gandhiji) signed a pact on March 5, 1931.
- In this, the INC called off the civil disobedience movement and agreed to join the second round table conference.

- The government on its part released the political prisoners and conceded the right to make salt for consumption for villages along the coast.

Second Round Table Conference (1931)

- Gandhiji represented the INC and went to London to meet British P.M. Ramsay Macdonald.
- However, the session was soon deadlocked on the minorities issue and this time separate electorates was demanded not only by Muslims but also by Depressed Classes, Indian Christians and Anglo-Indians.

The Communal Award (Aug 16, 1932)

- Announced by Ramsay McDonald. It showed divide and rule policy of the British.
- Envisaged representation of Muslims, Sikhs, Indian Christians, Anglo Indians, women and even Backward classes.
- Gandhiji, who was' in Yeravada jail at that time, started a fast unto death against it.

Poona Pact (September 25, 1932)

- After the announcement of communal award and subsequent fast of Gandhiji, mass meeting took place almost everywhere.
- Political leaders like Madan Mohan Malviya, B. R. Ambedkar and M. C. Rajah became active.
- Eventually Poona pact was reached and Gandhiji broke his fact on the sixth day (September 25, 1932).

In this, the idea of separate electorate for the depressed classes was abandoned, but seats reserved to them in the provincial legislature were increased.

Third Round Table Conference (1932)

- Proved fruitless as most of the national leaders were in prison. The discussions led to the passing of the Government of India Act, 1935.

Demand for Pakistan

- In 1930, Iqbal suggested that the Frontier Province, Baluchistan, Sindh and Kashmir be made the Muslim State within the federation.
- Chaudhary Rehmat Ali gave the term Pakistan in 1923.
- Mohd. Ali Jinnah of Bombay gave it practicality.
- Muslim League first passed the proposal of separate Pakistan in its Lahore session in 1940.

The Cripps Mission-1942

- In December 1941, Japan entered the World War II and advanced towards Indian borders. By March 7, 1942, Rangoon fell and Japan occupied the entire S E Asia.
- The British government with a view to getting co-operation from Indians sent Sir Stafford Cripps, leader of the House of Commons to settle terms with the Indian leaders.
- He offered a draft which proposed dominion status to be granted after the war.
- Rejected by the Congress as it didn't want to rely upon future promises.
- Gandhiji termed it as a postdated cheque in a crashing bank.

The Revolt of 1942 and The Quit India Movement

- Called the Vardha Proposal and Leaderless Revolt.
- The resolution was passed on August 8, 1942, at Bombay. Gandhiji gave the slogan 'Do or Die'.'
- On August 9, the Congress was banned and its important leaders were arrested.
- The arrests provoked indignation among the masses and, there being no program of action, the movement became spontaneous and violent. Violence spread throughout the country.
- The movement was however crushed.

The Indian National Army

- Founded by Rasbehari Bose with Captain Mohan Singh.
- S.C. Bose secretly escaped from India in January 1941, and reached Berlin. In July 1943, he joined the INA at Singapore. There, Rasbehari Bose handed over the leadership to him.

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- The soldiers were mostly raised from Indian soldiers of the British army who had been taken prisoners by the Japanese after they conquered S.E. Asia.
- Two INA head quarters were Rangoon and Singapore (formed in Singapore).
- INA had three fighting brigades named after Gandhiji, Azad and Nehru. Rani Jhansi Brigade was an exclusive women force.

The Cabinet Mission Plan (1946)

- The struggle for freedom entered a decisive phase in the year 1945-46. The new Labour Party PM Lord Attlee, made a declaration on March 15, 1946, that British Cabinet Mission (comprising of Lord Pethick Lawrence as Chairman, Sir Stafford Cripps and A.V. Alexander) will visit India.
- The mission held talks with the INC and ML to bring about acceptance of their proposals.
- On May 16, 1946, the mission put towards its proposals. It rejected the demand for separate Pakistan and instead a federal union consisting of British India and the Princely States was suggested.
- Both Congress and Muslims League accepted it.

Formation of Interim Government (September 2, 1946)

- Based on Cabinet Mission Plan, an interim government consisting of Congress nominees was formed on Sept. 2, 1946. J. L. Nehru was its Vice-President and the Governor-General remained as its President.

Jinnah's Direct Action Resolution
(August 16, 1946)

- Jinnah was alarmed at the results of the elections because the Muslim League was in danger of being totally eclipsed in the constituent assembly.
- Therefore, Muslim League withdrew its acceptance of the Cabinet Mission Plan on July 29, 1946.
- It passed a 'Direct action' resolution, which condemned both the British Government and the Congress (August 16, 1946). It resulted in heavy communal riots.
- Jinnah celebrated Pakistan Day on March 27, 1947.

Formation of Constituent Assembly (December 9, 1946)

- The Constituent assembly met on December 9, 1946 and Dr. Rajendra Prasad was elected as its president.

Mountbatten Plan (June 3, 1947)

- On June 3, 1947, Lord Mountbatten put forward his plan which outlined the steps for the solution of India's political problem. The outlines of the Plan were:
- India to be divided into India and Pakistan.
- Bengal and Punjab will be partitioned and a referendum in NEFP and Sylhet district of Assam would beheld.
- There would be a separate constitutional aswmbly for Pakistan to frame its constitution.
- The Princely states would enjoy the liberty to join either India or Pakistan or even remain independent.
- August 15, 1947 was the date fixed for handing over power to India and Pakistan.
- The British govt. passed the Indian Independence Act of 1947 in July 1947, which contained the major provisions put forward by the Mountbatten Plan.

Partition and Independence (August 1947)

- All political parties accepted the Mountbatten plan.
- At the time of independence, there were 562 small and big Princely States in India.
- Sardar Vallabh Bhai Patel, the first home minister, used iron hand in this regard. By August 15, 1947, all the States, with a few exceptions like Kashmir, Hyderabad and Junagarh had signed the Instrument of Accession. Goa was with the Portuguese and Pondicherry with the French.

Social and Cultural Uprising

Brahino Samaj

- Founded by Raja Ram Mohan Roy in 1828.
- Criticized Sati Pratha. casteism and advocated widow remarriage.
- He was opposed to Sanskrit system of education, because he thought it would keep the country in darkness.
- Other important leaders were Devenddranath Tagore (father of Rabindranath Tagore) and Keshap Chandra Sen.

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Arya Samaj

- Founded by Swami Dayanand (or, Moolshankar) in 1875.
- His motto was 'Go back to the vedas' and 'India for the Indians'. He disregarded Puranas, idol worship, casteism and untouchability. He advocated widow remarriage.
- Dayanand's views were published in his famous work, Satyarth Prakash. He also wrote Veda Bhashya Bhumika and Veda Bhashya.

Ramakrishna Mission

- Founded by Vivekanand (earlier, Narendranath Dutta) (1863-1902) in 1897, 11 years after tae death of his guru Ram Krishna Paramhans.
- Vivekanand attended the Parliament of Religion at Chicago in 1893.
- Irish woman Margaret Nobel (Known as sister Nivedita) popularized it.

Young Bengal Movement

- Founded by Henry Louis Vivian Derozio (1809-31). He was a teacher in Hindu College in Calcutta.
- He urged the students to live and die for truth. He also supported women's education and their rights.

Veda Samaj

- Veda Samaj called Brahmo Samaj of South. Started by Sridharalu Naidu.
- He translated books of Brahmo Dharma into Tamil and Telegu.

Servants of India Society

- Formed by Gopal Krishna Gokhale in 1915.
- It did notable work in providing famine relief and in improving the condition of the tribals.

Radhaswami Movement

- Founded in 1861 by a banker of Agra, Tulsi Ram, popularly known as Shiv Dayal Saheb or Swami Maharaj.
- The sect preached belief in one supreme being, tae Guru's supreme position and a simple social life for the believers (the Satsangis).

Theosophical Society

- Founded by Westerners who drew inspiration from Indian thought and culture.
- Madam H. P. Blavatsky laid the foundation of the movement in US in 1875. Later, Col. M. S. Olcott of the US Army joined her.
- In 1882, it was shifted to India at Adyar (Tamil Nadu).
  - Annie Besant was elected its president in 1907. She founded the Central Hindu College in 1898, which became Banaras Hindu University in 1916.

Exercise

1. Which of the following cannot be held as an important cause for the decline of the Mughal empire ?
   - (a) Economic deterioration
   - (b) Foreign invasions
   - (c) Military inefficiency
   - (d) Degeneration of the nobility
2. The independent kingdom of Avadh was founded by
   - (a) Shuja-ud-daulah
   - (b) Saadat Khan
   - (c) Safdar Jang
   - (d) Qin Kilich Khan
3. Who founded the independent state of Bengal ?
   - (a) Shuja-ud-din
   - (b) Asaf-ud-daulah
   - (c) Alivardi Khan
   - (d) Murshid Quli Khan
4. The greatest contribution of the Nawabs of Bengal was

    (a) Countering the designs of the English in Bengal

    (b) Transferring the capital of Murshidabad

    (c) Keeping Bengal free from Maratha raids

    (d) Promoting Bengal's prosperity

5.   Against which of the following hardships and privations of the peasants did the Indian nationalists, under the leadership of the Congress, engineer a great struggle ?

    (a) Non-remission of land revenue during periods of drought and other natural calamities

    (b) Absence of Permanent Settlement in most parts of the country

    (c) Indenture system

    (d) None of the above

6 . Which of the following reasons intensified the labour movement in India in the first quarter of the 20th century?

    1.   Influence of British Labour movement

    2.   Russian Revolution of 1917

    3.   Rise in cost of living

    4.   Legislative measures of the British against than labour

    (a) 2 and 3   (b) 1 and 4

    (c) 2 and 4   (d) 1 and 3

7.   **List I**   **List II**

    A. G.G. Agarkar   1. Mirza Ghulam Ahmed

    B. Ahmadiya   2. Social Service League

         Movement

    C. M.N. Joshi   3. Seva Samiti

    D. H.N. Kunzuru   4. Deccan Educational Society

   Codes:

	A	B	C	D
(a)	1	2	3	4
(b)	2	4	3	1
(c)	1	3	2	4
(d)	4	1	2	3

Direction: The following questions consists of two statements, one labelled a 'Assertion(A)' and the other as 'Reason (R)'. You have to examine these two statements carefully and decide if the assertion A and the Reason R and individually true and If so, whether the Reasonis a correct explanation of the Assertion. Select your answer to these items using the codes given below.

 (a) Both A and R are true and R is the correct explanation for A.

 (b) Both A and R are true but R is not the correct explanation for A.

 (c) A is true but R is false.

 (d) A is false but R is true.

8. **Assertion (A):** The Maharshi Devendra-nath Tagore functioned after the death of Rammohan Roy.

   Reason (R): It failed to sustain the split that occurred under the leadership of K.C. Sen in 1865.

9. **Assertion (A):** The first split in the All India Trade Union Congress took place in 1929.

   Reason (R): The Great Economic Depression resulted in differences of opinion among the AITUC leaders.

10. **The Act of 1858**

    (a) Transferred power to the Queen from the East India Company

    (b) Took away the administration of finances from the Company

    (c) Punished those who conspired with the rebels

    (d) Shared the administrative responsibi-lities with the Company

11. **What was the worst effect of the revolt of 1857 ?**

    (a) Increase of communal divide between the Hindus and Muslims.

    (b) Transference of administration from the Company to the Crown.

    (c) Vigilance of the army increased.

    (d) Local princes lost importance in admi-nistration.

12. **The Queen's Proclamation of 1858 declared that**

    (a) All those who rebelled against the British would be forgiven.

    (b) Indian affairs would be managed by the Indians themselves.

    (c) Indians would not be racially discrimi-nated anymore.

    (d) The policy of territorial expansion would be abandoned.

13. **Which of these were not the administrative causes for the revolt of 1857?**

    (a) The new administrative system introduced by the British was not understood by the masses.

    (b) The judicial process was intricate and was time consuming

    (c) The police force was corrupt.

    (d) The British looked down racially upon the Indians.

14. **Which one of these is not an adequate reason for the failure of the revolt?**

    (a) Lack of cohesion amongst the leaders of the movement.

    (b) Inferior arms and equipments

    (c) Strong desire to be independent from the British.

    (d) Repression of the government.

15. **Which one of the following reasons is not true to account for the failure of the revolt of the 1857?**

    (a) Lack of a common cause

    (b) Lack of a unified leadership

    (c) Inability of the rulers to prevent their states from British annexation

    (d) Lack of planning on the part of the leaders of the uprising

16. **After the fall of Delhi to the English troops, the most brutal act of General Hudson was**

    (a) Stripping of the sons of Bahadur Shah of their clothes in public

    (b) Imprisoning Emperor Bahadur Shah and his queen in a small room of the Red Fort

    (c) Shooting down the three sons of Bahadur Shah at point-blank range

    (d) None of the above

17. **Bombay and Madras failed to rise in revolt of 1857 like the northern provinces because**

    (a) The *ryotwari* settlement had denuded them of necessary leadership

    (b) They were comparatively free from annexations and confiscations

    (c) They had more tolerant and enlightened administrations

    (d) Britishers were liked by them

18. **It is not appropriate to term the Revolt of 1857 as 'the national war of independence' because**

    (a) At that time (1857) India was not yet politically a nation

    (b) The rebel leaders were more moved by personal interests and loyalties rather an loyalty to a common motherland

    (c) Both (a) and (b) above

    (d) Only South Indian kingdom partici-pated in it.

19. **The western-educated Indians of the new middle class did not support the Revolt of 1857 because**

    (a) They believed that British rule enhance to accomplish modernisation of the country

    (b) They were repelled by the rebels' opposition to progressive social measures

    (c) Both (a) and (b) above

    (d) Most of them were aspiring to share power with the British

20. **Which of the following was not one of the reasons why Emperor Bahadur Shah is regarded as the weakest link in the chain of leadership of the Revolt of 1857 ?**

    (a) He vacillated between the desire to rule and the apprehensions of British success

    (b) He had little genuine sympathy for the humble sepoys who, in turn, did not trust him fully

    (c) The British offer of monetary reward in case he agreed to dissociate himself from the Revolt was a destabilising factor

    (d) All of the above

21. **Which of the following was not one of the major weaknesses of the Wahabi or Waliullahi movement?**

    (a) It wholly ignored the lessons of history and sought to revive the outmoded ways of life

    (b) It asserted the absoluteness of social and economic systems, manners, and customs which are in constant flux

    (c) It failed to enlist the support of the British who were the dominant power in India at the time

    (d) None of the above

22. **Identify the most significant legacy of the Wahabi movement in the context of later developments in the field of Indian nationalism**
    (a) It demonstrated the possibility of prosecuting a rebellion in the face of police action and military precautions
    (b) It demonstrated the possibility of organising a rebellion with the support of propertyless classes
    (c) Its failure showed that no amount of religious fervour could overthrow a powerful empire
    (d) It gave a strong impetus to separatist tendencies in Indian society

23. **Who among the following were the sons and grandson of Bahadur Shah II and played a prominent role in the Rebellion of 1857 and were captured and shot ?**
    (a) Bakhat Khan, Ahsanullah Khan and Mahbub Ali
    (b) Mirza Moghul, Mirza Khawaja Sultan and Mirza Abu Bakr.
    (c) Prince Azam, Azim-ush-Shan and Muazzam
    (d) Asad Khan, Kam Bakhash and Jahandar Shah

24. **Why did the revolt witness limited participation from the people?**
    1. The revolt failed to embrace all sections of the society.
    2. Many native rulers and big zamindars refused to join it.
    3. Lack of nationalism in the people.
    4. Money-lenders and merchants refused to join it.
    Choose the correct answer from the codes given below:
    (a) 1, 2, 4   (b) 4, 2, 3
    (c) 1, 2, 3   (d) All the four

25. **The Government of India Act 1858 declared**
    1. The end of the policy of annexation by the British
    2. Transfer of administration from the Company to the Crown
    3. Zamindars were to be punished severely
    4. Governor-general became the viceroy of India
    Choose the correct answer from the codes given below:
    (a) 1, 2, 3   (b) 1 and 3
    (c) 3, 1, 2 and 4   (d) 2 and 4

26. **What is the correct chronological sequence of the following events in the Revolt of 1857?**
    1. Declaration of Delhi as the independent capital of the Mughal empire once again
    2. Revolt in Kanpur and the declaration of Nana Saheb as Raja under the Mughal emperor
    3. Hanging of Tantia Tope to death
    4. The marching of sepoys to Delhi and their entry in the Red Fort.
    (a) 4, 1, 2, 3   (b) 4, 1, 3, 2
    (c) 3, 4, 1, 2
    (d) 2, 3, 4, 1

Direction: The following questions consists of two statements, one labelled a 'Assertion(A)' and the other as 'Reason (R)'. You have to examine these two statements carefully and decide if the assertion A and the Reason R and individually true and If so, whether the Reasonis a correct explanation of the Assertion. Select your answer to these items using the codes given below.

  (a) Both A and R are true and R is the correct explanation for A.
  (b) Both A and R are true but R is not the correct explanation for A.
  (c) A is true but R is false.
  (d) A is false but R is true.

27. **Assertion (A):** After the revolt of 1857 the British forces quickly re-captured the cities.
    Reason (R): The rebels did not have any common cause to fight for.

28. **Assertion (A):** The immediate cause of the Revolt of 1857 was the introduction of the new enfield rifle in the British Indian Army.
    Reason (R): The sepoys were required to, before loading the cartridge into the new rigle, bite off its end which was feared to have been greased with the fats of cows and pigs.

29. **The Government of India Act 1919 clearly defined the**

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   (a) Separation of power between the judiciary and the legislature
   (b) Jurisdiction of the Viceroy and the governors of the provinces
   (c) Jurisdiction of the central and provincial governments
   (d) Powers of the Secretary of State for India and the Viceroy

30   **.How was the character of the Congress changed by the Non-Cooperation movement**
   (a) From a passive petitioning organization it became an active and revolutionary movement
   (b) It brought the Congress closer to the revolutionary terrorists
   (c) It became the organiser and leader of the masses in their national struggle for freedom from foreign rule
   (d)   All of the above

Answers

1. (b) 2. (b) 3. (d) 4. (d) 5. (c) 6. (a) 7. (d) 8. (c) 9. (c) 10. (a) 11. (a) 12. (d) 13. (d) 14. (c) 15. (c) 16. (c) 17. (a) 18. (c) 19. (b) 20. (a) 21. (d) 22. (d) 23. (b) 24. (d) 25. (c) 26. (a) 27. (d) 28. (c) 29. (c) 30. (c)

General Science

ANIMAL DISEASES, HUMAN DISEASES AND DEFICIENCY DISEASES

Animal Disease

Disease	Pathogen Responsible
Food and mouth disease	Virus
Rinderpest (cattle plague)	Virus
Blue Tongue	Virus (transmitted by mosquitoes)
Cow po (Vaccinia)	Vaccinia Virus
Ranikhet Disease (New castle disease)	Virus
March's Disease (Fowl paralysis)	Virus
Fowl plague	Virus
Fowl pox (Avian diphtheria)	Virus
Tuberculosis	Bacteria (transmitted by infected milk and milk products)
Anthrax (splenic fever)	Anthrax Bacillus
Blackquarter (Black leg)	Bacteria: Clostridium chauvoei
Mastitis	Bacteria: Streptococci and Staphylococci
Johne's Disease	Bacillus paratuberculosis
Brucellosis	Bacteria
(Bang's Disease)	Brucella
Salmonellosis	Salmonella dublin and S. typhimurium
Foot rot	Bacteria: Fusiformis nodosus
Haemorrhagic Disease	Bacteria
(Bovine pasteurellosis;	Pasteurella
Shipping fever; shipping	Multocida

pneumonia)

Fowl typhoid	Salmonella gallinarum
Ringworm	Mould (fungus) Microsporon, Trichophyton, Epidermophyton
Trichomoniasis	Protozoan; Trihomonas foetus (Transmitted through coitus)
Coccidiosis	protozoan: Eimeria bovis
Trypanosomiassis	Protozoan: Trypanosoma congolense
Babesiosis	Protozoan: Babesia bovis (Transmitted by tick)
"Snoring disease"	Trematode (fluke) Schistosoma nasale
Liver rot	Liver fluke Fasciola hepatica
Measly beef	Tapeworm: Taenia Saginata

Human Diseases

Diseases caused by Protozoa :

Disease	Affected organ	Parasites	Carrier	Symptoms
Malaria	RBC and Liver	Plasmodium	Female Anophelies	Fever with shivering
Pyorrhoea	Gums	Entamoeba gingivelis	-	Bleeding from gums
Sleeping sickness	Brain	Trypanosoma	Tse-Tse flies	Fever with severe sleep
Diarrhoea	Intestine	Entamoeba Histolytica	House flies	Mucous and Diarrohea with blood
Kala-ajar	Bone marrow	Leismania donovani	Sand flies	High fever
Filaria	-	Wuchereia baoncrofti	Culex moszuitoes	Swelling in legs, testes and other parts of body

Diseases caused by Bacteria :

Disease	Affected organ	Name of Bacteria	Symptoms
Tetanus	Nervous system	Clostridium tetani	High fever, spasm in body, Closing of jaws etc
Cholera	Intestine	Vibrio cholerae	Continuous stool and vomiting
Typhoid	Intestine	Salmonella typhosa	High fever, headache
Tuberculosis	Lungs	Mycobacterium tuberculosis.	Repeated coughing
Diphtheria	Respiratory tube	Corynebacterium diphtheriae	Difficulty in respiration and suffocation
Plague	Lungs, area between the two legs	Pasteurella pesties	Very high fever, muscular eruptions on the body
Whooping cough	Respiratory system	Hemophilis pertusis	Continuous coughing
Pneumonia	Lungs	Diplococcus	High fever, swelling in lungs

		pneumoniae	
Leprosy Skin leprae	Nervous System affected	Mycobacterium	Spots on body, nerves
Gonorrhea	Urinary Path	Neisseria gonorrhoeae	Swelling in urinary path.
Syphilis	Urinary path	Treponema pallidum	Wounds in urinogenial tract

Diseases caused by Viruses :

Diseases	Affected organ	Name of virus	Symptoms
AIDS	Defensive system (WBC)	HIV	Immune system of body became weak
Dengue fever	Whole body particularly head, eyes and joints.		Pain in eyes, muscles, head and joints
Polio	Throat, backbone nerve	Pilio virus destroyed.	Fever, body pain, back bone and intestine cells are
Influenza (flu)	Whole body	Mixo virus restlessness.	Suffocation, sneezing,
Chicken pox	Whole body	Variola virus	High fever, redish eruption on body.
Small pox body.	Whole body	Varicella virus	Light fever, eruption of bile on
Goitre	Parathyroid gland	-	Difficulty in opening the mouth with fever.
Measles	Whole body	Morbeli virus	Redish eruptions on body.
Trachoma	Eyes	-	Reddish eyes, pain in eyes.
Hepatitis or jaundice	Liver	-	Yellow urine, Eyes and skin become yellow.
Rabies	Nervous system	Rabies virus high fever.	The patient becomes mad with sever headache &
Meningitis	Brain	-	High fever.
Herpes	Skin	Herpes	Swelling in skin.

Diseases caused by Fungus :

Diseases	Name of fungi	Symptoms
Asthama	Aspergillus fumigatus	Obstructs the functions of lungs.
Athlete's foot	Tenia pedes	Cracking of feet
Scabies	Acarus scabies	White spots found on the skin
Baldness	Taenia capities	Hair of the head falls
Ringworm	Trycophyton lerucosum	Round red spot on the skin

Deficiency Diseases:

Deficiency	Disease	Causes/Symptoms

A. Protein		Kwashiorkor	Children become irritable, cease to grow, lose weight, skin pigmented, potbelly due to retention of water by the cells (oedema), mental retardation
	Protein Shortage	Marasmus	Muscle degeneration, thinning of limbs and abdominal wall, ribs prominent, skin pigmentation and oedema absent
B. Minerals		lron deficiency	Deficiency of haemoglobin in RBCs, persons look
	(a) Iron	anaemia	pale, lose appetite and fatigue easily
	(b) Potassium (K)	Hypokalemia	Loss of K in severe vomiting and acute diarrhoea. Rise in heart-beat rate, kidney damage, weakness and paralysis of muscles
	(c) Sodium (Na)	Hyponatremia	Loss of Na, dehydration, low blood pressure, loss of body weight
	(d) Iodine (I)	Simple goitre	Enlargement of thyroid due to low iodine content in drinking water
	(e) Calcium (Ca)	Rickets and Osteomalacia	Refer vitamin D deficiency
C. Vitamins			
	(a) Vitamin A	(i) Xerophthalmia or 'dry eye'	Lachrimal glands stop producing tears leading to blindness
		(ii) Dermatosis	Dry and scaly skin
		(iii) Night blindness	Inability to see in the dark or in dim light
	(b) Vitamin B-Complex		
	B_1 (thiamine)	Beri-beri	Extreme weakness, swelling and pain in the legs, loss of appetite, headache, enlarged heart and shortness of breath
	B_2 (riboflavin)	Ariboflavinosis	Blurred vision, buring and soreness of eye and tongue, cracking of skin at angle of mouth
	B12 (cobalamin)	Pernicious or megaloblastic anaemia	Reduction in haemoglobin content due to disturbance of RBC formation in bone marrow
	Niacin	Pellagra	Tip and lateral margins of tongue, mouth and gums become red, swollen and develop ulcers. skin red and itchy on hands, feet, elbows, wrists and knees.
	(c) Vitamin C (ascorbic acid)	Scurvy	pain in joints, loss of weight, anaemia, gums become spongy, swollen and bleed easily, teeth losses and fragile
	(d) Vitamin D	Rickets	Occurs in children. Softness and deformities of bones bow legs and pigeon chests due to loss of bone Ca
		Osteomalacia	Occurs in adults, softness and pain in bones which fracture easily, bending of vertebral column

COMMON BODY DISORDERS

- **Allergy :** A special reaction to a certain substance such as pollen or certain foods (causing sneeze, skin rashes, etc.) Allergy can be from any material, even by colours, etc.
- **Arthritis :** Inflammation of joints.
- **Asthma :** A respiratory disorder caused by narrowing of bronchial tubes. It can be caused by infection or due to allergy.
- **Bronchitis :** Inflammation of bronchial tubes caused by bacteria or virus.
- **Cancer :** An abnormal growth of body cells, often resulting in a malignant tumour.
- **Diabetes Mellitus :** Excess sugar in the body, when the body is not able to control the level of blood sugar due to malfunctioning of Islets of Langerhans of pancreas when it produces inadequate insulin.
- **Epilepsy :** Unwarned and periodic loss of consciousness along with convulsions, due to nervous disorders.
- **Mumps :** An acute infection particularly in children and young adults in which there is swelling of parotid gland associated with high fever.

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Exercise

1. **In LPG gas leakage, which substance is used to detect it?**
   - (a) Methyl mercaptan
   - (b) Sulphuric acid
   - (c) Ethyl mercaptan
   - (d) None

2. **Which of the following statement about natural gas is/are true?**
   - (a) It is a mixture of gaseous hydrocarbons.
   - (b) It is used in the manufacture of fertilizers.
   - (c) It is used as a fuel.
   - (d) all of the above

3. **Match the following:**

List-I	List-II
A. Freon	1. Bleaching
B. Chloroform	2. Antiseptic
C. Iodoform	3. Refrigerant
D. Ozone	4. Anaesthetic

   Code:

	A	B	C	D
(a)	2	3	4	1
(b)	3	4	2	1
(c)	4	3	1	1
(d)	3	2	1	4

4. **Match the following:**

List-I	List-II
A. Helium	1. Treatment of cancer
B. Neon	2. Electrical signs
C. Radon	3. Generation of low temperature

   Code:

	A	B	C
(a)	1	2	3
(b)	3	1	2
(c)	3	2	1
(d)	2	3	1

5. **Which of the following explains the difference between explosion and combustion?**
   - (a) combustion is accompanied by heat given out while explosion is caused by absorption of heat
   - (b) There is rapid increase of pressure in confined space in case of explosion
   - (c) Combustion can take place only in air while explosion can happen anywhere
   - (d) Combustion is a chemical reaction while explosion is caused by physical factors.

6. **Soda-acid fire extinguisher**
   - (a) based on the principle of extinguishing fire by cooling the burning substance below its ignition temperature
   - (b) based on the principle of extinguishing fire by heating the burning substance above its ignition temperature
   - (c) both (a) and (b) (d)None of the above

7. **Match the following:**

List-I	List-II
A. Glass	1. Phosphorous
B. Matchsticks	2. Sodium
C. Fertilizer	3. Sodium silicate
D. Salt	4. Potassium sulphate

   Code:

	A	B	C	D
(a)	3	4	2	1
(b)	3	1	4	2

    (c) 2 3   1   4
    (d) 4 3   2   1

8. **Match the following:**

    List-I   **List-II**
    A. Nitrolime   1. Rocket fuel
    B. Sodium thiosulphate   2. Sodium
    C. Liquid ammonia   3.   Photography
    D. Hydrazine   4. Fertilizer

    Code:

	A	B	C	D
(a)	3	2	4	1
(b)	1	4	3	2
(c)	4	3	2	1
(d)	3	4	1	2

9. **Choose the correct statement(s) from the following**

    (a) A good pesticide should be cheap, effective, easy to apply in solution and should be biodegradable
    (b) Any inorganic or organic chemical substance, which is used to destroy or inhibit the action of plant or animal pests, is known as pesticide
    (c) pesticides include such chemicals such as insecticides, herbicides, rodenticidcs, miticides, etc.
    (d) All of the above

10. **Ordinary glass is a mixture of:**

    (a) sodium silicate (Na_2SiO_3), calcium silicate ($CaSiO_3$) and silica (SiO_2)
    (b) sodium silicate and calcium silicate ($CaSiO_3$)
    (c) only sodium silicate and silica
    (d) none

11. **Detergents produce lather with hard water because:**

    (a) they are soluble in hard water
    (b) they are colourless substances
    (c) the calcium and magnesium salts of sulphonic acid are soluble in water
    (d) they form sodium carbonate with hard water

12. **A pyrex tumbler does not crack when hot water is poured into it, because pyrex:**

    (a) a strong material
    (b) does not expand much on heating
    (c) is a good conductor of heat
    (d) expands equally from inside and outside

13. **An electric bulb produces a loud sound when broken because:**

    (a) the air rushes into the partial vacuum in the bulb
    (b) the gas inside it explodes
    (c) the glass is brittle
    (d) the gas inside it suddenly expands

14. **Match List A with List B**

    List-I   **List-II**
    (Compound)   **(Present Acid)**
    A. Sour Milk   1. Maleic Acid
    B. Circa   2. Carbonic Acid
    C. Soda Water   3. Acetic Acid
    D. Apple   4. Lactic Acid

    Code:

	A	B	C	D
(a)	4	3	2	1
(b)	3	4	2	1
(c)	3	4	1	2
(d)	1	2	3	4

15. **Match List-I with List-II**

Scientists	*Contributions*
A. Dalton	1. Definition of an element
B. Madam Curie	2. Periodic Table
C. Robert Boyle	3. Atomic Theory
D. Mendeleev	4. Radioactivity

Code:

	A	B	C	D
(a)	3	4	1	2
(b)	4	3	2	1
(c)	1	2	3	4
(d)	2	3	4	1

16. **When a bottle of soda-water is un-corked CO_2 comes out in rushes. It shows:**

   (a) CO_2 is insoluble in water

   (b) The solubility of CO_2 does not depend upon pressure.

   (c) In comparison to high pressure, CO_2 is less soluble in water at low pressure.

   (d) By storage the solubility of CO_2 decreases.

Answers

1. (c) 2. (d) 3. (b) 4. (b) 5. (b) 6. (a) 7. (b) 8. (a)   9. (d) 10. (a) 11. (c) 12. (b) 13. (a) 14. (a) 15. (a) 16. (c)

Miscellany

The first person to reach Mount Everest	Sherpa Tenzing, Edmund Hillary
The first person to reach North Pole	Robert Peary
The first person to reach South Pole	Amundsen
The first religion of the world	Hinduism
The first country to print book	China
The first country to issue paper currency	China
The first country to commence competitive examination	China in civil services
The first President of the U.S.A.	George Washington
The first Prime Minister of Britain	Robert Walpole
The first Governor General of the United Nations	Trigveli (Norway)
The first country to win football World cup	Uruguay
The first country to prepare a constitution	U.S.A.
The first Governor General of Pakistan	Mohd. Ali Jinnah
The first country to host NAM summit	Belgrade (Yugoslavia)
The first European to attack India	Alexander, The Great
The first European to reach China	Marco Polo
The first person to fly aeroplane	Wright Brothers
The first person to sail round the world	Magellan
The first country to send man to the moon	U.S.A.
The first country to launch Artificial satellite in the space	Russia

The first country to host the modern Olympics	Greece
The first city on which the atom bomb was dropped	Hiroshima (Japan)
The first person to land on the moon	Neil Armstrong followed by Edwin E. Aldrin
The first shuttle to go in space	Columbia
The first spacecraft to reach on Mars	Viking-I
The first woman Prime Minister of England	Margaret Thatcher
The first muslim Prime Minister of a country	Benazir Bhutto (Pakistan)
The first woman Prime Minister of a country	Mrs. S. Bandamaike (Sri Lanka)
The first woman to climb Mount Everest	Mrs. Junko Tabei (Japan)
The first woman cosmonaut of the world	Velentina Tereshkova (Russia)
The first woman President of the U.N. General Assembly	Vijaya Lakshmi Pandit
The first man to fly into space	Yuri Gagarin (Russia)
The first batsman to score, three test century in three	Mohd. Azharuddin successive tests on debut
The first man to have climbed Mount Everest twice	Nawang Gombu
The first U.S. President to resign Presidency	Richard Nixon

MALE

The first President of Indian Republic	Dr. Rajendra Prasad
The first Prime Minister of free India	Pt. Jawahar Lal Nehru
The first Indian to win Nobel Prize	Rabindranath Tagore
The first President of Indian National Congress	W. C. Banerjee
The first Muslim President of Indian National Congress	Badruddin Tayyabji
The first Muslim President of India	Dr. Zakir Hussain
The first British Governor General of India	Lord William Bentinck
The first British Viceroy of India	Lord Canning
The first Governor General of free India	Lord Mountbatten
The first and the last Indian to be Governor General of free	C. Rajgopalachari India
The first man who introduced printing press in India	James Hicky
The first Indian to join the I.C.S.	Satyendra Nath Tagore
India's first man in space	Rakesh Sharma
The first Prime Minister of India who resigned without	Morarji Desai completing the full term
The first Indian Commander-in-Chief of India	General Cariappa
The first Chief of the Army Staff	Gen. Maharaj Rajendra Singhji
The first Indian member of the Viceroy's executive council	S. P. Sinha
The first President of India who died while in office	Dr. Zakir Hussain
The first Prime Minister of India who did not face the	Charan Singh Parliament
The first Field Marshal of India	S. H. F. Manekshaw
The first Indian to get Nobel prize in Physics	C. V. Raman
The first Indian to receive Bharat Ratna award	Dr. Radhakrishnan
The first Indian to cross English channel	Mihir Sen
The first person to receive Jnanpith award	Sri Shankar Kurup
The first Speaker of the Lok Sabha	Ganesh Vasudeva Mavalankar
The first Vice-President of India	Dr. Radhakrishnan
The first Education Minister	Abul Kalam Azad
The first Home Minister of India	Sardar Vallabh Bhai Patel

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The first Indian Air Chief Marshal	S. Mukherjee
The first Indian Naval Chief	Vice Admiral R. D. Katari
The first judge of International Court of Justice	Dr. Nagendra Singh
The first person to receive Paramveer Chakra	Major Somnath Sharma
The first person to reach Mt. Everest without oxygen	Sherpa Anga Dorjee
The first Chief Election Commissioner	Sukumar Sen
The first person to receive Magsaysay Award	Acharya Vinoba Bhave
The first person of Indian origin to receive Nobel Prize in	Hargovind Khurana Medicine
The first Chinese traveller to visit India	Fahein
The first person to receive Stalin Prize	Saifuddin Kitchlu
The first person to resign from the central cabinet	Shyama Prasad Mukherjee
The first foreigner to receive Bharat Ratna	Khan Abdul Ghaffar Khan
The first person to receive Nobel Prize in Economics	Amartya Sen
The first Chief Justice of Supreme Court	Justice Hiralal J. Kania

FEMALE

The first lady to become "Miss World"	Rita Faria
The first woman judge in Supreme Court	Mrs. Meera Sahib Fatima Bibi
The first woman Ambassador	Miss C. B. Muthamma
The first woman Governor of a State in free India	Mrs. Sarojini Naidu
The first woman Prime Minister	Mrs. Indira Gandhi
The first woman to climb Mount Everest	Bachhendri Pal
The first woman to climb Mount Everest twice	Santosh Yadav
The first woman President of the Indian National Congress	Mrs. Annie Besant
The first woman chief justice of a High Court	Mrs. Leela Seth
The first woman pilot in Indian Air Force	Harita Kaur Dayal
The first woman President of the United Nations General	Mrs. Vijaya Laxmi Pandit Assembly
The first woman Chief Minister of an Indian State	Mrs. Sucheta Kripalani
The first woman chairman of Union Public Service	Roze Millian Bethew Commission
The first woman Director General of Police (DGP)	Kanchan Chaudhary Bhattacharya
The first woman Lieutenant General	Puneeta Arora
The first woman Air Vice Marshal	P. Bandopadhyaya
The first woman chairperson of Indian Airlines	Sushma Chawla
The first woman I.P.S. Officer	Mrs. Kiran Bedi
The first woman to receive Nobel Prize	Mother Teresa
The first woman to receive Bharat Ratna	Mrs. Indira Gandhi
The first woman to receive Jnanpith Award	Ashapurna Devi

AWARDS, HONOURS AND PRIZES

Nobel Prize

- It is the most coveted international award of the world.
- It was instituted by the inventor of dynamite, Alfred Bernard Nobel (1833-96).
- The award is given on Dec. 10, which is the death anniversary of its founder.
- Nobel made a trust from the money that he earned through the patent of his invention whose interest is used to give the money for the Nobel Prizes.
- Nobel Prize is given every year to those eminent persons who have made pioneering achievements in the field of **Physics, Chemistry, Medicine, Peace, Literature** and **Economics.**

• Apart from Economics, all other categories have been given since 1901. Economics Nobel Prize was instituted in 1967 and was first given in 1969.

TWICE RECEPIENTS OF NOBEL PRIZE

Same Subjects		Different Subjects	
John Bardeen	Physics (1956)	Marie Curie	Physics (1903)
John Bardeen	Physics (1972)	Marie Curie	Chemistry (1911)
Frederic Sanger	Chemistry (1958)	Linus Pauling	Chemistry (1954)
Frederic Sanger	Chemistry (1980)	Linus Pauling	Peace (1962)

• The international Committee of the Red Cross has been awarded the Nobel Prize for peace three times : In 1917, 1944 and 1963.

ADJUDICATORS

Physics and Chemistry	Swedish Academy of Science
Medicine	Stockholm Faculty of Medicine
Literature	Swedish Academy of Litetature
Peace -	Panel of 5-parliamentarians of Norwegian Parliament
Economics	Bank of Sweden

INDIAN NOBEL PRIZE WINNERS

Name	Field	Year
Rabindranath Tagore	Literature	1913
Dr. C.V. Raman	Physics	1930
Dr. Hargovind Khurana	Medicine	1968
Mother Teresa	Peace	1979
Dr. S. Chandrashekhar	Physics	1983
Dr. Amartya Sen	Economics	1999
V.S. Naipaul	Literature	2001
Venkatraman Ramkrishnan	Chemistry	2009

Bharat Ratna

• It is the highest civilian award of India. It is presented by the Government of India.

• It is presented for exceptional public service and rarest achievements in the field of art, literature and science.

• It was instituted in 1954 and the first recepient was Dr. Radhakrishnan.

Recipients of Bharat Ratna

C. Rajagopalachari (1878–1972)	1954
Dr. Sarvepalli Radhakrishnan (1888–1975)	1954
Dr. C.V. Raman (1888–1970)	1954
Dr. Bhagwan Das (1869–1958)	1955
Dr. M. Visvesvaraya (1861–1962)	1955
Jawaharlal Nehru (1889–1964)	1955
Govind Ballabh Pant (1887–1961)	1957
Dr. Dhondo Keshav Karve (1858–1962)	1958
Dr. Bidhan Chandra Roy (1882–1962)	1961
Purushottam Das Tandon (1882–1962)	1961
Dr. Rajendra Prasad (1884–1963)	1962
Dr. Zakir Hussan (1897–1969)	1963

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Dr. Pandurang Vaman Kane (1880–1972)	1963
Lal Bahadur Shastri (1904–1966) (Posthumous)	1966
Indira Gandhi (1917–1984)	1971
Varahagiri Venkatagiri (1884–1980)	1975
Kumaraswami Kamraj (1903–1975) (Posthumous)	1976
Mother Teresa (1910–1997)	1980
Acharya Vinobha Bhave (1895–1982)	1983
Khan Abdul Ghaffar Khan (1890–1988)	1987
Marudu Gopalan Ramachandran (1917–1987) (Posthumous)	1988
Dr. Bhim Rao Ramji Ambedkar (1891–1956) (Posthumous)	1990
Dr. Nelson Rolihlaha Mandela (1918)	1990
Rajiv Gandhi (1944-1991) (Posthumous)	1991
Sardar Vallabhbhai Patel (1875–1950)	1991
Morarji Ranchhodji Desai (1869–1995)	1991
Maulana Abul Kalam Azad (1888–1958) (Posthumous)	1992
Jahangir Ratanji Dadabhai (J.R.D.) Tata (1904–1993)	1992
Satyajit Ray (1922–1992)	1992
Aruna Asaf Ali (1909–1996 (Posthumous)	1997
Gulzari Lal Nanda (1898–1997) (Posthumous)	1997
Dr. Avul Pakir Jainulabdeen Abdul Kalam (1931)	1997
Madurai Shanmukhavadivu (m.s) Subbalakshmi (1916)	1998
Chidambaram Subramaniam (1910–2000)	1998
Loknayak Jayaprakash Narayan (1902–1979) (Posthumous)	1999
Professor Amartya Sen (1933)	1999
Lokpriya Gopinath Bordoloi (1890–1950) (Posthumous)	1999
Pandit Ravi Shankar (1920)	1999
Lata Mangeshwar (1929)	2001
Ustad Bissmillah Khan (1916–2006)	2001
Pt. Bhimsen Joshi	2008

EXERCISE

1. **Which US president's wife Eleanor Roosevelt was the first American to address the Indian Parliament ?**
    (a) Franklin D Roosevelt
    (b) Harry Trumtan
    (c) Dewight D. Eisenhower   (d)   John Kennedy
2. **Who first declared that the US was strengthened if India was strengthened ?**
    (a) Barack Ohawa
    (b) John F. Kennedy
    (c) Dwight D. Eisenhower
    (d) Lyndon B. Johnson

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3. **U. S. President Barack Obama are received by Maharashn a Chief minister Ashok Chavan, Unit on minister of state for corporate affairs and minoriiy affairs and US consul-general paul Folmsbee on 6 November 2010 at Mumbai Airport.**
   - (a) Salim Ansari
   - (b) J.M. Sood
   - (c) Salman Khurshid
   - (d) Ahmed Patel

4. **President Barack Obama and his wife greeted by PM Manmohan Singh and Gursharan Kaur at New Delhi Airport on**
   - (a) 6 November, 2010
   - (b) 7 November, 2010
   - (c) 8 November, 2010
   - (d) 9 November, 2010

5. **The US President and First Lady board-helicopter to head for INS Shikra, an Indian Navy in. stallation at cuffee Parade, colaba.**
   - (a) Air Force One
   - (b) USA One
   - (c) Marine Drive
   - (d) Marine one

6. **Ohama and the First Lady take a minute to reflect at the......a brass sculpture that survived the 26/11 attaek.**
   - (a) Tree of Life
   - (b) Tomb
   - (c) Army of Life
   - (d) None of these

7. **The US President meets the top three Taj Group bossess. In which of the following is not related to Taj Group ?**
   - (a) Ratan Tata
   - (b) Raymond Bickson
   - (c) Krishnakumar
   - (d) Ramakrishna

8. **Consider the following statements about Barack Obama**
   - (a) The Obamas visit a science exhibition in one of the classes on the first floor of the Holy Name High School building in Colaba.
   - (b) The Oharnas arrive at St. Xavier's College, Dhobi Talao, and tour the Agriculture and Food Security Expo co-organised by the US Agency for Internation al Development Aid and Con- federation of Indian Indus tries.
   - (c) Ohama interacts with the villigers of Kanpura, around 25km. from Ajmer via video conferencing.

   Which of the above statements are true ?
   - (a) Only (a)
   - (b) Only (b)
   - (c) Only (c)
   - (d) All of the above

9. **What was the gross medals count of India in the Commonwealth Games 2010 that superseded its performance of 2002?**
   - (a) 98
   - (b) 100
   - (c) 101
   - (d) 105

10. **Which of the following teams, in the Delhi Commonwealth Games 2010, emerged first at the top of the board with 74 gold, 55 silver and 48 bronze medals for a total of 177?**
    - (a) England
    - (b) Canada
    - (c) Australia
    - (d) South Africa

11. **In the Commonwealth Games 2010 held in New Delhi in October 2010, India ended its gold medal drought in athletics since 1958 through woman discus thrower**
    - (a) Avinash Mohanti
    - (b) Krishna Poonia
    - (c) Daniel Mathew
    - (d) Alok Singla

12. **Which team beat India, on October 14, 2010, to win the Gold Medal of the Men's Hockey Competition of the 2010 Commonwealth Games in New Delhi?**
    - (a) New Zealand
    - (b) England
    - (c) Australia
    - (d) Canada

13. **…Triple jumper Trecia Smith was awarded David Dixon award at the closing of the 2010 Cornmonwealth Games held in New Delhi, bestowed to the best athlete of the Games and named after the former honorary secretary of the Commonwealth Games Federation.**
    - (a) Jamaican
    - (b) Nigerian
    - (c) Kenyan
    - (d) South Afriean

14. **Chrystalleni Trikomiti bagged two gold medals in rope and ribbon of the rhythmic gymnastics competition in the Commonwealth Games on October 14, 2010, bringing first gold medal for...... in the Games.**
   (a) Greece   (b) Cyprus
   (c) Turkey   (d) Algeria
15. **Who handed over the Queen's Baton to Prince Charles at the opening ceremony of the 2010 Commonwealth Games in New Delhi on October 3, 2010?**
   (a) Sushil Kumar   (b) Vijender Singh
           (c) Mary Korn   (d) Samaresh Jung

Answers

1. (a)   2. (c)   3. (c)   4. (b)   5. (d)   6. (a)   7. (d)   8. (d)   9. (c)   10. (c)   11. (d)   12. (c)   13. (d)   14. (d) 15. (a)

Section – 3: Numerical Aptitude

SECTION I

Percentage

'Per cent' means 'per hundred'. It is given by % symbol. Here x% means x per hundred or Thus, any percentage can be converted into an equivalent fraction by dividing it by 100.

eg $20\% = \dfrac{20}{100} = \dfrac{1}{5};$ $150\% = \dfrac{150}{100} = \dfrac{3}{2}$

Also, any fraction or decimal can be converted into its equivalent percentage by multiplying with 100.

eg $\dfrac{1}{5} = \dfrac{1}{5} \times 100 = 20\%;$ $\dfrac{3}{2} = \dfrac{3}{2} \times 100 = 150\%.$

Important Formulae

1. Percentage increase = $\dfrac{\text{Increase}}{\text{Original value}} \times 100$

2. Percentage decrease = $\dfrac{\text{Decrease}}{\text{Original value}} \times 100$

3. If the price of the commodity increases by r% then the reduction in consumption so as not to increase the expenditure is $\left[\dfrac{r}{100+r} \times 100\right]\%$

4. If the price of the commodity decreases by r% then the reduction in consumption so as not to increase the expenditure is $\left[\dfrac{r}{100-r} \times 100\right]\%$

5. If $A's$ income is r% more than $B's$ income then $B's$ income is less than $A's$ income by .
   $\left[\dfrac{r}{100+r} \times 100\right]\%$

6. If *A's* income is *r*% less than *B's* income then *B's* income is more than *A's* income by .

$$\left[\frac{r}{100-r}\times100\right]\%$$

7. Let the population of a town be *P* and it increases at the rate of *r*% per annum, then

(a) Population after *n* years = $P\left(1+\dfrac{r}{100}\right)^n$

(b) Population *n* years ago = $\dfrac{P}{\left(1+\dfrac{r}{100}\right)^n}$

8. Let the present value of the machine be *P* and if it depreciates at the rate of *r*% per annum.

(a) Value of machine after *n* years = $P\left(1-\dfrac{r}{100}\right)^n$

(b) Value of machine *n* years ago = $\dfrac{n}{P\left(1-\dfrac{r}{100}\right)^n}$

Example 1: Express 3/2 as rate per cent.

Solution. $\dfrac{3}{2}$ = $\left(\dfrac{3}{2}\times100\right)\%$ = 150%

Example 2: Find 25% of 1000.

Solution. 25% of 1000 = $\dfrac{25}{100}\times1000$ = 250

Example 3. What per cent of 6 is 144?

Solution. Required percentage = $\left(\dfrac{144}{6}\times100\right)\%$ = 2400%

Example 4: What per cent of 2.5 kg is 15 g?

Solution. Required percentage = $\left(\dfrac{15}{2.5\times1000}\times100\right)\%$ = 0.6%

Example 5. If the price of tea falls by 12%, by how much pr cent must a house holder increase its consumption, so as not to decrease its expenditure on tea?

Solution. (Short cut method)

Increase % in consumption = $\left\{\dfrac{r}{100-r}\times100\right\}\%$ = $\left\{\dfrac{12}{100-12}\times100\right\}\%$

= $\left(\dfrac{12}{88}\times100\right)\%$ = $\dfrac{150}{11}\%$ = $13\dfrac{7}{11}\%$

Example 6: The value of a machine depreciates at the rate of 10% per annum. If its present value is ` 162000, what was the value of the machine 2 year ago?

Solution. Value of machine 2 year ago = ₹ $\left[\dfrac{162000}{\left(1-\dfrac{10}{100}\right)^2}\right]$ = ₹ $\left(162000\times\dfrac{10}{9}\times\dfrac{10}{9}\right)$

= ₹ 200000

Example 7: Due to a reduction of 5% in prices of sugar, a man is able to buy 1 kg more for ₹ 95. Find the original and reduced rate of sugar.

Solution. Let the original rate be ₹ x per kg.

Reduced rate = ₹ $(100-5)\times\dfrac{1}{100}x$ = ₹ $\dfrac{95x}{100}$ ∴ $\dfrac{95}{\frac{95x}{100}}-\dfrac{95}{x}=1$

⇒ $\dfrac{5}{x}=1$ ⇒ $x=5$

∴ Original rate = ₹ 5 per kg

Reduced rate = ₹ $Rs.\left(\dfrac{19}{20}\times\dfrac{5}{1}\right)$ per kg = ₹ $Rs.\dfrac{19}{4}$ = 4.75 er kg

Example 8: If the price of 1 kg cornflakes is increased by 25%, the increase is ₹ 10. Find the new price of cornflakes per kg.

Solution. Original price = $\dfrac{\text{Difference in price}}{\text{Difference in per cent}}\times100$ = $\dfrac{10}{25}\times100$ = 400

∴ New price = $40\times\dfrac{125}{100}$ = ₹ 50

EXERCISE:

1. The difference of two numbers is 20% of the larger number. If the smaller number is 20, then the larger number is:
   (a) 25   (b) 46
   (c) 27   (d) 82

2. When any number is divided by 12, then dividend becomes 1/4th of the other number. By how much percent first number is greater than the second number?
   (a) 165   (b) 200
   (c) 300   (d) 400

3. If one number is 80% of the other and 4 times the sum of their squares is 656, then the numbers are:
   (a) 6,8   (b) 8, 10
   (c) 16, 20   (d) 10, 15

4. Two numbers A and B are such that the sum of 5% of A and 4% of B is two-third of the sum of 6% of A and 8% of B. Find the ratio of A : B.
   (a) 1 : 2   (b) 3 : 1
   (c) 3 : 4   (d) 4 : 3

5. Three candidates contested an election and received 1136, 7636 and 11628 votes respectively. What percentage of the total votes did the winning candidate get?
   (a) 57%   (b) 77%   (c) 80%   (d) 90%

6. The population of a town increased from 1,75,000 to 2,62,500 in a decade. The average percent increase of population per year is:
   (a) 7%   (b) 5%   (c) 9%   (d) 8.75%

7. A student multiplied a number by 3 instead of 5/3. What is the percentage error in the calculation?
   (a) 36% (b) 44% (c) 55% (d) 35%

8. A tempo is insured to the extent of 4 5 of its original value. If the premium on it at the rate of 1.3 percent amounts to ` 910, the original value of the tempo is:
   (a) ` 78,000  (b) ` 78,500
   (c) ` 80,000  (d) ` 87,500

9. When 15% is lost in grinding wheat, a country can export 30 lakh tons of wheat. On the other hand, if 10% is lost in grinding, it can export 40 lakh tons of wheat. The production of wheat in the country is:
   (a) 40 lakh tons (b) 400 lakh tons
   (c) 200 lakh tons (d) 900 lakh tons

10. In a competitive examination in State A, 6% candidates got selected from the total appeared candidates. State B had an equal number of candidates appeared and 7% candidates got selected with 80 more candidates got selected than A. What was the number of candidates appeared from each State?
    (a) 7600 (b) 8000
    (c) 8300 (d) 4000

ANSWERS

1. (a) **2.** (b) **3.** (b) **4.** (d) **5.** (a) **6.** (b) **7.** (d) **8.** (d) **9.** (c) **10.** (b)

EXPLAINATIONS:

1. Let the larger number be *x*.

   Then, $x - 20 = \dfrac{20}{100}x \Leftrightarrow x - \dfrac{1}{5}x = 20$

   $\Leftrightarrow \dfrac{4}{5}x = 20 \Leftrightarrow x = \left\{20 \times \dfrac{5}{4}\right\} = 25\%$

2. Let the numbers be *x* and *y*. Then,

   $\dfrac{x}{12} = \dfrac{y}{4} \Leftrightarrow x = 3y.$

   Required percentage =

   $\left(\dfrac{x-y}{y} \times 100\right)\% = \left(\dfrac{2y}{y} \times 100\right)\% = 200\%$

3. Let one number = *x*. Then, other number = 80% of *x* = $\dfrac{4}{5}$

   $\therefore\ 4\left[x^2 + \left(\dfrac{4}{5}x\right)^2\right] = 656$

   $\Leftrightarrow x = x^2 + \dfrac{16}{25}x^2 = 164$

   $\Leftrightarrow \dfrac{41}{25}x^2 = 164$

   $\Leftrightarrow x^2 = \left(\dfrac{164 \times 25}{41}\right) = 100$

   $\Leftrightarrow x = 100$

So, the numbers are 10 and 8.

4.   5% of A + 4% of B =(6% of A + 8% of B)

$$\Leftrightarrow \frac{5}{100}A + \frac{4}{100}B = \frac{2}{3}\left(\frac{6}{100}A + \frac{8}{100}B\right)$$

$$\Leftrightarrow \frac{1}{20}A + \frac{1}{25}B = \frac{1}{25}A + \frac{4}{75}B$$

$$\Leftrightarrow \frac{1}{100}A + \frac{1}{75}B \Leftrightarrow \frac{A}{B} = \frac{100}{75} = \frac{4}{3}$$

5.   Total number of votes polled
      = (1136 + 7636 + 11628) = 20400.

      Required percentage = $\left(\frac{11628}{20400} \times 100\right)\%$ = 57%.

6.   Increase in 10 years = (262500 − 175000) = 87500.

      Increases % = $\left(\frac{87500}{175000} \times 100\right)\%$ = 50%   Required average = $\left(\frac{50}{10}\right)\%$
      = 5%

7.   Let the number be x. Then, error = Error %

      = $\frac{5}{3}x - \frac{3}{5}x = \frac{16}{15}x$ = Error %

      = $\left(\frac{16x}{15} \times \frac{3}{5x} \times 100\right)\%$ = 64%

8.   Let the original value of the tempo be ` x. Then,

      1.3% $\frac{4}{5}$ of x= 910 $\Leftrightarrow$ $\frac{13}{10} \times \frac{1}{100} \times \frac{4}{5} \times x$ = 910

      $\Leftrightarrow$ x = $\left(\frac{910 \times 10 \times 100 \times 5}{13 \times 4}\right)$ = 87500.

9.   Let the total production be x lakh tons. Then, 15% of x – 10% of x = (40 – 30) lakh tons
      $\Leftrightarrow$ 5% of x = 10 lakh tons

      $\Leftrightarrow$ x = $\left(\frac{10 \times 100}{5}\right)$
                = 200 lakh tons.

10.   Let the number of candidates appeared from each state be x.
      Then, 7% of x – 6% of x = 80
      $\Leftrightarrow$ 1% of x = 80
            $\Leftrightarrow$ x = 80 × 100 = 8000.

Profit & Loss

Cost Price

The price at which an article is purchased is called the cost price or CP.

Selling Price

The price at which an article is sold is called the selling price or SP.

Formulae

$$\text{Gain or Profit} = \text{SP} - \text{CP}$$

$$\text{Gain per cent or Profit per cent} = \left(\frac{\text{Gain}}{\text{CP}} \times 100\right) \text{or} \left(\frac{\text{Profit}}{\text{CP}} \times 100\right)$$

$$\text{SP} = \left(\frac{100 + \text{Profit \%}}{100}\right) \times \text{CP}$$

Similarly,
$$\text{Loss} = \text{CP} - \text{SP}$$

$$\text{Loss per cent} = \left(\frac{\text{Loss}}{\text{CP}} \times 100\right) ; \text{SP} = \frac{(100 - \text{Loss \%})}{100} \times \text{CP}$$

- The Profit and Loss per cent is always calculated on the cost price.
- If a trader professes to sell his goods at CP but uses false weight, then Gain per cent or Profit per cent

$$= \left(\frac{\text{Error}}{\text{True Value} - \text{Error}} \times 100\right)\%$$

Marked Price or List Price

Price that is indicated or marked on the article is called marked price or MP.

Discount

It is reduction given on the Marked Price or List Price of an article.

$$d \text{ per cent} = \frac{100 \times \text{discount}}{\text{MP}}; \quad \text{Selling Price} = \frac{(100 - d\%)}{100} \times MP$$

If a trade gets x% profit and x% loss in selling two different articles, then in over all transaction, there is always a loss which is given by

$$\text{Loss \%} = \left(\frac{x}{10}\right)^2$$

Example 1: A chair is bought for ` 1950 and sold at ` 2340. Find the gain per cent.

Solution. CP = ` 1950 and SP = ` 2340

$$\text{Gain} = ` (2340 - 1950) = ` 390$$

$$\text{Gain \%} = \left(\frac{390}{1950} \times 100\right)\% = 20\%$$

Example 2: A radio is bought for ` 780 and sold at ` 650. Find the loss per cent.

Solution. CP = ` 780 and Sp = ` 650

$$\text{Loss} = \text{CP} - \text{SP} = ` (780 - 650) = ` 130$$

$$\text{Loss \%} = \left(\frac{13}{780} \times 100\right) =$$

Example 3: A book is bought for ` 80 and sold at the gain of 5%. Find the selling price.

Solution. CP = ` 80, Gain = 5%

$$SP = 105\% \text{ of } `\ 80 = ` \left(\frac{105}{100} \times 80\right) = `\ 84$$

Example 4: If cost price of 15 articles is equal to the selling price of 12 articles, then find the gain per cent.

Solution.   Let cost price of each article = ` 1

Then,   Cost price of 15 articles = ` 15

∴   Selling price of 12 articles = ` 15

But   Cost price of 12 articles = ` 12

∴   Profit = ` (15 – 12) = ` 3

∴   Profit % = $\dfrac{3}{12} \times 100$ = 25%

Example 5: What is the equivalent discount of three consecutive discount 30%, 20% and 5%.

Solution. Let MP = ` 100

∴   SP = 95% of 80% of 70% of 100 = $\dfrac{95}{100} \times \dfrac{80}{100} \times \dfrac{70}{100} \times 100$ = ` 53.20

∴   Required equivalent discount = ` (100 – 53.20) = ` 46.80

Example 6: By selling 66 m of cloth a person gains the cost price of 22 m. Find the gain per cent.

Solution. Let CP of 1 m cloth = ` 1

Then,   Gain % = $\dfrac{\text{gain}}{\text{CP}} \times 100$ = $\dfrac{\text{CP of 22 m cloth}}{\text{CP of 66 m cloth}} \times 100$ = $\dfrac{22}{66} \times 100$ = $33\dfrac{1}{3}\%$

Example 7: A radio is listed at ` 500 with a discount of 10%. What additional discount must be offered to the customer to bring the net price to ` 423?

Solution. List price = ` 500, Discount = 10%

$$SP = 90\% \text{ of } `\ 500 = `\ \left(\frac{90}{100} \times 500\right) = `\ 450$$

Sale price = ` 423

Additional discount = $\left(\dfrac{27}{450} \times 100\right)$ = 6%

EXERCISE

1.   A man purchased a box full of pencils at the rate of 7 for ` 9 and sold all of them at the rate of 8 for ` 11. In this transaction, he gained ` 10. How many pencils did the box contain?
   (a) 111   (b) 112
   (c) 114   (d) 116

2.   A man bought a number of clips at 3 for a rupee and an equal number at 2 for a rupee. At what price per dozen should he sell them to make a profit of 20%?
   (a) ` 9              (b) ` 10
   (c) ` 6              (d) ` 7

3.   A man buys eggs at 2 for Re. 1 and an equal number at 3 for ` 2 and sells the whole at 5 for ` 3. His gain or loss percent is:
   (a) % loss   (b) % gain
   (c) % loss   (d) % loss

4. A man bought some oranges at ` 10 per dozen and bought the same number of oranges at ` 8 per dozen. He sold these oranges at ` 11 per dozen and gained `120. The total number of oranges bought by him was:
   (a) 55 dozens   (b) 80 dozens
   (c) 90 dozens   (d) 60 dozens

5. A vendor bought toffees at 6 for a rupee. How many for a rupee must he sell to gain 20%?
   (a) 8   (b) 9
   (c) 5   (d) 2

6. By selling 12 toffees for a rupee, a man loses 20%. How many for a rupee should he sell to get a gain of 20%?
   (a) 6   (b) 8
   (c) 10   (d) 9

7. By selling 45 lemons for ` 40, a man loses 20%. How many should he sell for ` 24 to gain 20% in the transaction?
   (a) 19   (b) 18
   (c) 24   (d) 22

8. A trader mixes 26 kg of rice at `20 per kg with 30 kg of rice of other variety at `36 per kg and sells the mixture at `30 per kg. His profit percent is:
   (a) 6%   (b) 5%
   (c) 11%   (d) 10%

9. Arun purchased 30 kg of wheat at the rate of ` 11.50 per kg and 20 kg of wheat at the rate of ` 14.25 per kg. He mixed the two and sold the mixture. Approximately what price per kg should he sell the mixture to make 30% profit?
   (a) ` 15.80          (b) ` 16.40
   (c) ` 15.60          (d) ` 16.30

10. Padam purchased 30 kg of rice at the rate of `17.50 per kg and another 30 kg rice at a certain rate. He mixed the two and sold the entire quantity at the rate of `18.60 per kg and made 20% overall profit. At what price per kg did he purchase the lot of another 30 kg rice?
    (a) ` 14.50          (b) ` 13.50
    (c) ` 17.50          (d) ` 16.50

ANSWERS

1. (b) 2. (c) 3. (d) 4. (d) 5. (c) 6. (b) 7. (b) 8. (b) 9. (d) 10. (b)

EXPLAINATONS

1. Suppose, number of pencils bought
   = L.C.M. of 7 and 8 = 56.

   C.P. of 56 pencils = ` $\left(\dfrac{9}{7}\times56\right)$ = ` 72.

   S.P. of 56 pencils = ` $\left(\dfrac{11}{8}\times56\right)$ = ` 77.

   Now, ` 5 are gained on 56 pencils.

   So, ` 10 are gained on $\left(\dfrac{56}{5}\times10\right)$ = 112 pencils.

2. Suppose he bought 1 dozen clips of each kind.

C.P. of 2 dozens = ` $\left(\dfrac{1}{3}\times 12+\dfrac{1}{2}\times 12\right)$

= ` **10**

∴ S.P. of 2 dozen = 120% of ` **10**

= ` = ` $\left(\dfrac{120}{100}\times 10\right)$ **12**

Hence, S.P. per dozen = ` **6.**

3. Suppose he buy 6 eggs of each kind.

C.P. of 12 eggs = ` $\left(\dfrac{1}{2}\times 6+\dfrac{2}{3}\times 6\right)$ = ` **7.**

S.P. of 12 eggs = ` $\left(\dfrac{3}{5}\times 12\right)$ = ` **7.20.**   ∴   Gain = $\left(\dfrac{0.20}{7}\times 100\right)\%$ =

4. C.P. of 2 dozen oranges = ` **(10 + 8) = ` 18.**

S.P. of 2 dozen oranges = ` **22.**

If profit is ` **4, orange bought = 2 dozen.**       If profit is ` **120, oranges bought**

= $\left(\dfrac{2}{4}\times 120\right)$ **dozens = 60 dozens.**

5. C.P. of 6 toffees = Re. 1 S.P. of 6 toffees   = 120% of Re. 1 = ` $\dfrac{6}{5}$.

For ` $\dfrac{6}{5}$, toffees sold = 6. For Re. 1, toffees sold = $\left(6\times\dfrac{6}{5}\right)$ = 5.

6. Let S.P. of 12 toffees be ` x. Then, 80 : 1 = 120 : x or x = $\left(\dfrac{120}{80}\right)=\dfrac{3}{2}$.

For ` $\dfrac{3}{2}$, toffees sold = 12.

For ` 1, toffees sold = $\left(12\times\dfrac{2}{8}\right)$ = 8.

7. Let S.P. of 45 lemons be ` x.

Then,   80 : 40 = 120 : x

or x = $\left(\dfrac{120\times 40}{80}\right)$ = 60.

For ` 60, lemons sold = 45. For ` 24, lemons sold = $\left(\dfrac{45}{60}\times 24\right)$ = 18.

8. C.P. of 56 kg rice

= ` **(26 × 20 + 30 × 36)**

= ` **(520 + 1080)**

= ` **1600. S.P. of 56 kg rice**

= ` **(56 × 30) = ` 1680.**

∴ Gain $= \left(\dfrac{80}{1600} \times 100 \right) \% = 5\%.$

9. C.P. of 50 kg wheat

    $= ` (30 \times 11.50 + 20 \times 12.25)$

    $= ` (345 + 285)$

    $= ` 630.$ S.P. of 50 kg wheat

    $= 130\%$ of ` 630

    $= ` = ` \left(\dfrac{130}{100} \times 630 \right) 819.$

    ∴ S.P. per kg = ` $\left(\dfrac{819}{50} \right)$

    $= ` 16.38 \approx ` 16.30.$

10. Let the required price per kg be ` *x*. Then, C.P. of 60 kg rice = ` $(30 \times 17.50 + 30 \times x) = ` (525 + 30x) =$ ` $(525 + 30x).$

    S.P. of 60 kg rice = ` (60×18.60)

    $= ` 1116$

    ∴ $\dfrac{1116 - (525 + 30x)}{525 + 30x} \times 100 = 20$

    ⇔ $\dfrac{519 - 30x}{525 + 30x} = \dfrac{1}{5}.$

    ⇔ $2955 - 150x = 525 + 30x$

    ⇔ $180x = 2430$

    ⇔ $x = \left(\dfrac{2430}{180} \right) = \left(\dfrac{27}{2} \right)$

    $= 13.50.$

    So, the C.P. of second lot is ` 13.50 per kg.

Geometry

Point

A point is defined by its position. It has no length, width or thickness. A straight line joining two points is the shortest distance between them. Three or more points are said to be **collinear**, if there is a line which contains all of them.

Line

A line is defined by its length and has no breadth. It has length units. (metre, foot, centimetre kilometre, etc.).

A line contains infinite points. Through a given point, there pass infinite lines. One and only one straight line passes through two distinct points. Three or more lines are said to be **concurrent**, if they pass, through one point and that point is called the point of concurrence. Two lines are said to be **intersecting lines**, if they have a common point.

Angle

When two straight lines meet at a point, they are said to form an angle. Angles generally are measured in degrees. There are 180° in a straight line and a full circle constitutes 360°.

1. Two angles are said to be complementary, if their sum is 90°. Complement of *x* is (90° – *x*).
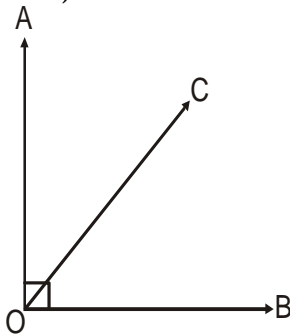
In the adjoining figure, $\angle AOC + \angle BOC = 90°$.

∴ $\angle AOC$ and $\angle BOC$ are complementary to each other.

2. Two angles are said to be supplementary, if their sum is 180°. Supplement of *x* is (180° – *x*).
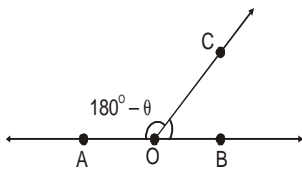
$\angle AOC + \angle BOC = 180°$.

∴ $\angle AOC$ and $\angle BOC$ are supplementary to each other.

3. An angle which less than 90^0, is called acute angle

$\angle AOB < 90°$ ∴ $\angle AOB$ is an acute angle.
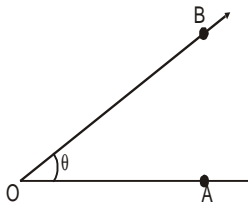
4. An angle which is greater than 90° is called obtuse angle.

$\angle AOB > 90°$ ∴ $\angle AOB$ is an obtuse angle.
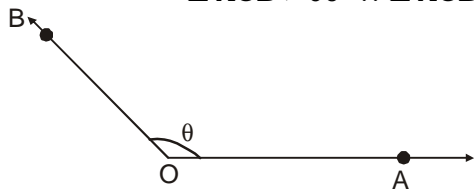
5. An angle which is exactly 90° is called **Right Angle** and the two lines are said to be **Perpendicular** to each other.

$\angle AOB = 90°$ ∴ $\angle AOB$ is a right angle and OA and OB are perpendicular to each other.

6 . An angle which is greater than two right angles but less than four right angles is said to be **Reflex Angle**.

$180° < \angle AOB < 360° \therefore \angle AOB$ is reflex angle.
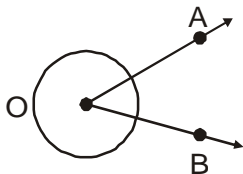
7. Angles which lie on either side of a common line are called Adjacent Angles.

$\angle AOC$ and $\angle COB$ have a common vertex 'O' and a common arm . Hence, they are adjacent angles.
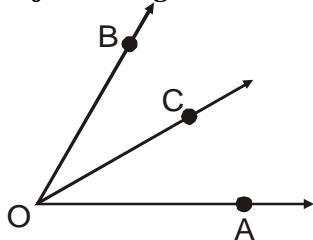
8. If two lines intersect, then Vertically Opposite Angles are equal in magnitude.

$\angle AOB = \angle COD$ and $\angle BOC = \angle AOD$ are two pairs of vertical opposite angles.
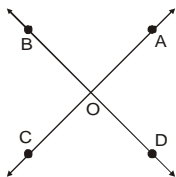
Angles Bisector

A line which cuts an angle into two equal angles is called an angle bisector. An angle bisector can be internal or external.

$\angle AOC = \angle COB =$ is the internal angle bisector.
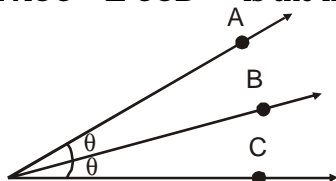
$\angle A' OC = \angle COB =$ is the external angle bisector.

Parallel Lines

Two lines in the same plane are said to be parallel, if they never meet, however any far they are extended in either direction. They remain at same distance for the whole length. The sign of parallel is '||'. A line which cuts a pair of parallel lines is called a **transversal**.

If *AB* || *CD* and *EF* a transversal. Then,

1. Four pairs of **corresponding angles** are formed which are equal. The corresponding angles are $\angle 1 = \angle 5$, $\angle 2 = \angle 6$, $\angle 4 = \angle 8$ and $\angle 3 = \angle 7$.
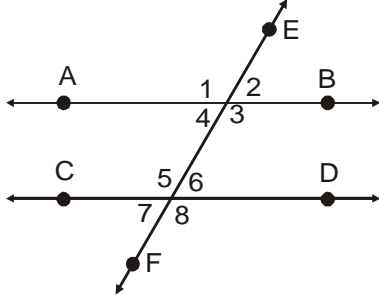
2. Four pairs of **alternate angles** are formed which are equal. The alternate angles are
$\angle 1 = \angle 7$, $\angle 2 = \angle 8$, $\angle 3 = \angle 5$ and $\angle 4 = \angle 6$

3. The sum of the **interior angles** on the same side of the transversal equal to two right angles.
$\angle 3 + \angle 6 = 180°$ and $\angle 4 + \angle 5 = 180°$.

4. The sum of the **exterior angles** on the same side of the transversal equal to two right angles.
$\angle 1 + \angle 8 = 180°$ and $\angle 2 + \angle 7 = 180°$.
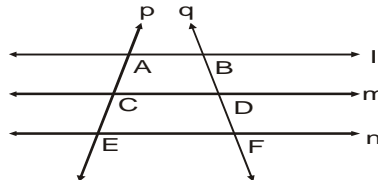
Also, straight lines which are parallel to the same straight line are parallel to one another and intercepts made by two transversals on three or more parallel lines are proportional. In the adjoining figure, *l*, *m* and *n* are three parallel lines and *p* and *q* are two transversals than

Polygons

A polygon is a closed plane figure bounded by straight lines.

Convex Polygon: A polygon in which none of its interior angles is more than 180^0.

Concave Polygon A polygon in which atleast one angle is more than 180°.

Regular Polygon A regular polygon has all its sides and angles equal.

(i) Each exterior angle of a regular polygon = $\left(\dfrac{360°}{\text{number of sides}} \right)$

(ii) Each interior angle = 180° – (exterior angle).

In a **Convex Polygon** of *n* sides, we have

(a) Sum of all interior angles = $(2n – 4) \times 90°$
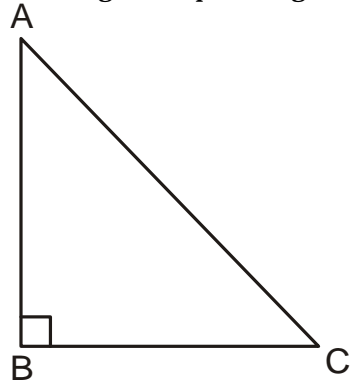(b) Sum of all exterior angles = 360°

(c)   Number of diagonals of a polygon on n sides = $\dfrac{n(n-3)}{2}$

A polygon is called a Triangle, Quadrilateral, Pentagon, Hexagon, Heptagon, Octagon, Nonagon and Decagon according as it contains 3, 4, 5, 6, 7, 8, 9, 10 sides respectively.

Triangles

A triangle is a plane figure bounded by three straight lines.

1. In a triangle, the side which is opposite to the largest angle is the longest side and the side which is opposite to the smallest angle is the shortest side.

2. The sum of the lengths of two sides of a triangle is always greater than the length of the third side.

3. The sum of the internal angles in a triangle is 180° and that of the external angles is 360°.

4.   The difference of any two sides of a triangle is always lesser than the third side.

5. If one side of a triangle is produced, the exterior angle formed is equal to the sum of the interior opposite angles.

   Scalene Triangle: When all the sides (and angles) of a triangle are unequal.

   Isosceles Triangle: When two sides of a triangle are equal and two angles opposite to the two equal sides are equal.

   Equilateral Triangle: When all the sides (and angles) of a triangle are equal. Each interior angle is 60°. Right-Angled Triangle When one angle of a triangle is right angle. In the figure $\angle B = 90°$ and $\angle A + \angle C = 90°$.

   By Pythagoras Theorem: $AB^2 + BC^2 = AC^2$ where AC is the hypotenuse.

   A triplet is a set of numbers which will satisfy the Pythagoras Theorem. The frequently used triplets are (3, 4, 5), (5, 12, 13), (7, 24, 25), (8, 15, 17), (9, 40, 41), (11, 60, 61), (12, 35, 37), (16, 63, 65), (20, 21, 29). The multiples of triplets are also triplets eg, (6, 8, 10) is a multiple of (3, 4, 5) and a triplet.

   Congruency of Triangles Two triangles are congruent, if

 (i) Three sides of one triangle are respectively equal to three sides of the other (SSS).

 (ii) Two sides and the included angle of the one triangle is equal to the corresponding two sides and the included angle of the other (SAS).

 (iii) Two angles and a side of one triangle is equal to the corresponding two angles and a side of the other (ASA).

   Similarity of Triangles: Two triangles are said to be similar, if their corresponding angles are equal and their corresponding sides are proportional, ie, they have the same shape but may have different sizes.

 (i) Ratio of the areas of two similar triangles is equal to the ratio of the squares of any two corresponding sides.

 (ii) Ratio of areas of two similar triangles is equal to the ratio of the squares of the corresponding altitudes and medians.

(iii) The internal bisector of an angle of a triangle divides the opposite side internally in the ratio of sides containing the angle.

(iv) The lines joining the mid points of any two sides of a triangle is parallel to the third side and equal to half of it.

Altitude: It is the perpendicular dropped to a side of a triangle from the vertex opposite to that side. All the three altitudes of a triangle meet at a point called the orthocentre of the triangle.
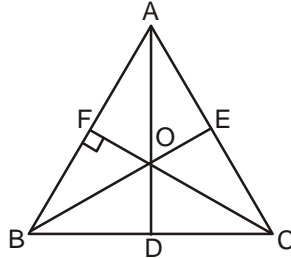

In ∆ABC, AD, BE and CF are altitudes and meet at orthocentre O.

Angle Bisector: It is the bisector of an angle contained in the vertex of a triangle. All the three angle bisectors of a triangle meet at a point called the in centre of the triangle. The in centre is the centre of a circle which can be perfectly inscribed in the triangle.

In radius = *ID* = *IE* = *IF*. Also, ∠ *BIC* = . In ∆ *ABC AD*, *BE* and *CF* are angle bisectors and meet at in centre *I*.

Perpendicular Bisector: It is the line passing through the mid point of the side of a triangle and perpendicular to it. All the three perpendicular bisectors of a triangle meet at a point called the circumcentre of the triangle. The circumcentre is the centre of a circle which can be perfectly circumscribed about the triangle. The circumradius = *PC* = *QC* = *RC* and ∠ *QCR* = 2 ∠ *P*. In ∆ *PQR* the angle bisectors meet at circumcentre *C*. Also, *D*, *E* and *F* are mid points of *QR*, *RP* and *PQ* respectively.
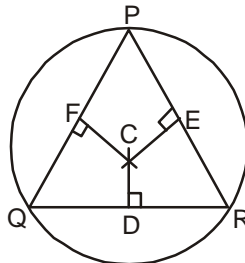
Median: It is the line joining the mid point of a side of a triangle with the vertex opposite to that side. All the three medians of a triangle meet at a point called the centroid of the triangle. They also intersect each other such that each median is split in a ratio of 1 : 2 from the base side. In ∆ *ABC*, *AD*, *BE* and *CF* are the medians and meet at the centroid *G*. Also,

$$\frac{AG}{GD} = \frac{BG}{GE} = \frac{CG}{GF} = 2$$

and D, E and F are mid points of BC, CA and AB respectively.
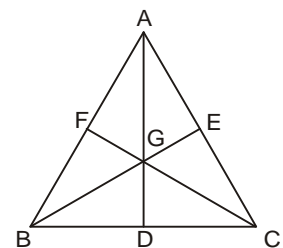
By Apollonius theorem,

$AB^2 + AC^2 = 2AD^2 + 2\ [BD^2]$

Quadrilaterals

It is a plane figure bounded by four straight lines. It has four sides and four internal angles. The sum of the internal angles of a quadrilateral is 360°.
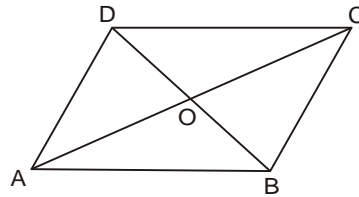
Parallelogram: A quadrilateral in which the opposite sides are equal and parallel is called a parallelogram. In a parallelogram

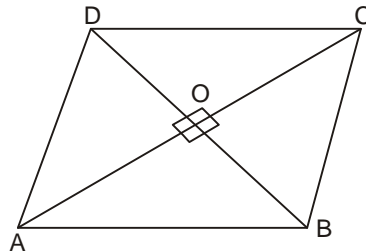(i)   The opposite sides are parallel and of equal length. $AB = DC$ and $AD = BC$.

(ii) The sum of any two adjacent interior angles is equal to 180°.

∠ A + ∠ B = ∠ B + ∠ C = ∠ C + ∠ D = ∠ D + ∠ A

(iii) The opposite angles are equal in magnitude ∠ A = ∠ C and ∠ B = ∠ D.

(iv) The diagonals of a parallelogram are not equal in magnitude, but they bisect each other. $AC \neq BD$ but $AO = OC$ and $OB = OD$.

Rhombus: A parallelogram in which all the sides are equal is called a rhombus.

(i) The opposite sides are parallel and all the sides are of equal length.

$AB = BC = CD = DA$

(ii) The sum of any two adjacent interior angles is equal to 180°.

∠ A + ∠ B = ∠ B + ∠ C = ∠ C + ∠ D = ∠ D + ∠ A.

(iii) The opposite angles are equal in magnitude. ∠ A = ∠ C and ∠ B = ∠ D.

(iv) The diagonals bisect each other at right angles and form four right angled triangles. They are not of equal magnitude.

(v) Area of the four right triangles ∠ AOB = ∠ BOC = ∠ COD = ∠ DOD and each equals   the area of the rhombus.

(vi) Sum of the squares of sides is equal to the sum of the squares of its diagonals.

Rectangle: A parallelogram in which the adjacent sides are perpendicular to each other.
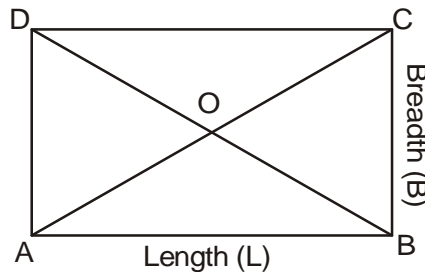
(i) The opposite sides are parallel and of equal length. $AB = CD$ and $AD = BC$.

(ii) The adjacent sides are perpendicular ie, ∠ A = ∠ B = ∠ C = ∠ D = 90°.

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(iii) The diagonals of a rectangle are of equal magnitude and bisect each other. *AC = BD* and *AO = OC = BO = OD.*

    Square: A parallelogram in which all the sides are equal and perpendicular to each other.
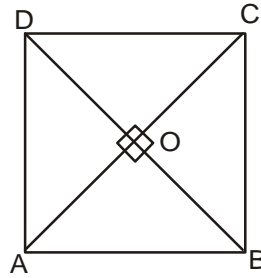
(i) The opposite sides are parallel and all the sides are of equal length. *AB = BC = CD = DA.*

(ii) The diagonals bisect each other at right angles and form four isosceles right angled triangle.

(iii) The adjacent sides are perpendicular ie, ∠ *A* = ∠ *B* = ∠ *C* = ∠ *D* = 90°.

(iv) The diagonals of a square are of equal magnitude. *AC = BD.*
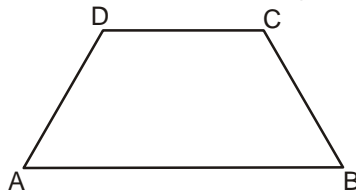
    Trapezium: It is a quadrilateral where only one pair of opposite sides are parallel.

    ABCD is a trapezium as *AB || DC.*

Circles

    A circle is a set of points which are equidistant from a given point. The given point is known as the centre of that circle. The angle in a circle is 360°.

Arcs, Chords and Central Angles

  (i) In equal circles (or in the same circle), if two arcs are equal, the chords associated with the arcs are equal and vice-versa.

  (ii) In equal circles (or in the same circle), if two arcs subtend equal angles at the centre, then they are equal.

Angles in a Circle

  (i) The angle which an arc of a circle subtends at the centre is double that which it subtends at any point on the remaining part of the circle.

  (ii) Angles in the same segment of a circle are equal.

 (iii) The angle in a semicircle is a right angle.

Chords in a Circle

  (i) A straight line drawn from the centre of a circle to bisect a chord which is not a diameter is at right angle to the chord. Conversely, the perpendicular to a chord from the centre bisects the chord.

  (ii) Equal chords of a circle are equidistant from the centre. Conversely, the chords that are equidistant from the centre are equal.

        (ii)   If two chords of a circle *AB* and *CD* intersect internally or externally the circle when produced at a point *E,* then $AE \times EB = DE \times EC.$
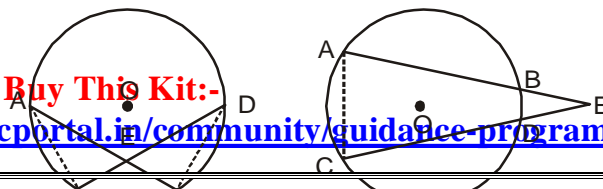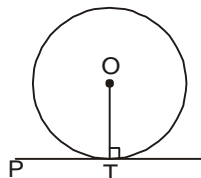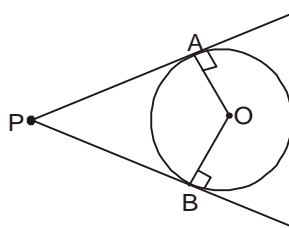
Tangents to a Circle

    (i)   **The tangent at any point of a circle is perpendicular to the radius through the point of contact** $OT \perp PT$.

  i)   If two tangents are drawn to a circle from an outside point, the length of the tangents from the external point to their respective points of contact are equal. ie, $PA = PB$.
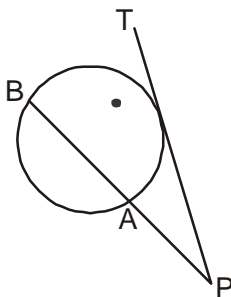

The angle which a chord makes with a tangent at its point of contact is equal to any angle in the alternate segment.
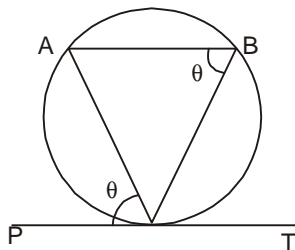
$\angle PTA = \angle ABT$ where AT is the chord and PT the tangent to the circle.

    (iii)   **If PT is a tangent (with P being an external point and T being the point of contact) and PAB is a secant to circle (with A and B as the points where the secant cuts the circle), then $PT^2 = PA \times PB$.**
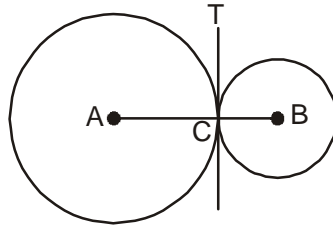

Pairs of Circles

(i) If two circles touch each other, the point of contact of the two circles lies on the straight line through the centres of the circles, ie,. the points *A*, *C*, *B* are collinear.


(ii) In a given pair of circles there are two types of tangents. The direct tangents and the cross (or transverse) tangents. In the figure the direct tangents are AB and CD and EH and GF are the transverse tangents.
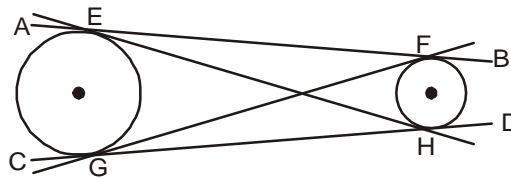
(iii) When two circles of radii r_1 and r_2 have there centres at a distance d, the length of the direct common tangent = where $r = r_1 - r_2$ and the length of transverse tangent = . If the two circles touch, then $d = r_1 + r_2$.

Cyclic Quadrilateral: A quadrilateral whose vertices be on the circumference of a circle is called a cyclic quadrilateral. The opposite angles of a cyclic quadrilateral are supplementary. $\alpha + \beta = 180^0$.
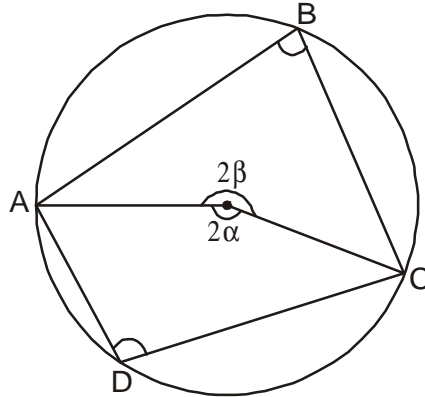
Example 1: An angle $\theta°$ is one-fourth of its supplementary angle. What is the measure of angle $\theta°$?

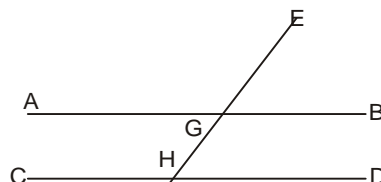**Solution.** If the sum of two angles is 180°, the angles are said to be supplementary.

∴ The supplementary angle of $\theta°$ is (180°− θ').

Given that, $\theta° = (180° - \theta°) \Rightarrow 4\ \theta° = 180° - \theta°$

$5\ \theta° = 180° \Rightarrow \theta° = = 36°$

Example 2: In the given figure *AB* and *CD* are parallel lines. If ∠ *EGB* = 50°, then find ∠ *CHG*.

Solution. $\angle AGH = \angle EGB$ (Vertically opposite angles)

$\angle AGH = 50°$.

Now, $\angle AGH + \angle CHG = 180°$

(Interior angles on the same side of the transversal are supplementary).

$$50° + \angle CHG = 180°$$

$\Rightarrow$ $\angle CHG = 180° - 50° = 130°.$

Example 3: In the figure given find *x*.
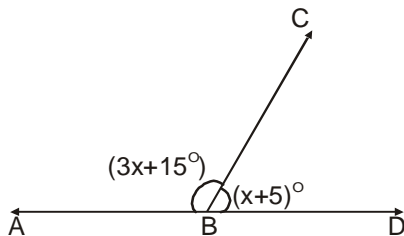
Solution. $\angle ABC + \angle DBC = 180°(3x + 15)° + (x + 5)° = 180°$

$\Rightarrow 4x = 160° = x = 40°$

Example 4: In the following figure *A, B, C, D* are the concyclic points. Find the value of *x*.
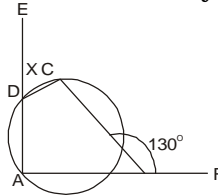
Solution.

$$\angle ABC + \angle CBF = 180°$$

$\therefore$ $\angle ABC = 180° - 130° = 50^0$

Now, in $\angle ABCD, \angle ABC + \angle ADC = 180°$

$\Rightarrow$ $\angle ADC = 180° - 50° = 130°$

Now, $\angle ADC + \angle CDE = 180°$

$\Rightarrow$ $x = 180° - 130° = 50°$

Example 5: Find the value of *x* in the given figure,
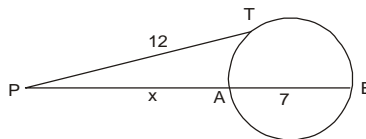
Solution. Since *PT* is a tangent and *PAB* is a secant to the circle

$$PT^2 = PA \cdot PB$$

$$144 = x(x + 7) = x^2 + 7x - 144 = 0$$

$$(x + 16)(x - 9) = 0$$

$\Rightarrow$ $x = 9\ (\therefore\ x = -16\text{ is not possible})$

Example 6: In the give figure, $AD \parallel BC$. Find the value of x
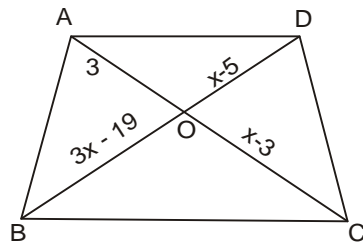
Solution. Here, $AD \parallel BC$,

$$\frac{AO}{OC} = \frac{DO}{OB}$$
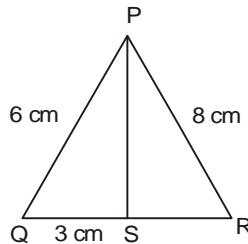
$\Rightarrow \qquad \dfrac{3}{x-3} = \dfrac{x-5}{3x-19}$

$\Rightarrow \qquad 9x - 57 = x^2 - 8x + 15 = x^2 - 17x + 72 = 0$

$\Rightarrow \qquad (x-8)(x-9) = 0$

$\Rightarrow \qquad x = 8, 9$

Example 7: In the figure given $\angle BAC : \angle ABC = 2 : 3$. Find the measure of $\angle ABC$.
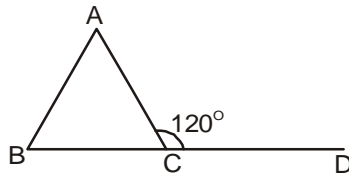
Solution. Let $\angle A = 2x$ and $\angle B = 3x$

Then, $2x + 3x = 120°$ [exterior angle is equal to the sum of the interior opposite angles]

$\Rightarrow 5x = 120°$

$\Rightarrow x = 24°$

$\angle ABC = 3x = 3 \times 24° = 72°$

Example 8: In $\Delta\ PQR$, if $PQ = 6$ cm, $PR = 8$ cm, $QS = 3$ cm and PS is the bisector of $\angle QPR$, then what is the length of QR?

Solution. Since, PS is the angle bisector of $\angle QPR$.

$\dfrac{QS}{SR} = \dfrac{PQ}{PR} \quad \Rightarrow \quad \dfrac{3}{SR} = \dfrac{6}{8}$

$\Rightarrow SR = \left(\dfrac{3 \times 8}{6}\right)$cm $= 4$ cm

$QR = QS + SR = (3 + 4)$ cm $= 7$ cm

Exercise

1.   Find the measure of an angle which is complement of itself.

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     (a) 45°   (b) 36°
     (c) 42°   (d) 35°

2. An angle is equal to five times its supplement. Find its measure.
     (a) 110°   (b) 140°
     (c) 150°   (d) 100°

3. The supplement of an angle is one-fourth of itself. Determine the angle and its supplement.
     (a) 132°, 48°   (b) 156°, 24°
     (c) 118°, 62°   (d) 144°, 36°

4. Two complementary angles differ by 18°, Find the angles.
     (a) 42°, 60°   (b) 36°, 54°
     (c) 24°, 66°   (d) 18°, 72°

5. If two supplementary angles are in the ratio 1 : 5. Find the difference of the angles.
     (a) 64°   (b) 90°
     (c) 36°   (d) 70°

6. In the given figure, find $\angle ADB$
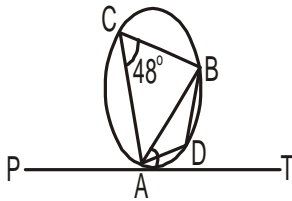
     (a) 132°   (b) 144°
     (c) 48°   (d) 96°

7. In the following figure, find x
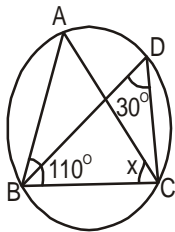
     (a) 40°   (b) 25°
     (c) 30°   (d) 45°

8. In the following figure, it is given that 0 is the centre of the circle and $\angle AOC = 140°$. Find $\angle ABC$
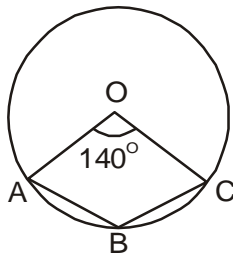
     (a) 110°   (b) 120°
     (c) 115°   (d) 130°

9. Find x in the given figure
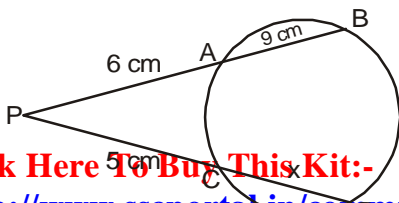
     (a) 13 cm   (b) 12 cm

     (c) 16 cm   (d) 15 cm

10.   In the figure below, $PQ = QS$, $QR = RS$ and $SRQ = 100°$. Find $\angle QPS$
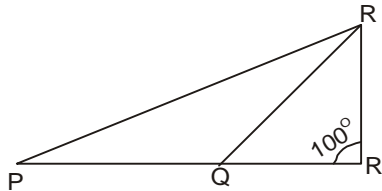
     (a) 20°   (b) 40°

      (c) 15°   (d) 735°

Answers

1. (a)   2. (c)   3. (d)   4. (b)   5. (b)   6. (a) 7. (a) 8. (a) 9. (a) 10. (a)

Section II
Data Interpretation

Table Chart/Tabulation

1.Make sure to look at the *entire* table or graph.

2. Make sure to express your answer in the correct units (Units of the Tables or Graphs).

3. Look at the possible answers before calculating.

4. Don't confuse decimals and percentages. If the units are percentages, then an entry of .2 means .2% which is equal to .002.

5. In inference questions, only the information given can be used. See if the answer makes sense.

The table below gives the height and weight of 11 newborn infants.

Height (inches)	Weight (pounds)
21	10.2
10	3.3
15	5.6
18	9.0
20	11.0
19	8.2
18	9.5
23	12.1
14	5.0
16	5.9

<p style="text-align:center">20   8.9</p>

Q. **What is the difference in weight between the tallest and shortest infants?**

  (a) **13 pounds**   (a) **12.1 pounds**

  (c) **8.8 pounds**   (d) **6.9 pounds**

The correct answer is (c), which is obtained by subtracting 3.3 (the weight of the shortest–10 inches–infant) from 12.1 (the weight of the tallest–23 inches–infant).

Directions: Study the following table carefully and answer the questions given below.

1. **What is the respective ratio of the number of adult females to the total number of female children staying in all the societies together?**

(c)   **82 : 243**   (d) **71 : 112**

2. **What is the total number of female children staying in all the societies together?**

  (a) **314**   (b) **433**

  (c) **410**   (d) **343**

3. **What is the respective ratio of the total number of adult males in societies A and B together to the total number of adult males in societies E and F together?**

  (a) **75 : 79**   (b) **14 : 17**

  (c) **79 : 75**   (d) **17 : 14**

4. **What is the total number of members staying in all the societies together?**

  (a) **3520**   (b) **3360**

  (c) **4100**   (d) **3000**

5. **What is the difference between the number of male children in society B and the number of male children in society F?**

  (a) **84**   (b) **14**

  (c) **96**   (d) **26**

Answers with Explanation

1.   (a) Number of childrens in

Society A $\rightarrow 600 \times \dfrac{25}{100} = 150$

(Total number of Male and Females is 600 in Society A)

Number of female children

$$= 150 \times \dfrac{60}{100} = 90$$

Number of male children $= 150 - 90 = 60$

Society B $\rightarrow 550 \times \dfrac{40}{100} = 220$

(Number of children in Society B)

Number of female children

$= 220 \times \dfrac{25}{100} = 55$

Number of male children $= 220 - 55 = 165$

Society C
$$\rightarrow 575 \times \frac{16}{100} = 92$$

(Number of children in Society C)
Number of female children

$$= 92 \times \frac{75}{100} = 69$$

Number of male children $= 92 - 69 = 23$

Society D
$$\rightarrow 580 \times \frac{25}{100} = 145$$

(Number of children in Society D)
Number of female children

$$= 145 \times \frac{20}{100} = 29$$

Number of male children = 145 – 29 = 116

Society E
$$\rightarrow 430 \times \frac{40}{100} = 172$$

(Number of children in Society E)

Number of female children $= 172 \times \frac{50}{100}$

= 86

Number of male children = 172 – 86 = 86

Society F
$$\rightarrow 625 \times \frac{24}{100} = 150$$

(Number of children in Society F)

Number of female children $= 150 \times \frac{54}{100} = 81$

Number of male children $= 150 - 81 = 69$

Number of adult females $= (350 + 150 + 275 + 300 + 250 + 300) - 410$

$= 1625 - 410 = 1215$

Number of female children = 90 + 55 + 69 + 29 + 86 + 81 = 410

$\therefore$ **Required ratio = 1215 : 410**

= 243 : 82

2. **(c) From question (1)**

Number of all female children = 410

3. **(d) Number of adult males in Societies A and B = (250 – 60) + (400 – 165) = 190 + 235 = 425**

Number of adult males in Societies E and F = (180 – 86) + (325 – 69) = 94 + 256 = 350

Required ratio = 425 : 350 = 17 : 14

4. **(b) Number of all members**

= (250 + 350) + (400 + 150) + (300 + 275) + (280 + 300) + (180 + 250) + (325 + 300) + 150 + 220 + 92 + 145 + 172 + 150 = 4289

5. **(c) Required difference = 165 – 69 = 96**

Exercise

Directions: Study the following table carefully to answer the questions that follow:

Sale (in crores) of Number of Units by Six Different Companies over the Years.

Year / Company	1997	1998	1999	2000	2001	2002
L	107.0	80.0	28.48	38.0	26.5	36.6
M	175.1	76.0	31.38	43.0	27.5	32.8
N	156.6	66.49	43.7	45.2	.19.0	40.12
O	112.4	78.24	56.6	35.1	25.1	25.0
P	95.1	111.8	53.2	48.9	22.5	37.0
Q	192.0	72.18	31.04	42.2	17.0	30.0

1. Number of units sold by Company M in the year 2002 is what percent of the total number of units sold by all the Companies together in that year? (rounded off to two digits after decimal)
   (a) 14.16
   (b) 21.48
   (c) 16.28
   (d) 26.26

2. Which Company has sold the maximum number of units over the years?
   (a) Q
   (b) M
   (c) N
   (d) P

3. Which year is the percentage increase/decrease in number of units sold from the previous year the lowest for Company L?
   (a) 2000
   (b) 2002
   (c) 2001
   (d) 1998

4. What is the approximate average number of units sold in the year 1999?
   (a) 407300000
   (b) 427400000
   (c) 4274000
   (d) 4073000000

5. What is the difference between number of units sold by company O in the year 1997 and the year 2000?
   (a) 7730000000
   (b) 703000000
   (c) 7030000000
   (d) 77300000

Directions: Study the following table carefully to answer the questions that follow:

Number of Boys and Girls in Five Streams of a College Over the Years Streams

Year	Arts		Science		Commerce		Management		IT	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
2002	556	414	619	505	668	612	770	633	670	515

2003	763	608	793	612	781	616	667	439	866	722
2004	672	519	540	516	859	713	778	727	781	619
2005	809	602	928	908	870	811	849	729	977	817
2006	745	510	884	820	967	819	562	938	990	808
2007	698	413	765	616	571	515	1288	1016	1151	1010

6. **What is the total number of boys, for all the streams together, in the year 2004?**
   (a) 4148   (b) 3630
   (c) 4433   (d) 3247

7. **The number of boys in Arts stream in the year 2004 is approximately what percent of the total number of boys for all the years together in Arts stream?**
   (a) 27   (b) 34
   (c) 08   (d) 16

8. **What is the ratio of the total number of boys to the total number of girls, from all the streams together, for the year 2007?**
   (a) 2 : 3   (b) 14 : 13
   (c) 52 : 49   (d) 213 : 170
   (5) None of these

9. **What is the ratio of the total number of boys to the total number of girls, in the Management stream for all the years together?**
   (a) 9 : 8   (b) 71 : 86
   (c) 91 : 83   (d) 27 : 23

10. **What is the average number of Girls from Commerce stream for the given years?**
    (a) 681   (b) 675
    (c) 618   (d) 657

Answers

1. (c) 2. (b) 3. (d) 4. (a) 5. (d) 6. (b) 7. (d) 8. (d) 9. (c) 10. (a)

Section – 4 : English language & Comprehension

Comprehension

Directions (Q.1–11): Read the following passage carefully and answer the questions given below it. Certain words are printed in bold in the passage to help you locate them while answering some of the questions.

What is immediately needed today is the establishment of a Wrold Government or an International Federation of mankind. It is the utmost necessity of the world today, and all those persons who wish to see all human beings happy and prosperous naturally feel it keenly.

Of course, at times we feel that many of the problem of our political, social, linguistic and cultural life would come to an end if there were one Govenment all ovet the world. Travellers, businessmen, seekers of knowledge and teachers of righteousness know very well that great impediments and obstructions are faced

by them when they pass from one country to another, exchange goods, get information, and make an efforts to spread their good gospel among their fellow-men. In the past, religious sects divided one set of people against another, colour of skin or shape of the body set one against the other.

But today when philosophical light has exploded the darkness that was created by religious differences, and when scientific knowledge has flasified the superstitions, they have enabled human beings of all religious views and of all races and colours to come in frequent contact with one another . It is the governments of various countries that keep poeple of one country apart from, those of another. They create artificial barriers, unnatural distinctions, unhealthy isolation, unnecessary fears and dangers in the minds of common men who by their nature want to live in friendship with their fellow-men. But all these evils would cease to exist if there were one Government all over the world.

1. What divides people of a country against another?
   (a) Different religions
   (b) Different language
   (c) Different social and political systems of different people
   (d) Government of various countries

2. What is the urgent heed of the world today?
   (a) The establishment of an international economic order.
   (b) The establishment of a world government.
   (c) The creation of a cultural international social order.
   (d) The raising of an international spiritual army.

3. What will the world Government be expected to do?
   (a) it will arrange for interplanetary contacts
   (b) it will end all wars for all time to come
   (c) it will bring about a moral regeneration of mankind
   (d) it will kill the evil spirit in man

4. Choose the word which is SIMILAR in meaning as the word "righteousness" as used in the passage.
   (a) rectitude   (b) religiosity
   (c) requirement   (d) scrupulousness

5. Which of the following problems has not been mentioned in the passage as likely to be solved with the establishment of world Government?
   (a) Social Problems   (b) Political Problems
   (c) Cultural Problems   (d) Economic Problems

6. Choose the word which is most OPPOSITE in meaning of the word 'implediments' as used in the passage.
   (a) handicaps   (b) furtherance
   (c) providence   (d) hindrances

7. The most appropriate title of the above passage may be ....
   (a) The evils of the world order.
   (b) The man can make his destiny.
   (c) The need of world Government.
   (d) The role of Religion in the Modern Times.

8. What was the factor, according to the passage, that set one man against another?
   (a) Material prosperity of certain people in the midst of grinding poverty.
   (b) Superior physical strength of some persons.
   (c) Colour of skin or shape of the body.
   (d) Some people being educated and other illiterate.

9. The theory of racial superiority stands falsified today by ....
   (a) knowledge derived from scientific advances.
   (b) the ascendancy of people who were here to fore considered of inferior racial stock.
   (c) the achievements of the so called backward countries in every field of life.
   (d) the precedence given to the physical powers of different races.

10. In the part religious sects ....
    (a) united the people with one another.

    (b) Interfered in political affairs.
    (c) did a good job by way of spreading message of love and peace.
    (d) divided one set of people from another.

Directions (Q. 12-18): Read the following passage carefully and answer the question given below it. Certain words are printed in bold to help you to locate them while answering some of the questions.

The window offered a view of the house opposite. The two families did not speak to each other because of a property dispute. One day, Ruchira's textbooks lay untouched as the young girl's gaze was on the happenings in the house opposite. There were two new faces in the neighbouring household – that of an elderly widow and a girls aged sixteen. Some times the elderly lady would sit by the window, doing the young girl's hair. On other days she was absent.

The new young neighbour's daily routine could be seen through the window – she cleaned the rice paddy; split nuts, put the cushions in the sun to air them. In the afternoons while the men were all at world some of the women slept and others played cards. The girl sat on the terrace and read. Sometimes she wrote. One day there was hindrance. She was writing when the elderly woman snatched the unfinished letter from her hands. Thereafter the girl was not to be seen on the terrace. Sometimes during the day sounds came from the house indicating that a massive argument was going on inside.

A few days passed. One evening Ruchira noticed the girl standing on the terrace in tears. The evening prayer was in progress. As she did daily, the girl bowed several times in prayer. Then she went downstairs. That night Ruchira wrote a letter. She went out and posted it that very instant. But as she lay in bed that night, she prayed fervently that her offer of friendship wouldn't reach its destination. Ruchira then left for Madhupur and returned when it was time for college to start. She found the house opposite in darkness, locked. They had left.

When she stepped into her room she found the desk **piled** with letters – one had a local stamp on it with her name and address in unfamiliar handwriting. She quickly read it. They continued to write to each other for the next twenty years.

11.   Why did Ruchira write a letter to her new neighbour?
    (a) She wanted to offer her, her help.
    (b) She wanted to be friends with her.
    (c) To apologize for her family's behaviour towards her family.
    (d) To encourage her to continue learning to read and write.

12.   Which of the following can be said about Ruchira?
    A. She used to spy on her neighbours because she didn't trust them.
    B. She was at home because she was studying.
    C. She did not speak to her neighbours because they did not own property.
    (a) None   (b) Only B
    (c) Both A & B   (d) Only C

13.   How did the new young neighbour spend her days?
    (a) She was busy writing letters to Ruchira.
    (b) She used to daydream about her past experiences.
    (c) She would attend to the needs of the widow.
    (d) She spent her time learning to read and write.

14.   Why was the young neighbour prevented from sitting on the terrace?
    (a) She used to while away her time instead of working
    (b) The old woman could no longer keep an eye on her.
    (c) She had not finished writing the letter she was asked to.
    (d) She had been writing a letter which she wasn't supposed to.

15.   What was the major argument in the house about?
    (a) There were too many people living there, which resulted in arguments.
    (b) The young girl was insisting on attending college.
    (c) The young girl had been wasting her time instead of working.
    (d) The old woman did not guard the young girl closely.

16. Which of the following is TRUE in the context of the passage?
    (a) The young girl was very devout and prayed everyday.
    (b) Only two letters were exchanged between the two girls.
    (c) The new young neighbour was a servant.
    (d) The afternoon was a time to relax for everyone.

17. Why did the young girl wish that the letter would not reach its destination?
    A. She was going away and would not be able to see if her neighbour was glad to receive it.
    B. She was afraid that it would lead to a quarrel between the two families.
    C. She was afraid that her neighbour would be angry when she received her letter.
    (a) None
    (b) Only A
    (c) Only C
    (d) Both B & C

Directions (Q.18-20): Choose the word which is most nearly the SAME in meaning as the world printed in bold as used in the passage.

18. **Hindrance**
    (a) handicapped   (b) delay
    (c) interruption   (d) difficult

19. **Offered**
    (a) forward   (b) willing
    (c) volunteered   (d) provided

20. Choose the word which is most OPPOSITE in meaning of the word **piled** as used in the passage.
    (a) low   (b) empty
    (c) blank   (d) nothing

ANSWERS

1. (d) 2. (d) 3. (c) 4. (a) 5. (d) 6. (b) 7. (c) 8. (c) 9. (a) 10. (d) 11. (b) 12. (b) 13. (d) 14. (d) 15. (c) 16. (a) 17. (b) 18. (c) 19. (d) 20. (b)

Idioms and Phrases

A dog in the manager: A person who prevents others from enjoying something that is useless to him.

A sitting duck: A person or thing that is an easy target to attack.

A Bird in the Hand is Worth Two in the Bush: Having something that is certain is much better than taking a risk for more, because chances are you might lose everything.

A Blessing in Disguise: Something good that isn't recognized at first.

A Chip On Your Shoulder: Being upset for something that happened in the past.

A Dime a Dozen: Anything that is common and easy to get.

A Doubting Thomas: A skeptic who needs physical or personal evidence in order to believe something.

A Drop in the Bucket: A very small part of something big or whole.

A Fool and his Money are Easily Parted: It's easy for a foolish person to lose his/her money.

A House Divided against itself cannot Stand: Everyone involved must unify and function together or it will not work out.

A Leopard Can't Change his Spots: You cannot change who you are.

A Penny Saved is a Penny Earned: By not spending money, you are saving money (little by little).

A Picture Paints a Thousand Words: A visual presentation is far more descriptive than words.

A Piece of Cake: A task that can be accomplished very easily.

A Slap on the Wrist: A very mild punishment.

A Taste of Your Own Medicine: When you are mistreated the same way you mistreat others.

A Toss-Up: A result that is still unclear and can go either way.

Actions Speak Louder Than Words: It's better to actually do something than just talk about it.

Add Fuel to the Fire: Whenever something is done to make a bad situation even worse than it is.

Against the Clock: Rushed and short on time.

All Bark and no Bite: When someone is threatening and/or aggressive but not willing to engage in a fight.

All Greek to me: Meaningless and incomprehensible like someone who cannot read, speak, or understand any of the Greek language would be.

All in the Same Boat: When everyone is facing the same challenges.

An Arm and a Leg: Very expensive. A large amount of money.

An Axe to Grind: To have a dispute with someone.

Apple of My Eye: Someone who is cherished above all others.

As High as a Kite: Anything that is high up in the sky.

At the Drop of a Hat: Willing to do something immediately.

Black and Blue: To beat mercilessly.

Back Seat Driver: People who criticize from the sidelines, much like someone giving unwanted advice from the back seat of a vehicle to the driver.

Back to Square One: Having to start all over again.

Back to the Drawing Board: When an attempt fails and it's time to start all over.

Baker's Dozen: Thirteen.

Barking up the Wrong Tree: A mistake made in something you are trying to achieve.

Beat a Dead Horse: To force an issue that has already ended.

Beating around the Bush: Avoiding the main topic. Not speaking directly about the issue.

Bend Over Backwards: Do whatever it takes to help. Willing to do anything.

Between a Rock and a Hard Place: Stuck between two very bad options.

Bite Off More Than You Can Chew: To take on a task that is way to big.

Bite Your Tongue: To avoid talking.

Blood is Thicker Than Water: The family bond is closer than anything else.

Blue Moon: A rare event or occurrence.

Break a Leg: A superstitious way to say 'good luck' without saying 'good luck', but rather the opposite.

Buy a Lemon: To purchase a vehicle that constantly gives problems or stops runnings after you drive it away.

Close shave: A narrow escape.

Can't Cut the Mustard: Someone who isn't adequate enough to compete or participate.

Cast Iron Stomach: Someone who has no problems, complications or ill effects with eating anything or drinking anything.

Charley Horse: Stiffness in the leg/A leg cramp.

Chew someone out: Verbally scold someone.

Chip on his Shoulder: Angry today about something that occurred in the past.

Chow Down: To eat.

Close but no Cigar: To be very near and almost accomplish a goal, but fall short.

Cock and Bull Story: An unbelievable tale.

Come Hell or High Water: Any difficult situation or obstacle.

Crack Someone Up: To make someone laugh.

Cross Your Fingers: To hope that something happens the way you want it to.

Cry Over Spilt Milk: When you complain about a loss from the past.

Cry Wolf: Intentionally raise a false alarm.

Cup of Joe: A cup of coffee.

Curiosity Killed the Cat: Being Inquisitive can lead you into a dangerous situation.

Cut to the Chase: Leave out all the unnecessary details and just get to the point.

Dark Horse: One who was previously unknown and is now prominent.

Dead Ringer: 100% identical. A duplicate.

Devil's Advocate: Someone who takes a position for the sake of argument without believing in that particular side of the argument. It can also mean one who presents a counter argument for a position they do believe in, to another debater.

Dog Days of Summer: The hottest days of the summer season.

Don't count your chickens before they hatch: Don't rely on it until your sure of it.

Don't Look a Gift Horse in the Mouth: When someone gives you a gift, don't be ungrateful.

Don't Put all Your Eggs in One Basket: Do not put all your resources in one possibility.

Doozy: Something outstanding.

Down to the Wire: Something that ends at the last minute or last few seconds.

Drastic Times Call for Drastic Measures: When your are extremely desperate you need to take extremely desperate actions.

Drink like a fish: To drink very heavily.

Drive someone up the wall: To irritate and/or annoy very much.

Dropping Like Flies: A large number of people either falling ill or dying.

Dry Run: Rehearsal.

Eighty Six: A certain item is no longer available. Or this idiom can also mean, to throw away.

Elvis has left the building: The show has come to an end. It's all over.

Ethnic Cleansing: Killing of a certain ethnic or religious group on a massive scale.

Every Cloud Has a Silver Lining: Be optimistic, even difficult times will lead to better days.

Everything But The Kitchen Sink: Almost everything and anything has been included.

Excuse my French: Please forgive me for cussing.

French Leave: Absence without permission.

Feeding Frenzy: An aggressive attack on someone by a group.

Field Day: An enjoyable day or circumstance.

Finding Your Feet: To become more comfortable in whatever you are doing.

Finger lickin' good: A very tasty food or meal.

Fixed in Your Ways: Not willing or wanting to change from your normal way of doing something.

Flash in the Pan: Something that shows potential or looks promising in the beginning but fails to deliver anything in the end.

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Flea Market: A swap meet. A place where people gather to buy and sell inexpensive goods.

Flesh and Blood: This idiom can mean living material of which people are made of, or it can refer to someone's family.

Flip the Bird: To raise your middle finger at someone.

Foam at the Mouth: To be enraged and show it.

Fools' Gold: Iron pyrites, a worthless rock that resembles real gold.

French Kiss: An open mouth kiss where tongues touch.

From Rags to Riches: To go from being very poor to being very wealthy.

Fuddy-duddy: An old-fashioned and foolish type of person.

Full Monty: This idiom can mean either, "the whole thing" or "completely nude."

Funny Farm: A mental institutional facility.

Get Down to Brass Tacks: To become serious about something.

Get Over it: To move beyond something that is bothering you.

Get Up on the Wrong Side of the Bed: Someone who is having a horrible day.

Get Your Walking Papers: Get fired from a job.

Give him the Slip: To get away from. To escape.

Go Down Like a Lead Ballon: To be received badly by an audience.

Go for Broke: To gamble everything you have.

Go Out on a Limb: Put yourself in a tough position in order to support someone/something.

Go the Extra Mile: Going above and beyond whatever is required for the task at hand.

Good Samaritan: Someone who helps others when they are in need, with no discussion for compensation, and no thought of a reward.

Graveyard Shift: Working hours from about 12:00 am to 8:00 am. The time of the day when most other people are sleeping.

Great Minds Think Alike: Intelligent people think like each other.

Green Room: The waiting room, especially for those who are about to go on a tv or radio show.

Gut Feeling: A personal intuition you get, especially when feel something may not be right.

Haste Makes Waste: Quickly doing things results in a poor ending.

Hat Trick: When one player scores three goals in the same hockey game. This idiom can also mean three scores in any other sport, such as 3 homeruns, 3 touchdowns, 3 soccer goals, etc.

Have an Axe to Grind: To have a dispute with someone.

He Lost His Head: Angry and overcome by emotions.

Head Over Heels: Very excited and/or joyful, especially when in love.

Hell in a Handbasket: Deteriorating and headed for complete disaster.

High Five: Slapping palms above each others heads as celebration gesture.

High on the Hog: Living in Luxury.

Hit the Books: To study, especially for a test or exam.

Hit the Hay: Go to bed or go to sleep.

Hit the Nail on the Head: Do something exactly right or say something exactly right.

Hit the Sack: Go to bed or go to sleep.

Hocus Pocus: In general, a term used in magic or trickery.

Hold Your Horses: Be patient.

Icing on the Cake: When you already have it good and get something on top of what you already have.

Idle Hands are the Devil's Tools: You are more likely to get in trouble if you have nothing to do.

If it's not one Thing, it's another: When one thing goes wrong, then another, and another...

In Like Flynn: To be easily successful, especially when sexual or romantic.

In the Bag: To have something secured.

In the Buff: Nude.

In the Heat of the Moment: Overwhelmed by what is happening in the moment.

In Your Face: An aggressive and bold confrontation.

It Takes Two to Tango: A two person conflict where both people are at fault.

It's a Small World: You frequently see the same people in different places.

Its Anyone's Call: A competition where the outcome is difficult to judge or predict.

Ivy League: Since 1954 the Ivy League has been the following universities: Columbia, Brown, Cornell, Dartmouth, Yale, Pennsylvania, Princeton, and Harvard.

Jaywalk: Crossing the street (from the middle) without using the crosswalk.

Joshing Me: Tricking me.

Keep an Eye on Him: You should carefully watch him.

Keep body and soul together: To earn a sufficient amount of money in order to keep yourself alive.

Keep your chin up: To remain joyful in a tough situation.

Kick the Bucket: Die.

Kitty-corner: Diagonally across. Sometimes called Catty-Corner as well.

Knee Jerk Reaction: A quick and automatic response.

Knock on Wood: Knuckle tapping on wood in order to avoid some bad luck.

Know the Ropes: To understand the details.

Last but not least: An introduction phrase to let the audience know that the last person mentioned is no less important than those introduced before him/her.

Lend Me Your Ear: To politely ask for someone's full attention.

Let Bygones be Bygones: To forget about a disagreement or argument.

Let Sleeping Dogs Lie: To avoid restarting a conflict.

Let the Cat out of the Bag: To share a secret that wasn't suppose to be shared.

Level playing field: A fair competition where no side has an advantage.

Like a chicken with its head cut off: To act in a frenzied manner.

Liquor someone up: To get someone drunk.

Long in the Tooth: Old people (or horses).

Loose Cannon: Someone who is unpredictable and can cause damage if not kept in check.

Make no Bones About: To state a fact so there are no doubts or objections.

Method to My Madness: Strange or crazy actions that appear meaningless but in the end are done for a good reason.

Mumbo Jumbo: Nonsense or meaningless speech.

Mum's the word: To keep quiet. To say nothing.

Nest Egg: Savings set aside for future use.

Never Bite the Hand that Feeds You: Don't hurt anyone that helps you.

New kid on the block: Someone new to the group or area.

New York Minute: A minute that seems to go by quickly, especially in a fast paced environment.

No Dice: To not agree. To not accept a proposition.

No Room to Swing a Cat: An unusually small or confined space.

Not Playing with a Full Deck: Someone who lacks intelligence.

Off on the Wrong Foot: Getting a bad start on a relationship or task.

Off the Hook: No longer have to deal with a tough situation.

Off the Record: Something said in confidence that the one speaking doesn't want attributed to him/her.

On Pins and Needles: Anxious or nervous, especially in anticipation of something.

On the Fence: Undecided.

On the Same Page: When multiple people all agree on the same thing.

Out of the Blue: Something that suddenly and unexpectedly occurs.

Out on a Limb: When someone puts themself in a risky situation.

Out on the Town: To enjoy yourself by going out.

Over my Dead Body: When you absolutely will not allow something to happen.

Over the Top: Very excessive.

Pass the Buck: Avoid responsibility by giving it to someone else.

Pedal to the metal: To go full speed, especially while driving a vehicle.

Peeping Tom: Someone who observes people in the nude or sexually active people, mainly for his own gratification.

Pick up your ears: To listen very carefully.

Pig in a Poke: A deal that is made without first examining it.

Pig out: To eat alot and eat it quickly.

Pipe Down: To shut-up or be quiet.

Practice Makes Perfect: By constantly practicing, you will become better.

Pull the plug: To stop something. To bring something to an end.

Pulling Your Leg: Tricking someone as a joke.

Put a sock in it: To tell noisy person or a group to be quiet.

Queer the pitch: Destroy or ruin a plan.

Raincheck: An offer or deal that is declined right now but willing to accept later.

Raining Cats and Dogs: A very loud and noisy rain storm.

Ring Fencing: Separated usual judgement to guarantee protection, especially project funds.

Rise and Shine: Time to get out of bed and get ready for work/school.

Rome was not Built in one Day: If you want something to be completely properly, then its going to take time.

Rule of Thumb: A rough estimate.

Run out of steam: To be completely out of energy.

Saved by the Bell: Saved at the last possible moment.

Scapegoat: Someone else who takes the blame.

Scot-free: To escape and not have to pay.

Sick as a Dog: To be very sick (with the flu or a cold).

Sitting Shotgun: Riding in the front passenger seat of a car.

Sixth Sense: A paranormal sense that allows you to communicate with the dead.

Skid Row: The rundown area of a city where the homeless and drug users live.

Smell a Rat: To detect someone in the group is betraying the others.

Smell Something Fishy: Detecting that something isn't right and there might be a reason for it.

Son of a Gun: A scamp.

Southpaw: Someone who is left-handed.

Spitting Image: The exact likeness or kind.

Start from Scratch: To do it all over again from the beginning.

The Ball is in Your Court: It is your decision this time.

The Best of Both Worlds: There are two choices and you have them both.

The Bigger they are the Harder they Fall: While the bigger and stronger opponent might be alot more difficult to beat, when you do they suffer a much bigger loss.

The Last Straw: When one small burden after another creates an unbearable situation, the last straw is the last small burden that one can take.

The Whole Nine Yards: Everything. All of it.

Third times a charm: After no success the first two times, the third try is a lucky one.

Tie the knot: To get married.

Till the cows come home: A long time.

To Make a Long Story Short: Something someone would say during a long and boring story in order to keep his/her audience from losing attention. Usually the story isn't shortened.

To Steal Someone's Thunder: To take the credit for something someone else did.

Tongue and Cheek: Humour, not to be taken serious.

Turn a Blind Eye: Refuse to acknowledge something you know is real or legit.

Twenty three skidoo: To be turned away.

Under the weather: Feeling ill or sick.

Up a blind alley: Going down a course of action that leads to a bad outcome.

Use Your Loaf: Use your head. Think smart.

Van Gogh's ear for music: Tone deaf.

Variety is the Spice of Life: The more experiences you try the more exciting life can be.

Wag the Dog: A diversion away from something of greater importance.

Water Under the Bridge: Anything from the past that isn't significant or important anymore.

Wear Your Heart on Your Sleeve: To openly and freely express your emotions.

When it Rains, it Pours: Since it rarely rains, when it does it will be a huge storm.

When Pigs Fly: Something that will never ever happen.

Wild and Woolly: Uncultured and without laws.

Wine and Dine: When somebody is treated to an expensive meal.

Without a Doubt: For certain.

X marks the spot: A phrase that is said when someone finds something he/she has been looking for.

You are What You Eat: In order to stay healthy you must eat healthy foods.

You can't Judge a Book by its Cover: Decisions shouldn't be made primarily on appearance.

You can't Take it With You: Enjoy what you have and not what you don't have, since when you die you cannot take things (such as money) with you.

Your Guess is as Good as Mine: I have no idea.

Zero Tolerance: No crime or law breaking big or small will be overlooked.

EXERCISE

Directions (Q. No. 1-30): Select the meaning of the bold Idiom or phrase from the given alternatives.

1. In the organised society of today no individual or nation can **plough a lonely furrow**.
    - (a) remain unaffected
    - (b) do without the help of others
    - (c) survive in isolation
    - (d) remain non-aligned

2. **To flog a dead horse**
    - (a) to do interesting things
    - (b) to try to take work from a weak horse
    - (c) to beat a horse that is dead
    - (d) to revive interest in a subject which is out of date

3. **To bait the hook to suit the fish**
    - (a) to look at things from other person's point of veiw
    - (b) to catch fish by providing suitable food
    - (c) to do things to please others
    - (d) to prepare a box to pack the fish

4. **Bed of roses**
    - (a) very soft bed
    - (b) dull life
    - (c) belong to
    - (d) full of joys

5. **Black and blue**
    - (a) painting
    - (b) severely
    - (c) together
    - (d) intermix

6. **Smell a rat**
    - (a) to act unfairly
    - (b) to talk boastfully
    - (c) to have reason to suspect
    - (d) to discourage

7. **Under duress**
    - (a) under compulsion
    - (b) willingly
    - (c) to elicit information
    - (d) to demand

8. **In the throes of**
    - (a) out of the grip
    - (b) in the grip of
    - (c) uncontrolled
    - (d) in the power of

9. There followed **an awkward silence** after Salim declared his love to her.
    - (a) Uncomfortable silence
    - (b) Embarrassing silence

    (c)   **Clumsy silence**

    (d)   **A period of embarrassment**

10. Looking at them now, who can imagine that they were a couple of **babes in the wood in school!**

    (a)   **Children or babies in the forest**

    (b)   **Babies made of wood**

    (c)   **Babies lost in the wood**

    (d)   **Innocent and inexperienced people**

11. The ship was about to **weigh anchor** when the storm came.

    (a)   **Weigh the anchor**

    (b)   **Leave the docking berth**

    (c)   **Raise the anchor as a preparation to sail again**

    (d)   **Drop the anchor**

12. I did not know that he was **pulling my leg** all the time.

    (a)   **complimenting me**

    (b)   **defaming me**

    (c)   **degrading me**

    (d)   **befooling me**

13. Only the cowards **hit below the belt.**

    (a)   **give a crippling blow**

    (b)   **hit in the thighs**

    (c)   **act unfairly**

    (d)   **act brutally**

14. **Sow the wind and reap the whirlwind**

    (a)   **A good done to others does not go unnoticed**

    (b)   **Do or say a thing which may bring severe punishment**

    (c)   **Prevention is better than cure**

    (d)   **See no evil and do no evil**

15. Anurag has made a **laughing stock** of the braggart:

    (a)   **Foolish**

    (b)   **Laugh**

    (c)   **Laughing store-house**

    (d)   **Look ridiculous**

ANSWERS

1. (b) 2. (d) 3. (a) 4. (d) 5. (b) 6. (c) 7. (a) 8. (b) 9. (b) 10. (d) 11. (c) 12. (d) 13. (c) 14. (b) 15. (d)

ONE WORD SUBSTITUTION

A person who is out to destroy all government and order	Anarchist
Government by the people	Democracy
The whole mass of air surrounding the earth	Atmosphere
One who is not sure of the existence of God	Agnostic
A medicine which prevents infection by killing germs	Antiseptic
One who does something not professionally but for pleasure	Amateur
A statement open to more than one interpretation	Ambiguous
One who makes an official examination of accounts	Auditor
Marrying more than one wife or more than one husband at a time	Polygamy
The science that studies plants	Botany

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The science which studies natural processes of living things	Biology
People working together in the same office or department	Colleagues
The state of remaining unmarried	Celibacy
The action of bringing into completion	Consummation
To give one's authority to another	Delegate
Study of the relation of living things to environment	Ecology
The action of looking within or into one's own mind	Introspection
One incapable of being tired	Indefatigable
A letter, poem, etc. whose auther is unknown	Anonymous
Work for which no salary is paid	Honorary
One who looks at the bright side of things	Optimist
One who cannot read or write	Illiterate
A game or battle in which neither party wins	Draw
Holding established opinions	Orthodox
Hater of women	Misogynist
The study of the origin and physical and cultural development of manking	Anthropology
The science which studies the crust of the earth	Geology
The science which studies animals	Zoology
Happening at one and the same time	Simultaneous
Murder or murderer of oneself	Suicide
Lasting only for a very short while	Temporary
Capable of being seen through	Transparent
The first speech delivered by a person	Maiden
The art practised by statesmen and ambassadors	Diplomacy
One who walks on foot	Pedestrian
One who lives on others	Parasite
One who speaks for others	Spokesperson
One who spends very little	Miser
One who prossesses several talents or gifts	Versatile
One who eats vegatables only	Vegetarian
A thing that is fit to be eaten	Edible
A statement absolutely clear	Explicit
A widespread disease affecting many people at the same time	Epidemic
A trade that is prohibited by law	Gala day
A desire that cannot be represed	Illicit
A method that cannot be imitated	Irrespressible
Remarks which do not really apply to the subject under discussion	Inimitable
A story that can hardly be believed	Incredible
A comparison that is out of place	Inapt
That which cannot be satisfied	Insatiable
A remedy which never fails	Infallible
A thing that cannot be seen with human eyes	Invisible
One who is very easily made angry	Irritable

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An ordinary and common place remark	Platitude
A sum paid to a man for a piece of work	Remuneration
The act of violating the sanctity or destroying the property of a sacred place	Sacrilege
To make up one's mind and change it quickly	Vacillate
A person with a long experience of any occupation	Veteran
A place where clothes are kept	Wardrobe
A state of complete continence on the part of a woman	Virginity
A man who has too much enthusiasm for his own religion and hates other religions	Fanatic
One who makes calculations connected with insurance	Actuary
A country, etc. which is very distant	Remote
To send out of one's native country	Exile
A person chosen by parties who have a controversy to settle their differences	Mediator
Notice of death, especially in a newspaper	Obituary
Opinion contrary to accepted doctrines	Heresy
Great clapping and cheering	Applause
Exclusive possession of the trade in some commodity	Monopoly
Sole right to make and sell some invention	Patent

EXERCISE

Directions: In each of these questions, out of the four lternatives, choose the one which can be substituted for the given sentence, group of words or clauses.

1. Parts of a country behind the coast or a river's banks**.**
    (a) Swamps   (b) Archipelago
    (c) Hinterland
    (d) Isthmus

2. A lower-area storm with high winds rotating about a centre of low atmospheric pressure
    (a) Cyclone   (b) Tornado
    (c) Typhoon   (d) Hurricane

3. One who promotes the idea of absence of government of any kind, when every man should be a law unto himself
    (a) Anarchist   (b) Belligerent
    (c) Iconoclast   (d) Agnostic

4. Something which is not through or profound
    (a) Superficial   (b) Superstitious
    (c) Superfluous   (d) Supernatural

5. Indifference to pleasure or pain
    (a) Docility
    (b) Stoicism
    (c) Patience
    (d) Reticence

6. Present opposing arguments or evidence
    (a) Rebut   (b) Quiet
    (c) Rebuff   (d) Reprimand

7. One filled with excessive and mistaken enthusism in cause
    (a) Martyr   (b) Pedant
    (c) Fanatic   (d)   Patriot

8. Animals living on land and in water

     (a) Ambiguous   (b) Amphibian
     (c) Amorphous   (d) Ambivalent

9. A light sailing boat built especially for racing
     (a) Dinghy   (b) Canoe
     (c) Yacht   (d) Frigate

10. Be the embodiment or perfect example of
     (a) Signify   (b) Characterise
     (c) Personify   (d) Masquerade

11. A house for storing grains
     (a) Cellar   (b) Store
     (c) Godown   (d) Granary

12. A name adopted by an author in his writings
     (a) Title   (b) Nomenclature
     (c) Nickname   (d) Pseudonym

13. Through which light cannot pass
     (a) Dull   (b) Dark
     (c) Obscure   (d) Opaque

14. Stealing from the writings of others
     (a) Copyright   (b) Reframing
     (c) Reproducing   (d) Plagiarism

15. A short stay at a place
     (a) Halt   (b) Interlude
     (c) Intermission   (d) Sojourn

16. Constant effort to achieve something
     (a) Perseverance   (b) Attempt
     (c) Enthusiasm   (d) Vigour

17. A person not sure of the existence of God
     (a) Theist   (b) Atheist
     (c) Agnostic   (d) Cynic

18. Design made by putting together coloured pieces of glass or stones
     (a) Oleograph   (b) Mosaic
     (c) Tracery   (d) Relief

19. A person who travels to a sacred place as an act of religious devotion
     (a) Hermit   (b) Pilgrim
     (c) Saint   (d) Merchant

20. Food which agrees with one's taste
     (a) Pungent   (b) Palatable
     (c) Sensuous   (d) Edible

21. One who loves books
     (a) Bibliophobe   (b) Bibliographer
     (c) Bibliophile   (d) Bibliophagist

22. To mediate between two parties in a dispute
     (a) Interfere   (b) Interact
     (c) Interrupt   (d) Intercede

23. The branch of medical science which deals with the problems of the old
     (a) Oncology   (b) Geriatrics
     (c) Obstetrics   (d) Endocrinology

24. One who specialises in the study of birds
     (a) Biologist   (b) Naturalist
     (c) Zoologist   (d) Ornithologist

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25. A person pretending to be somebody he is not
    (a) Imposter   (b) Liar
    (c) Rogue   (d) Magician

Answers

1. (c)   **2. (a)**   **3. (a)**   **4. (a)**   **5. (b)**   **6. (a)**   **7. (c)**   **8. (b)**   **9. (c)**   **10. (c)** **11. (d)** **12. (d)** **13. (d)**
14. (d) **15. (d)** **16. (c)** **17. (c)** **18. (b)** **19. (b)** **20. (b)** **21. (c)**   **22. (d)** **23. (b)** **24. (d)** **25. (a)**