



Aakash

Medical | IIT-JEE | Foundations

(Divisions of Aakash Educational Services Limited)

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Answers & Solutions *for* NTSE (Stage-I) 2018-19

INSTRUCTIONS TO CANDIDATES

1. Use blue/black ball point pen only. There is no negative marking.
2. All the questions are compulsory. This test booklet contains 200 questions (Paper-I : 100 & Paper-II : 100) of one mark each.
3. Paper-I : MAT : 1 - 100 questions
Paper-II : SAT : 1 - 100 questions
4. Answer each question by darkening the one correct alternative among the four choices on the OMR Sheet with blue/black ball point pen.
5. Students are not allowed to scratch/alter/change out an answer once marked on OMR Sheet, by using white fluid/eraser/blade/tearing/wearing or in any other form.
6. Separate sheet has been provided for rough work in this test booklet.
7. Please handover the OMR sheet to the invigilator before leaving the Examination Hall.
8. Darken completely the ovals of your answers on OMR Sheet in the time limit allotted for that particular paper.
9. Your OMR Sheet will be evaluated through electronic scanning process. Incomplete and incorrect entries may render your OMR sheet invalid.
10. Use of electronic gadgets, calculator, mobile etc., is strictly prohibited.

14. $7 = 5 \times 16 - 19$

- (1) $\div = +$ (2) $\times = +$
(3) $- = +$ (4) $+ = -$

Answer (2)

15. $11 \times 7 - 23 = 5$

- (1) $- = \times$ (2) $+ = -$
(3) $\div = -$ (4) $\times \div =$

Answer (2)

16. $12 = 3 \div 19 + 4$

- (1) $+ = -$ (2) $\div = -$
(3) $\times = -$ (4) $\times \div =$

Answer (1)

17. $11 \times 7 \div 13 = 5$

- (1) $+ = +$ (2) $\div + =$
(3) $\times = -$ (4) $- = +$

Answer (1)

18. $2 - 7 \div 5 = 19$

- (1) $+ = +$ (2) $\times + =$
(3) $- + =$ (4) $\div = -$

Answer (2)

19. $2 = 11 \div 3 \times 19$

- (1) $- = \times$ (2) $\div = \div$
(3) $= + -$ (4) $\times = +$

Answer (4)

20. $3 + 5 - 2 = 13$

- (1) $\times = +$ (2) $- = \times$
(3) $+ = -$ (4) $\div = -$

Answer (1)

Direction: In Question nos. 21 to 30:

In the number series given below, one number is missing. Each series is followed by four alternatives (1), (2), (3) and (4). One of them is the right answer. Identify and indicate it as per the "Instructions".

21. 8, 24, 12, 36, 18, 54,

- (1) 72 (2) 68
(3) 108 (4) 27

Answer (4)

Sol. $\frac{8}{\times 3} \frac{24}{\div 2} \frac{12}{\times 3} \frac{36}{\div 2} \frac{18}{\times 3} \frac{54}{\div 2} \frac{27}{\div 2}$

22. 7, 10, 8, 11, 9, 12,

- (1) 16 (2) 14
(3) 13 (4) 10

Answer (4)

Sol. $\frac{7}{+3} \frac{10}{-2} \frac{8}{+3} \frac{11}{-2} \frac{9}{+3} \frac{12}{-2} \frac{10}{-2}$

23. 3, 7, 6, 5, 9, 3, 12, 1, 15,

- (1) -3 (2) 18
(3) -1 (4) 13

Answer (3)

Sol. $\frac{3}{+3} \frac{7}{+3} \frac{6}{-2} \frac{5}{+3} \frac{9}{+3} \frac{3}{-2} \frac{12}{+3} \frac{1}{-2} \frac{15}{+3} \frac{-1}{-2}$

24. 77, 91, 105, 119, 133, 161,

- (1) 189 (2) 203
(3) 175 (4) 193

Answer (No Key)

25. 888, 440, 216, 104, 48,

- (1) 26 (2) 28
(3) 24 (4) 20

Answer (4)

Sol. $\frac{888}{\times 2+8} \frac{440}{\times 2+8} \frac{216}{\times 2+8} \frac{104}{\times 2+8} \frac{48}{\times 2+8} \frac{20}{\times 2+8}$

26. 4, 9, 19, 39, 79,

- (1) 139 (2) 159
(3) 119 (4) 169

Answer (2)

Sol. $\frac{4}{\times 5} \frac{9}{\times 10} \frac{19}{\times 20} \frac{39}{\times 40} \frac{79}{\times 80} \frac{159}{\times 20}$

27. 11, 23, 48, 99,, 409

- (1) 205 (2) 200
(3) 202 (4) 201

Answer (3)

Sol. $\frac{11}{\times 2+1} \frac{23}{\times 2+2} \frac{48}{\times 2+3} \frac{99}{\times 2+4} \frac{202}{\times 2+5} \frac{409}{\times 2+5}$

28. 10, 26, 74, 218, 650,

- (1) 1946 (2) 1950
(3) 1956 (4) 1942

Answer (1)

Sol. $\frac{10}{\times 3-4} \frac{26}{\times 3-4} \frac{74}{\times 3-4} \frac{218}{\times 3-4} \frac{650}{\times 3-4} \frac{1946}{\times 3-4}$

29. 0, 7, 26, 63, 124, 215,

- (1) 295 (2) 323
(3) 305 (4) 342

Answer (4)

Sol. $\begin{matrix} 0 & 7 & 26 & 63 & 124 & 215 & 342 \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ (1^2-1) & (2^2-1) & (3^2-1) & (4^2-1) & (5^2-1) & (6^2-1) & (7^2-1) \end{matrix}$

30. 0, 3, 8, 15, 24,

- (1) 35 (2) 39
(3) 27 (4) 32

Answer (1)

Sol. $\begin{matrix} 0 & 3 & 8 & 15 & 24 & \textcircled{35} \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ (1^2-1) & (2^2-1) & (3^2-1) & (4^2-1) & (5^2-1) & (6^2-1) \end{matrix}$

Direction: In Question nos. 31 to 35:

Some letters are given in Column I and some digits are given in Column II. Each digit of Column II represents any letter of Column I. Study the columns and write the alternative letter after choosing the correct alternative against the corresponding question.

Column - I

GCUHV
CKXJD
UDVGH
DYK VX
HXGJY
CGUDV
HGKDY
UDCKG
KYDXC
GXHJD

Column - II

56372
95084
37862
18394
06291
25738
14628
42587
19485
62890

31. The code for Y is

- (1) 1 (2) 8
(3) 3 (4) 7

Answer (1)

32. The code for C is

- (1) 3 (2) 5
(3) 6 (4) 2

Answer (2)

33. The code for D is

- (1) 3 (2) 8
(3) 0 (4) 7

Answer (2)

34. The code for G is

- (1) 8 (2) 6
(3) 2 (4) 4

Answer (3)

35. The code for J is

- (1) 3 (2) 2
(3) 0 (4) 4

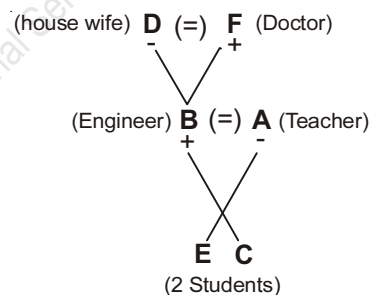
Answer (3)

Direction: In Question nos. 36 to 40:

Read the following and answer the questions given below :

There are six persons in the family of Mr. Murty

- They are A, B, C, D, E and F.
- There are two married couples.
- B is an engineer and the father of E.
- F is the paternal grandfather of C and is a doctor.
- D is the paternal grandmother of E and is a housewife.
- There is one engineer, one doctor, one teacher, one housewife and two students in the family.



36. Who among the following members are the males?

- (1) B, F and D (2) B and F
(3) F and D (4) B, F and A

Answer (2)

37. Who is the husband of A ?

- (1) B (2) E
(3) F (4) C

Answer (1)

38. What is A's profession ?

- (1) Student
(2) Teacher
(3) Housewife or teacher
(4) Housewife

Answer (2)

39. Who is the sister of E ?

- (1) A (2) D
(3) Data inadequate (4) C

Answer (3)

40. Which of the following are the two married couples?

- (1) ED and CF
(2) FD and BA
(3) FD and CA
(4) FD and BE

Answer (2)

Direction: In Question nos. 41 to 50:

41.

32	35	39
42	46	51
3	8	?

- (1) 90 (2) 60
(3) 11 (4) 14

Answer (4)

Sol. $32 + 39 = 71 \longrightarrow 71 - 1 = \frac{70}{2} = 35$

$3 + 14 = 17 \longrightarrow 17 - 1 = \frac{16}{2} = 8$

42.

?	2
108	3
18	6

- (1) 216 (2) 1944
(3) 1 (4) 36

Answer (2)

Sol. $2 \times 3 = 6, 3 \times 6 \longrightarrow 18,$

$18 \times 108 \longrightarrow 1944$

43.

5	$\frac{3}{2}$	4	6	$\frac{4}{3}$	8	$\frac{6}{5}$	7
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- (1) 28 (2) 24
(3) 26 (4) 22

Answer (3)

Sol. $5 + 3 + 4 + 2 = 14; 8 + 6 + 7 + 5 = 26$

44.

$\frac{4}{7}$	$\frac{1}{1}$	$\frac{2}{8}$
$\frac{12}{9}$	$\frac{4}{4}$	$\frac{?}{5}$

- (1) 9 (2) 8
(3) 5 (4) 11

Answer (4)

Sol. $7 + 9 = 16 \longrightarrow 16 - 4 = 12$

$8 + 5 = 13 \longrightarrow 13 - 2 = 11$

45.

$\frac{5}{4}$	$\frac{3}{6}$	$\frac{7}{5}$	$\frac{5}{6}$	$\frac{6}{5}$	$\frac{29}{4}$
---------------	---------------	---------------	---------------	---------------	----------------

- (1) 47
(2) 37
(3) 25
(4) 41

Answer (4)

Sol. $5 \times 3 = 15 \longrightarrow 15 + 4 = 19$

$6 \times 4 = 24 \longrightarrow 24 + 5 = 29$

$7 \times 5 = 35 \longrightarrow 35 + 6 = 41$

46.

16	49
?	9
3	8
7	4

- (1) 56 (2) 64
(3) 49 (4) 96

Answer (2)

Sol. 64 Answer

47.

$\frac{4}{1}$	$\frac{3}{2}$	$\frac{4}{2}$
8	12	?
2	1	2

- (1) 28 (2) 30
(3) 26 (4) 32

Answer (4)

Sol. $1^2 \times 4 \times 2 = 8$

$2^2 \times 3 \times 1 = 12$

$2^2 \times 4 \times 2 = 32$

48.

$\frac{3}{5}$	$\frac{5}{4}$	$\frac{?}{1}$
24	30	42
3	2	2

- (1) 13 (2) 16
(3) 15 (4) 14

Answer (4)

$5 + 3 = 8$

$1 + 2 = 3$

Sol. $8 \times 3 = 24$

$3 \times 14 = 42$

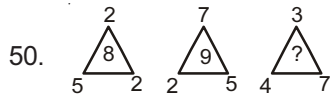
49.

$\frac{8}{7}$	$\frac{9}{8}$	$\frac{7}{6}$
2	2	?
6	7	5

- (1) 3 (2) 2
(3) 6 (4) 8

Answer (2)

Sol. $7 - 5 = 8 - 6 = 2, 6 - 4 = 7 - 5 = 2$



- (1) 7 (2) 8
(3) 5 (4) 6

Answer (3)

Sol. $5 \times 2 = 10 \longrightarrow 10 - 2 = 8$

$4 \times 3 = 12 \longrightarrow 12 - 7 = 5$

Direction: In Question nos. 51 to 60

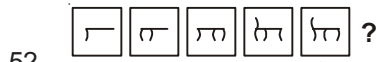
Each of the following questions consists of the five figures marked A, B, C, D and E called the problem figures followed by four alternatives marked 1, 2, 3 and 4 called the answer figures. Select a figure which will continue the same series established by the five problem figures:



- (A) (B) (C) (D) (E)

- (1) (2)
(3) (4)

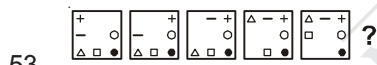
Answer (4)



- (A) (B) (C) (D) (E)

- (1) (2)
(3) (4)

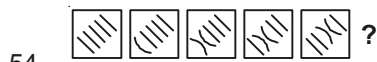
Answer (3)



- (A) (B) (C) (D) (E)

- (1) (2)
(3) (4)

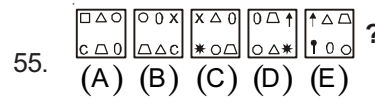
Answer (2)



- (A) (B) (C) (D) (E)

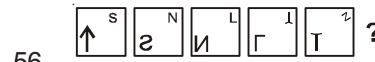
- (1) (2)
(3) (4)

Answer (3)



- (1) (2)
(3) (4)

Answer (2)



- (1) (2)
(3) (4)

Answer (3)



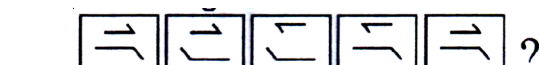
- (1) (2)
(3) (4)

Answer (3)



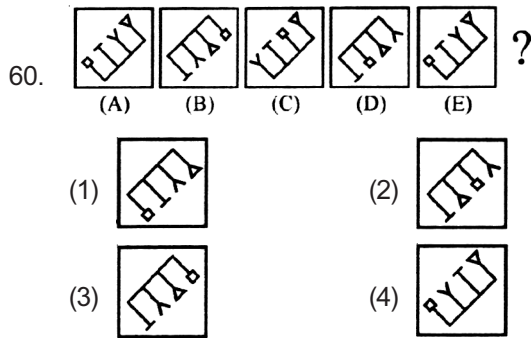
- (1) (2)
(3) (4)

Answer (2)



- (1) (2)
(3) (4)

Answer (1)



Answer (3)

Direction: In question nos. 61 to 65:

Some letters are given in Column I and some digits are given in Column II. Each digit of column II represents any letter of Column I. Study the columns and write the alternative letter after choosing the correctly alternative against the corresponding question.

Column - I	Column - II
ABLMS	90418
QRLBA	63109
LRNPQ	37261
MSPTQ	87354
RABLS	04961
PLQST	51437
PTQAB	79350
ATRNP	62705
QPNAR	62703
TSLBA	49150

61. The code for M is

- (1) 1
- (2) 6
- (3) 0
- (4) 8

Answer (4)

62. The code for P is

- (1) 7
- (2) 9
- (3) 3
- (4) 4

Answer (1)

63. The code for S is

- (1) 2
- (2) 9
- (3) 4
- (4) 3

Answer (3)

64. The code for B is

- (1) 4
- (2) 9
- (3) 6
- (4) 1

Answer (2)

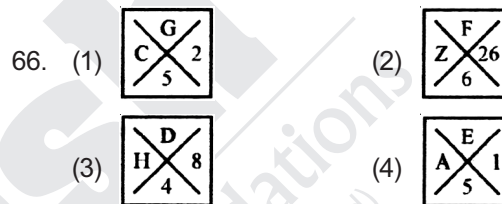
65. The code for Q is

- (1) 3
- (2) 7
- (3) 5
- (4) 4

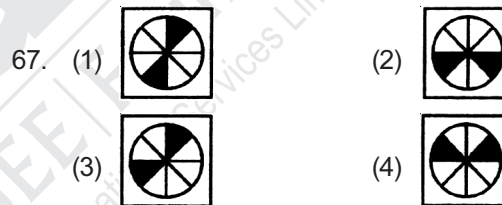
Answer (1)

Direction: In question nos. 66 to 75:

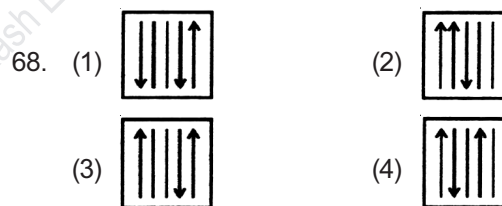
Out of the four figures (1), (2), (3), (4) given in each question, three are similar in a certain way. Choose the figure which is different from the other figures.



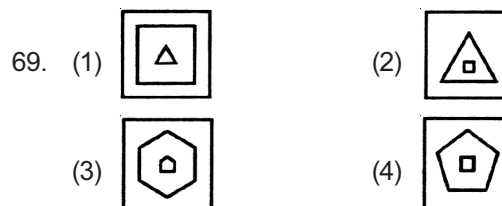
Answer (1)



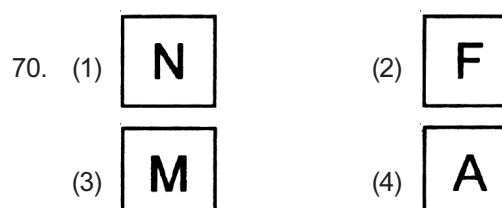
Answer (1)



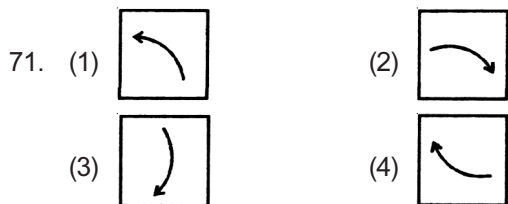
Answer (2)



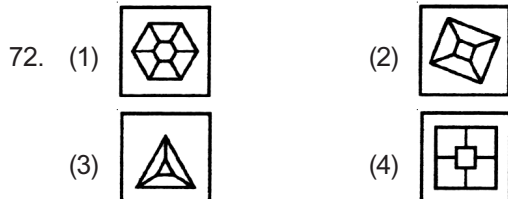
Answer (2)



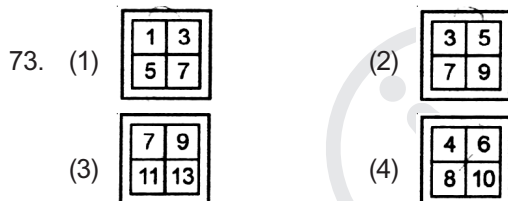
Answer (1 or 3 or 4)



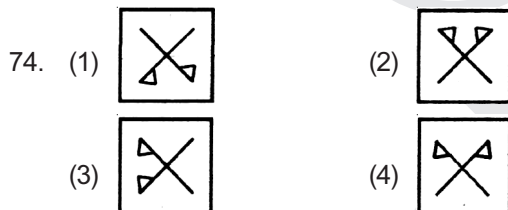
Answer (1)



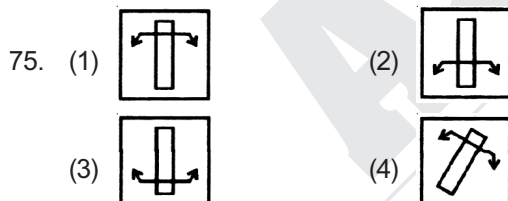
Answer (4)



Answer (4)



Answer (1)



Answer (2)

Direction: In Question nos. 76 to 85:

In each of the following questions, a letter series is given, in which some letters are missing. The missing letters are given in the proper sequence as one of the alternatives. Find the correct alternative.

76. A_CA_BC_BCC_BCA
 (1) AABB (2) BBAA
 (3) BBAB (4) BABA

Answer (2)

77. A_BBC_AAB_CCA_BBCC
 (1) ACBA (2) ABBA
 (3) CABA (4) BACB

Answer (1)

Sol. AAB|BCC|AAB|BCC.....

78. AA_BBB_CCAAAB_BC_C
 (1) BCCC (2) BBCC
 (3) CCBB (4) ACBC

Answer (4)

Sol. AAA|BBB|CCC|.....

79. ABCA_BCAAB_CA_BBC_A
 (1) ABBA (2) BBAA
 (3) CCAA (4) ABAC

Answer (4)

Sol. ABC|AABC|AABBC|AABBCC|A

80. BAA_AAB_A_A_BAA_
 (1) ABAAB (2) ABABA
 (3) AABBA (4) BABAB

Answer (4)

Sol. BAA|BAA|BAA - -

81. A_B_BA_AB_BA
 (1) ABBA (2) ABAB
 (3) BABB (4) ABAA

Answer (2)

Sol. AABBBBA|AABBBBA

82. ABA_BACA_BA_BACAABAC_ACA
 (1) CABC (2) ABCB
 (3) CACB (4) CCAB

Answer (3)

Sol. ABAC|BACA|ABAC|BACA

83. A_CDAAB_CC_DAA_BBB_CCDDD
 (1) BBDAC (2) DBBCA
 (3) BDDCA (4) BDBDA

Answer (1)

Sol. ABCD|AABBCCDD|AAABBBCCDDDD

84. A_CC_AAB_CB_
 (1) BCAB (2) BBCA
 (3) ABCA (4) AABC

Answer (2)

Sol. ABC|CBA|ABC|CBA

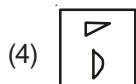
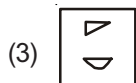
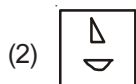
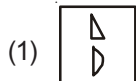
85. A_CBABC_CB_AB_C
 (1) ACAB (2) BACA
 (3) CABA (4) ABAB

Answer (No Key)

Direction: In Question nos. 86 to 95:

The following questions consists of two sets of figures. Figures A, B, C and D constitute the problem set while figures 1, 2, 3, and 4 constitute the answer set. A Definite relationship exists between figures A and B. You are required to establish a similar relationship between figures C and D by choosing a suitable figure D from the answer set.

86. Problem Figures :



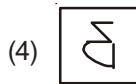
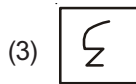
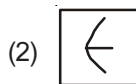
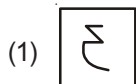
Answer (3)

87. Problem Figures :



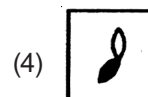
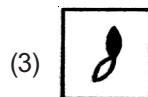
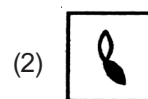
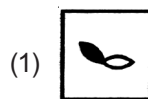
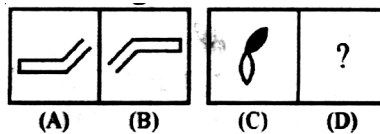
Answer (2)

88. Problem Figures :



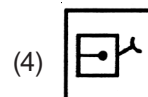
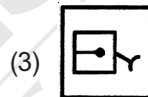
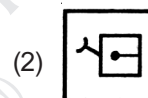
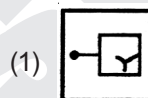
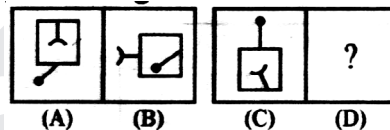
Answer (1)

89. Problem Figures :



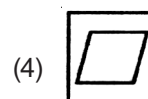
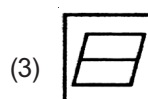
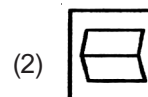
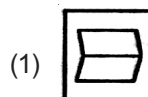
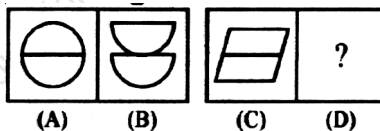
Answer (4)

90. Problem Figures :



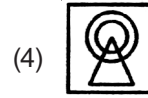
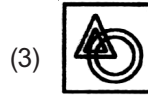
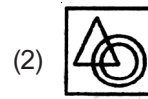
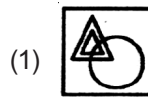
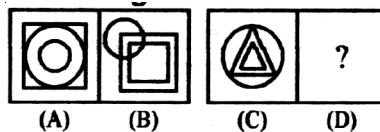
Answer (3 or 4)

91. Problem Figures :



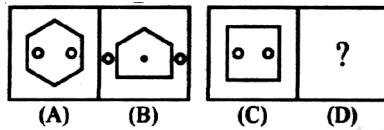
Answer (1)

92. Problem Figures :



Answer (2)

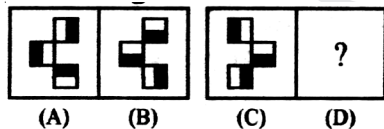
93. Problem Figures :



- (1)
- (2)
- (3)
- (4)

Answer (1)

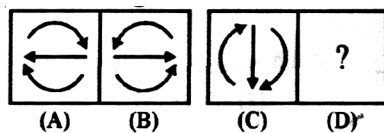
94. Problem Figures :



- (1)
- (2)
- (3)
- (4)

Answer (3)

95. Problem Figures :



- (1)
- (2)
- (3)
- (4)

Answer (2)

Direction: In Question nos. 96 to 100:

Read the following information carefully and answer the questions that follow :

- (i) They are A, B, C, D, E and F.
- (ii) A is a historical place and not a hill station.
- (iii) B and E are not historical places.
- (iv) D is not a twin city.
- (v) A and B are not alike.
- (vi) D is not a historical city.

96. Which two cities are hill stations ?

- (1) A and F
- (2) A and E
- (3) E and D
- (4) A and D

Answer (3)

97. Which two cities are historical places ?

- (1) D and F
- (2) A and C
- (3) A and D
- (4) E and D

Answer (2)

98. Which city is a hill station and a twin city but not a historical place ?

- (1) B
- (2) A
- (3) E
- (4) D

Answer (3)

99. Which two cities are neither historical places nor twin cities ?

- (1) B and D
- (2) B and E
- (3) A and F
- (4) A and B

Answer (1)

100. Which two cities are twin cities ?

- (1) B and E
- (2) E and A
- (3) C and E
- (4) B and F

Answer (3)

PAPER-II : SCHOLASTIC APTITUDE TEST (SAT)

BIOLOGY

1. Which of the following is the connecting link between the aves and reptiles ?

- (1) Archaeopteryx (2) Alligator
(3) Dinosaurs (4) Amphioxus

Answer (1)

Sol. Archaeopteryx looks like a bird. It has wings like birds however, its teeth and tail are like those of reptiles.

2. Deficiency of vasopressin causes a disease called

- (1) Asthma (2) Goiter
(3) Diabetes insipidus (4) Diabetes mellitus

Answer (3)

Sol. Deficiency of Vasopressin (Anti Diuretic hormone) causes Diabetes insipidus which is associated with increased thirst and urine production.

3. Saliva contains an enzyme called

- (1) Trypsin (2) Ptyalin
(3) Lipase (4) Pepsin

Answer (2)

Sol. Ptyalin is a form of amylase found in the saliva of humans which helps in digestion of starch.

4. Area of best vision present in the retina

- (1) Blind spot (2) Pupil
(3) Sclera (4) Yellow spot

Answer (4)

Sol. Yellow spot (or) Fovea is the area of best vision in eye consisting of more number of cones.

5. Granular structures present on the rough endoplasmic reticulum are

- (1) Lipida (2) Plastids
(3) Ribosomes (4) Lysosomes

Answer (3)

Sol. Rough endoplasmic reticulum is the site of synthesis of proteins

6. Name the connecting tissue that connects a muscle to the bone.

- (1) Areolar tissue (2) Cartilage
(3) Ligament (4) Tendon

Answer (4)

Sol. Tendon is a flexible but inelastic cord of strong fibrous collagen tissue attaching a muscle to a bone.

7. What happens to the inhaled air as it passes through the nasal cavity?

- (1) Warmed to the body temperature
(2) Moistened by mucus
(3) All of these
(4) Filtered in the nasal cavity

Answer (3)

Sol. As air passes through nasal cavities, it is warmed and humidified, so that air that reaches lungs is warm and moist. Combination of cilia and mucous helps to filter out solid particles from air.

8. Match the item in Column-I with Column-II :

Column - I	Column - II
(a) Retinol	(i) Scurvy
(b) Thiamine	(ii) Xerophthalmia
(c) Ascorbic acid	(iii) Rickets
(d) Calciferol	(iv) Beri-beri
(1) a-iii, b-i, c-iv, d-ii	(2) a-iv, b-ii, c-iii, d-i
(3) a-ii, b-iv, c-i, d-iii	(4) a-iv, b-iii, c-ii, d-i

Answer (3)

Sol. Fact

9. Choose the correct statement from the below : Each human cell contains

- (1) one pair of autosome and 22 pairs of allosomes
(2) only 23 pairs of allosomes
(3) only 23 pairs of autosomes
(4) 22 pairs of autosomes and one pair of allosome

Answer (4)

Sol. Human cell contains 22 pairs of autosomes and the other two chromosomes are sex chromosomes.

10. Name the structure that helps the sperm in penetrating into ovum.

- (1) Tail (2) Middle piece
(3) Acrosome (4) Neck

Answer (3)

Sol. Acrosome contains digestive enzymes that breakdown outer membrane of the ovum, called the zona pellucida, allowing haploid nucleus of sperm to join with haploid nucleus in the ovum.

11. From which part of cinchona plant the alkaloid quinine is obtained ?
- (1) Seeds (2) Bark
(3) Leaves (4) Roots

Answer (2)

Sol. The bark of cinchona is medicinally active, containing alkaloids including anti malarial compound quinine.

12. Scientific and objective study of animal behaviour is called
- (1) Zoo geography
(2) Ecology
(3) Zoology
(4) Ethology

Answer (4)

Sol. Ethology is the scientific and objective study of animal behaviour, usually with a focus on behaviour under natural conditions.

13. The process of entry of pollutants into a food chain is known as
- (1) Biomass (2) Bio-Magnification
(3) Bio-accumulation (4) Biosphere

Answer (3)

Sol. Bioaccumulation is the accumulation of substances when an organism absorbs a substance at a rate faster than that at which the substance is lost by catabolism and excretion.

14. The nickname given to the neural apparatus of human digestive tract
- (1) Fore brain (2) Mid brain
(3) Hind brain (4) Second brain

Answer (4)

Sol. 100 million neurons present in the enteric nervous system enables us to "feel" the inner world of our gut.

POLITICAL SCIENCE

15. Four statements are given below to support the argument "Democracy is the best form of government". Which one of them is not correct ?
- (1) Mistakes can never be made in democracy
(2) Democracy promotes equality among citizens.
(3) Democracy offers better chances of a good decision
(4) Democracy enhances the dignity of citizens.

Answer (1)

16. A party was recognised as state party after general elections to the Legislative Assembly of a State. It secured six percent of the total votes. In addition to this, it must have won atleast :
- (1) four seats (2) two seats
(3) three seats (4) one seat

Answer (2)

17. At present, 'right to property' is a
- (1) Constitutional Right (2) Human Right
(3) Fundamental Right (4) Natural Right

Answer (2)

18. When all the democracies and dictatorships for the 50 years between 1950 and 2000 are considered:
- (1) Dictatorships have slightly higher rate of economic growth.
(2) Democracies have slightly higher rate of economic growth.
(3) Democracies have very higher rate of economic growth.
(4) Both the dictatorships as well as the democracies have equal rate of economic growth

Answer (1)

19. In India, the Prime Minister is
- (1) None of these
(2) The head of the Government
(3) The head of the State as well as government
(4) The head of the State.

Answer (2)

20. "... as long as there are tears and suffering, so long our work will not be over" - who spoke these words in his/ her speech to the Constituent Assembly ?
- (1) Sarojini Naidu (2) Mahatma Gandhi
(3) Dr. B.R. Ambedkar (4) Jawaharlal Nehru

Answer (4)

21. Which among the following statements is/are correct with reference to Election Commission (EC) of India?
- A. The Government Officers work under the control of the EC and not the government when they are on election duty.
B. EC implements the code of conduct and punishes any candidate or party that violates it.
C. The Chief Election commissioner is not answerable to the President or that Government.

D. The Chief Election Commissioner is appointed by the President of India.

- (1) A, B, C and D (2) B only
(3) B, C and D (4) C only

Answer (3)

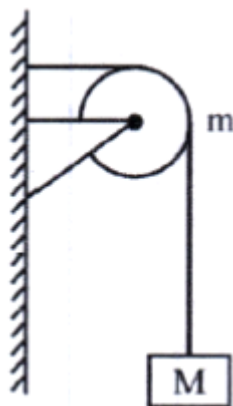
22. Which of the following States has its own Constitution ?

- (1) Jammu and Kashmir (2) Nagaland
(3) Gujarat (4) None of these

Answer (1)

PHYSICS

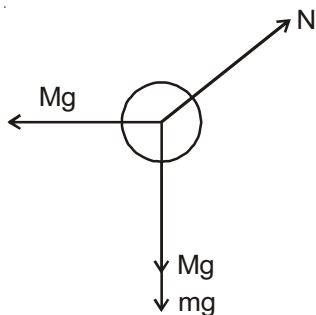
23. A string of negligible mass going over a clamped pulley of mass m supports a block of mass M as shown in the figure. The force on the pulley by the clamp is (g = acceleration due to gravity)



- (1) $\sqrt{(M-m)^2 + m^2g}$ (2) $\sqrt{(M-m)^2 - m^2g}$
(3) $\sqrt{(M+m)^2 + m^2g}$ (4) $\sqrt{(M+m)^2 + M^2g}$

Answer (4)

Sol. Free Body Diagram



$$N = \sqrt{((M+m)g)^2 + M^2g^2}$$

$$N = \left(\sqrt{(M+m)^2 + M^2} \right) g$$

24. A small block slides without friction down on inclined plane starting from rest. Let S_n be the distance travelled from time $t = (n-1)$ to time $t = n$.

Then $\frac{S_n}{S_{n+1}} =$

- (1) $\frac{(2n+1)^2}{2n+3}$ (2) $\frac{2n+1}{2n-1}$
(3) $\frac{2n-1}{2n}$ (4) $\frac{2n-1}{2n+1}$

Answer (4)

Sol. $\frac{S_n}{S_{n+1}} = \frac{g \sin \theta \left(n - \frac{1}{2} \right)}{g \sin \theta \left(n + 1 - \frac{1}{2} \right)}$
 $= \frac{2n-1}{2n+1}$

25. The refractive index of the material of a double convex lens is 1.5 and its focal length is 5 cm. If the radii of curvature are equal, the value of the radius of curvature is cm.

- (1) 6.5 (2) 5
(3) 8 (4) 5.6

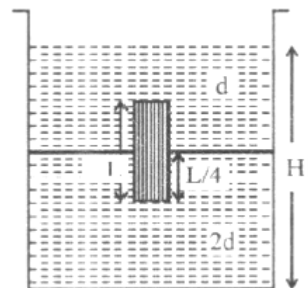
Answer (2)

Sol. Applying lens maker's formula

$$\frac{1}{f} = (\mu - 1) \left(\frac{2}{R} \right)$$

$$R = 5$$

26. In a container (Cross-sectional Area A) a homogeneous solid cylinder of length L ($L < H/2$ as shown in the figure), cross-sectional area $A/5$ is immersed such that it floats with length $L/5$ in the denser liquid as shown in the figure. The lower density liquid is open to the atmosphere. Then the density D of solid is given by



- (1) $\frac{4}{5}d$ (2) $4d$
(3) $\frac{d}{5}$ (4) $\frac{5}{4}d$

Answer (4)

Sol. $mg = F_{B_1} + F_{B_2}$

$$\Rightarrow D \times L \times \frac{A}{5} \times g = d \times \frac{3L}{4} \times \frac{A}{5} \times g + 2d \times \frac{L}{4} \times \frac{A}{5} \times g$$

$$\Rightarrow D = \frac{3d}{4} + \frac{2d}{4}$$

$$\Rightarrow D = \frac{5d}{4}$$

27. On a planet whose size (including radii) is the same and mass is 4 times as that of our earth. Then the amount of work done to lift 3 kg mass vertically upwards through 3 m distance on that planet is (g on the surface of earth is 10 m/s^2)

- (1) 40 J
- (2) 360 kg
- (3) 360 J
- (4) 40 kg

Answer (3)

Sol. $g' = 4g$

$$W = mgh$$

$$= 360 \text{ J}$$

28. Three unequal resistors in parallel are equivalent to a resistance 1 ohm. If two of them are in the ratio of 1 : 2 and if no resistance value is fractional, (let them be natural numbers) the smallest of the three resistance (in ohms) is

- (1) 6
- (2) 2
- (3) 4
- (4) 3

Answer (2)

Sol. $\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} = 1$

$$\text{If } \frac{R_1}{R_2} = \frac{1}{2} \Rightarrow R_2 = 2R_1$$

$$\Rightarrow \frac{1}{R_3} = 1 - \frac{3}{2R_1}$$

By inspection $R_1 = 3\Omega$

$$R_2 = 6\Omega$$

$$R_3 = 2\Omega$$

29. Two trains with V_1, V_2 speeds take 3 seconds to pass one another when going in opposite direction, but takes only 2.5 seconds if the speed of any one of it is increased by (its speed) 50%. The time would take to pass the other when going in the same direction with V_1, V_2 speed in sec.

- (1) 10
- (2) 18
- (3) 15
- (4) 12

Answer (3)

Sol. 1st case

$$\frac{2x}{v_1 + v_2} = 3$$

2nd case

$$\frac{2x}{v_1 + \frac{3v_2}{2}} = 2.5 \quad \text{on solving } v_1 = \frac{2x}{5} \quad v_2 = \frac{4x}{15}$$

3rd case

$$t = \frac{2x}{\frac{2x}{5} + \frac{4x}{15}}$$

$$t = 15 \text{ s.}$$

30. Let the smallest audible sound (near to total silence) is 0 dB. A sound 1000 times more powerful than the sound nearer to total silence is

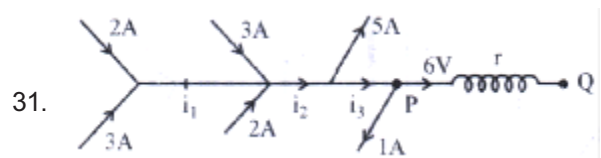
- (1) 3 dB
- (2) 1000 dB
- (3) 10 dB
- (4) 30 dB

Answer (4)

Sol. $SL_1 - SL_2 = 10 \log_{10} \left(\frac{I_1}{I_2} \right)$

$$SL_1 - 0 = 10 \log_{10} (1000)$$

$$SL_1 = 30 \text{ dB}$$



Then $r =$

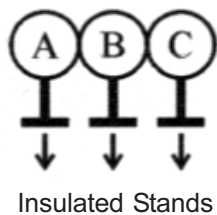
- (1) 1Ω
- (2) 3Ω
- (3) 2.5Ω
- (4) 1.5Ω

Answer (4)

Sol. Current in PQ = 4 A

$$\text{then } R = \frac{6}{4} = 1.5\Omega$$

32. The identical (in all aspects) metal spheres A, B and C are supported on separate insulated stands and placed in contact as shown in the figure. A charged glass rod rubbed by a silk cloth is kept near the metal sphere A, then charges on A, B and C respectively are

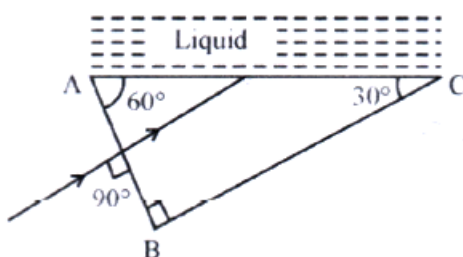


- (1) Positive charge, Neutral, Neutral
- (2) Negative charge, Positive charge, Neutral
- (3) Negative charge, Neutral, Positive charge
- (4) Positive charge, Neutral, Negative charge

Answer (3)

Sol. The rod will acquire positive charge as electrons will get transferred to the silk cloth. So, charge on A is negative due to induction, charge on B is neutral, charge on C is positive.

33. A ray of light is incident normally on face AB of a prism as shown in the figure. A liquid of refractive index μ is placed on the face AC of the prism. The prism is made of glass of refractive index $3/2$. The limit of μ for which total internal reflection takes place on face AC is



- (1) $\mu < \frac{3\sqrt{3}}{4}$
- (2) $\mu < \frac{3\sqrt{3}}{14}$
- (3) $\mu > \frac{\sqrt{3}}{2}$
- (4) $\mu < \sqrt{3}$

Answer (1)

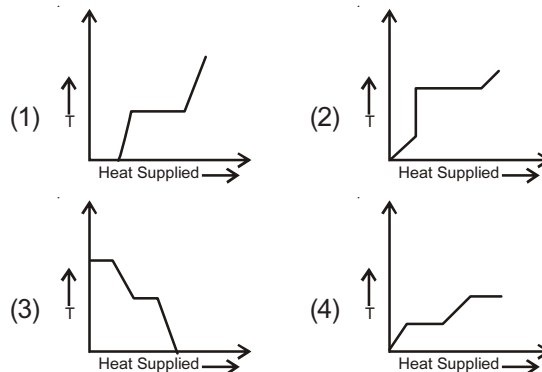
Sol. $i > c$

$$\sin i > \sin c$$

$$\sin 60^\circ > \frac{\mu_1}{\mu_g}$$

$$\mu_1 < \frac{3\sqrt{3}}{4}$$

34. A block of ice at -10°C is slowly heated and converted to steam at 100°C . Which of the following curves represents the phenomenon qualitatively ?



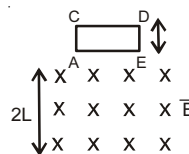
Answer (4)

Sol. -10°C Ice $\rightarrow 0^\circ\text{C}$ Ice $\rightarrow 0^\circ\text{C}$ Water $\rightarrow 100^\circ\text{C}$ Water $\rightarrow 100^\circ\text{C}$ Steam

From -10°C Ice to 0°C Ice temperature changes

From 0°C Ice to 0°C Water temperature remains constant. So, appropriate graph is option 4.

35. A square coil ACDE with its plane vertical is released from rest in horizontal uniform magnetic field B of length $2L$. The acceleration of the coil when coming out of the field is (Acceleration due to gravity g)



- (1) More than g
- (2) Twice to g
- (3) Less than g
- (4) Equal to g

Answer (3)

Sol. Acceleration is less than g due to Lenz's law

MATHEMATICS

36. One of the factor for $x^3 - 23x^2 + 142x - 120$ is

- (1) $x+10$
- (2) $x+12$
- (3) $x-4$
- (4) $x-1$

Answer (4)

Sol. Given polynomial $f(x) = x^3 - 23x^2 + 142x - 120$
Since sum of coefficients is 'Zero' $(x-1)$ is a factor.

37. The volume of regular cylindrical wire of diameter 2 mm is 99 cubic cm, then the length of wire in metres.

- (1) 51.3
- (2) 35.1
- (3) 31.5
- (4) 53.1

Answer (3)

Sol. Diameter = 0.2 cm

Radius = 0.1 cm

Volume = 99 cm^3

$$\pi r^2 h = 99$$

$$\frac{22}{7} \times \frac{1}{100} \times h = 99$$

$$h = \frac{6300}{2}$$

$$h = 3150 \text{ cm}$$

$$h = 31.5 \text{ m}$$

38. The radius of cone and cylinder are in the ratio 2 : 3 and their heights are in the ratio 3 : 2, then their volumes are in the ratio

(1) 9 : 2

(2) 2 : 3

(3) 3 : 2

(4) 2 : 9

Answer (4)

Sol.
$$\frac{v_1}{v_2} = \frac{\frac{1}{3} \pi r_1^2 h_1}{\pi r_2^2 h_2} = \frac{1(4)(3)}{3(9)(2)} = 2 : 9$$

39. If $\operatorname{cosec} \theta - \sin \theta = 4$, then $\sin^2 \theta + \operatorname{cosec}^2 \theta =$

(1) 4

(2) 8

(3) 16

(4) 18

Answer (4)

Sol. Squaring on Both sides

$$\Rightarrow \operatorname{cosec}^2 \theta + \sin^2 \theta - 2 = 16$$

$$\Rightarrow \sin^2 \theta + \operatorname{cosec}^2 \theta = 18$$

40. If the number of observation n is even, then median is

(1) average of $\frac{n}{2}$ and $\left(\frac{n-1}{2}\right)^{\text{th}}$ observation

(2) average of $\frac{n}{2}$ and $\left(\frac{n}{2}+1\right)^{\text{th}}$ observation

(3) average of n and $(n+1)^{\text{th}}$ observation

(4) average of $\frac{n}{2}$ and $\left(\frac{n+1}{2}\right)^{\text{th}}$ observation

Answer (2)

Sol. If n is even median = average of $\frac{n}{2}$ th and

$\left(\frac{n}{2}+1\right)$ th observations.

41. Four numbers in A.P. whose sum is 20 and the sum of whose squares is 120, then the numbers are

(1) 6, 8, 10, 12

(2) 4, 6, 8, 10

(3) 2, 4, 6, 8

(4) 8, 10, 12, 14

Answer (3)

Sol. Given $a - 3d + a - d + a + d + a + 3d = 20$

$$\Rightarrow a = 5$$

$$(5 - 3d)^2 + (5 - d)^2 + (5 + d)^2 + (5 + 3d)^2 = 120$$

$$\Rightarrow 100 + 20d^2 = 120 \Rightarrow d = 1$$

\therefore They are 2, 4, 6, 8

42. $3(\sin x - \cos x)^4 + 6(\sin x + \cos x)^2 + 4(\sin^6 x + \cos^6 x) =$

(1) 7

(2) 9

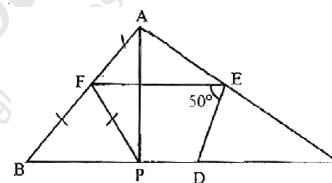
(3) 13

(4) 14

Answer (3)

Sol. Put $x = 0^\circ \Rightarrow 3 + 6 + 4 = 13$

43. In $\triangle ABC$, D, E and F are respectively mid points of the sides BC, CA and AB and P is a point on BC such that $AP \perp BC$. If $\angle DEF = 50^\circ$, then $\angle FPD =$



(1) 130°

(2) 135°

(3) 120°

(4) 110°

Answer (1)

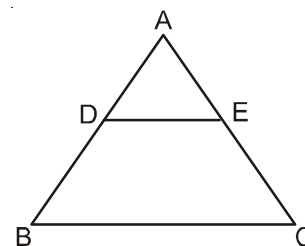
Sol. Clearly D, E, F, P are concyclic

$$\therefore \angle DEF + \angle FPD = 180^\circ$$

$$\Rightarrow \angle FPD = 130^\circ$$

44. From the adjacent figure $\triangle ABC$, $DE \parallel BC$ and

$$\frac{AD}{DB} = \frac{3}{5}, \text{ if } AC = 5.6 \text{ then } AE \text{ is}$$



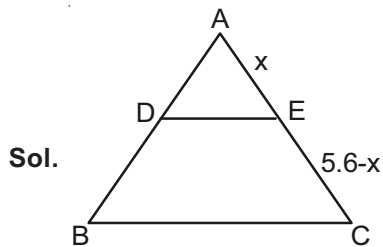
(1) 6 cm

(2) 15 cm

(3) 9 cm

(4) 2.1 cm

Answer (4)



Sol.

$$\frac{AD}{DB} = \frac{AE}{EC}$$

$$\frac{3}{5} = \frac{x}{5.6 - x}$$

$$16.8 - 3x = 5x$$

$$8x = 16.8$$

$$x = 2.1 \text{ cm}$$

45. If $x < 1$, $y < -1$, then $(x - 1, y - 3)$ lies in

- (1) Q_4 (2) Q_3
(3) Q_1 (4) Q_2

Answer (2)

Sol. $x < 1 \Rightarrow x - 1 < 0$

$$y < -1 \Rightarrow y - 3 < 0$$

$$\therefore (x - 1, y - 3) \in Q_3$$

46. If a, b, c are in A.P., then $ax + by + c = 0$ will always pass through a fixed point whose coordinates are

- (1) $(-1, -2)$ (2) $(-1, 2)$
(3) $(1, -2)$ (4) $(1, 2)$

Answer (3)

Sol. If a, b, c are in A.P.

$$b = \frac{a+c}{2} \Rightarrow C = 2b - a$$

$$\text{Then } ax + by + 2b - a = 0$$

$$\Rightarrow a(x - 1) + b(y + 2) = 0$$

$$\text{It is in the form } \lambda_1 L_1 + \lambda_2 L_2 = 0$$

$$\therefore \text{ solving } x - 1 = 0 \text{ and } y + 2 = 0$$

$$\text{We get } (x, y) = (1, -2)$$

47. If the equation $(k + 3)x^2 - (5 - k)x + 1 = 0$ has distinct roots, the value of k will be

- (1) $k < 13$ or $k > 1$
(2) $k = 1$ or $k = 13$
(3) $k > 13$ or $k < 1$
(4) $k > 12$ or $k < 1$

Answer (3)

Sol. $(K + 3)x^2 - (5 - K)x + 1 = 0$

$$\Delta > 0$$

$$b^2 - 4ac > 0$$

$$(5 - K)^2 - 4 \cdot (K + 3) \cdot 1 > 0$$

$$(5 - K)^2 > 4(K + 3)$$

$$25 + K^2 - 10K > 4K + 12$$

$$K^2 - 14K + 13 > 0$$

$$(K - 1)(K - 13) > 0$$

$$K > 13 \text{ or } K < 1$$

48. If the roots of the equation $(b - c)x^2 + (c - a)x + (a - b) = 0$ are equal, then $\frac{a+c}{b} =$

$$(a - b) = 0 \text{ are equal, then } \frac{a+c}{b} =$$

- (1) 1 (2) 3
(3) 2 (4) 4

Answer (3)

Sol. Given equation is $(b - c)x^2 + (c - a)x + (a - b) = 0$

Since sum of coefficients is zero, one root must be 1

Since the roots are equal product of roots equal to 1

$$\frac{a-b}{b-c} = 1 \Rightarrow \frac{a+c}{b} = 2$$

49. If $\frac{x+1}{2} + \frac{y-1}{3} = 8$ and $\frac{x-1}{3} + \frac{y+1}{2} = 9$ then $y =$

- (1) 7 (2) 12
(3) 8 (4) 13

Answer (4)

Sol. $\frac{x+1}{2} + \frac{y-1}{3} = 8$ $\frac{x-1}{3} + \frac{y+1}{2} = 9$

$$3x + 2y = 47 \rightarrow (1)$$

$$2x + 3y = 53 \rightarrow (2)$$

$$(1) \times 2 \Rightarrow 6x + 4y = 94$$

$$(2) \times 3 \Rightarrow 6x + 9y = 159$$

$$-5y = -65$$

$$y = 13$$

50. If the sum of the squares of the roots of quadratic polynomial $f(x) = x^2 - 8x + k$ is 40 then $k =$

- (1) 12 (2) 6
(3) 36 (4) 18

Answer (1)

Sol. $\alpha^2 + \beta^2 = (\alpha + \beta)^2 - 2\alpha\beta$

$$40 = 64 - 2K$$

$$\Rightarrow K = 12$$

51. 14 cards numbered 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, are placed in a box and mixed thoroughly. If a card is drawn from the box, then probability that the number on the card divisible by 3 or 2 is

(1) $\frac{12}{14}$ (2) $\frac{5}{14}$

(3) $\frac{9}{14}$ (4) $\frac{4}{14}$

Answer (3)

Sol. Given cards 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18

Numbers divisible by 2 are 6, 8, 10, 12, 14, 16, 18

Numbers divisible by 3 are 6, 9, 12, 15, 18

Numbers divisible by both are 6, 12, 18

Probability of number divisible by 3 or 2 is equals to

$$\frac{7+5-3}{14} = \frac{9}{14}$$

52. If $a^{x-1} = bc$, $b^{y-1} = ca$, $c^{z-1} = ab$ then $xy + yz + zx$

(1) xyz (2) 0

(3) 1 (4) $\frac{1}{x} + \frac{1}{y} + \frac{1}{z}$

Answer (1)

Sol. $a^{x-1} = bc$, $b^{y-1} = ca$, $c^{z-1} = ab$

$$\Rightarrow a = (abc)^{\frac{1}{x}}, b = (abc)^{\frac{1}{y}}, c = (abc)^{\frac{1}{z}}$$

$$\Rightarrow (abc)^1 = (abc)^{\frac{1}{x} + \frac{1}{y} + \frac{1}{z}}$$

$$\Rightarrow \frac{1}{x} + \frac{1}{y} + \frac{1}{z} = 1$$

$$\Rightarrow xy + yz + zx = xyz$$

53. If $a^x = b^{y+z}$ then

(1) $\frac{\log b}{\log a} = \frac{y+z}{x}$ (2) $\frac{\log a}{\log b} = \frac{x}{y+z}$

(3) $\frac{\log a}{\log b} = \frac{y+z}{x}$ (4) $x \log a = yz \log b$

Answer (3)

Sol. $a^x = b^{y+z}$

$$\Rightarrow x \log a = (y+z) \log b$$

$$\Rightarrow \frac{\log a}{\log b} = \frac{y+z}{x}$$

54. If the sum of the roots of the equation $(x^2-x) = \lambda(2x-1)$ is zero, then the value of λ is

(1) $\frac{1}{2}$ (2) -2

(3) $-\frac{1}{2}$ (4) 2

Answer (3)

Sol. $x^2 - x = \lambda(2x - 1)$

$$x^2 - x - 2\lambda x + \lambda = 0$$

$$x^2 - (1+2\lambda)x + \lambda = 0$$

If sum of the roots zero

$$\alpha + \beta = 0$$

$$1 + 2\lambda = 0$$

$$\lambda = -\frac{1}{2}$$

55. If $(a, 0)$, $(0, b)$ and $(1, 1)$ are collinear, then $\frac{1}{a} + \frac{1}{b} =$

(1) 4 (2) 1

(3) 3 (4) 2

Answer (2)

Sol. Given $(a, 0)$, $(0, b)$, $(1, 1)$ are collinear

$$\frac{b-0}{0-a} = \frac{1-b}{1-0}$$

$$\frac{b}{-a} = \frac{1-b}{1}$$

$$b = -a + ab$$

$$\frac{a+b}{ab} = 1 \Rightarrow \frac{1}{a} + \frac{1}{b} = 1$$

CHEMISTRY

56. The correct set of quantum number is

(1) $n = 2, l = 1, m = 0, s = 0$

(2) $n = 2, l = 2, m = -1, s = -\frac{1}{2}$

(3) $n = 2, l = -2, m = 1, s = +\frac{1}{2}$

(4) $n = 2, l = 1, m = 0, s = +\frac{1}{2}$

Answer (4)

Sol. $n=2, l=1, m=0, s=+1/2$

57. Which of the following sets of phenomena would increase on raising the temperature?
- Evaporation of liquid
 - Sublimation of solid
 - Solubility of solute in water
 - Solubility of gases in water
- (1) a, b (2) a, b, c
 (3) a, c (4) a, b, c, d

Answer (1)

Sol. (a, b)

There are still few solutes whose solubility decreases and some may remain constant

58. Arrange the elements B, Al, Mg, K in the increasing order of metallic character.
- (1) B < Mg < K < Al (2) B < Al < Mg < K
 (3) B < K < Mg < Al (4) B < Mg < Al < K

Answer (2)

Sol. Down the group metallic character increases and across the period metallic character decreases B < Al < Mg < K

59. Which of the following compound with underlined carbon is having sp^3 hybridisation ?
- $CH_3 - CH_2 - \underline{CH} = CH_2$
 - $CH_3 - CH_2 - \underline{NH}_2$
 - $CH_3 - \underline{CO} - NH_2$
 - $CH_3 - CH_2 - \underline{CN}$

Answer (2)

Sol. All the carbon bonds in option (2) are sigma bonds

60. The decreasing order of priority for choosing and naming a principal characteristic group in nomenclature is
- $COOH > -CHO > -COOR > C=O > -NH_2 > R-OH$
 - $-COOR > -COOH > -CHO > C=O > R-OH > -NH_2$
 - $-COOR > -CHO > -COOH > C=O > R-OH > -NH_2$
 - $-COOH > -COOR > -CHO > C=O > R-OH > -NH_2$

Answer (4)

Sol. As per the IUPAC rules

61. Refining of impure Copper with Zinc impurity is to be done by electrolysis using anode and cathode respectively as
- Pure Zinc, Pure Copper
 - Pure Copper, Pure Zinc
 - Impure Copper, Pure Zinc
 - Impure Zinc, Pure Zinc

Answer (3)

Sol. In electro-refining, impure metal used as anode and pure metal is used as cathode

62. An element X belongs to 3rd period and 3rd group of the periodic table. Choose the correct statement(s) regarding it.
- It is used in thermite process
 - One of its allotropic is tetra atomic X_4 .
 - It belongs to p-block
 - Third most abundant element after oxygen and silicon in the earth crust.

- (1) a and b (2) a, b and d
 (3) b only (4) a, c and d

Answer (4)

Sol. As the given information is best suitable for Aluminium

63. Potassium Super Oxide (KO_2) is used in submarines because it
- absorbs moisture
 - absorbs CO_2 and decrease O_2 concentration
 - produces ozone
 - absorbs CO_2 and increases O_2 concentration

Answer (4)

Sol. Potassium superoxide upon decomposition gives oxygen and potassium oxide. Produced Potassium oxide absorbs CO_2

64. Which of the following is not an oxidation reaction?
- The poling process involving the removal of impurities from a molten metal
 - The black coating on silver due to formation of silver sulphide
 - Bleaching of coloured sugarcane juice/vegetables using moist sulphur dioxide.
 - Rancidity of fats

Answer (3)

Sol. SO_2 is reductive bleaching agent

65. Find the false procedure.
- Roasting - Presence of oxygen - Carbonate ore - Oxide ore
 - Calcination - presence of oxygen - Carbonate ore - Oxide ore
 - Froth Flotation - presence of blown air - impure sulphide ore - increase concentration of sulphide ore
 - Smelting - presence of Flux - Reduction of oxide ore - Metal

Answer (2)

Sol. Calcination is done under absence of oxygen

66. $\text{CuO} + \text{H}_2 \rightarrow \text{Cu} + \text{H}_2\text{O}$ is a balanced chemical equation, causing reduction of CuO. what volume of H_2 at STP is required to reduce 7.95 gm of CuO to give Cu and H_2O ? (Atomic weight of Cu = 63.5 U and Atomic weight of O = 16U)

- (1) 22.4 lit (2) 2.24 lit
(3) 0.224 lit (4) 224 lit

Answer (2)

Sol. As per the balanced equation

79.5 g of CuO required 22.4Lt of H_2

$$7.95 \text{ g of CuO required} = \frac{7.95 \times 22.4}{79.5} = 2.24 \text{ Lt}$$

67. Ionic compounds are formed most easily when the combination is having

- (1) High Electron Affinity, Low Ionisation energy
(2) Low electron Affinity, Low Ionisation Energy
(3) High Electron Affinity, High Ionisation Energy
(4) Low Electron Affinity, High Ionisation Energy

Answer (1)

68. Find the incorrect statement.

- (1) 10% ethanol in gasoline (gasohol) is a good motor fuel
(2) Ethanol is a colourless liquid with characteristic of sweet odour and pure ethanol is called absolute alcohol
(3) Orange colour $\text{Cr}_2\text{O}_7^{2-}$ changes bluish green Cr^{3+} during the process of oxidation of ethanol to ethanal and ethanoic acid
(4) Denatured alcohol means 100% alcohol in the form of pure ethanol.

Answer (4)

Sol. Denatured alcohol is methylated alcohol

ECONOMICS

69. The marginal Productivity of the disguised unemployed is

- (1) Zero (2) very low
(3) unmeasured (4) very high

Answer (1)

70. International Co-operative day is celebrated every year on the

- (1) First Saturday of July
(2) First Saturday of August
(3) Second Saturday of July
(4) Second Saturday of August

Answer (1)

71. US farmer can sell the farm products at abnormally low prices because :

- (1) They use machines for all works of cultivation.
(2) Production cost is very low in US.
(3) They receive massive sums of money from the US Government.
(4) They are very rich and they don't want any profits.

Answer (1)

72. When the period of last 4 decades is considered, which of the following statements is/are true regarding the primary sector of India economy ?

- A. The primary sector has lost its credit as the largest employer.
B. The primary sector continues to be the largest employer.
C. The share of primary sector in GDP has fallen drastically
D. The share of primary sector in GDP has increased slightly.

- (1) A & C
(2) A & D
(3) B & C
(4) B & D

Answer (3)

73. Consider the following statements and select the correct answer using the code given below.

- A. According to social scientists, social exclusion.
B. According to social scientists, social exclusion is a consequence of poverty.

- (1) Only 'A' is correct
(2) Only 'B' is correct
(3) Both 'A' and 'B' are correct
(4) Both 'A' and 'B' are not correct

Answer (3)

74. Which of the following factors is not at all related to Green Revolution ?

- (1) Use of HYV seed
(2) Use of chemical fertilisers
(3) Loss of soil fertility
(4) All of these are related.

Answer (4)

75. "We have not inherited the world from our forefathers - we have borrowed it from our children" - This quote expects us :
- (1) To use non-renewable resource extensively.
 - (2) To extract more ground water
 - (3) To prefer sustainability of development.
 - (4) To prefer rapid industrialisation.

Answer (3)

76. If organised sector is denoted by the code 'A' and unorganised sector by the code 'B', then which of the following statements is correct in the context of contemporary India ?
- (1) Most of the people want to work in 'B' and they are in 'B'.
 - (2) Most of the people want to work in 'B' and they have to be in 'A'.
 - (3) Most of the people want to work in 'A' and they have to be in 'B'.
 - (4) Most of the people want to work in 'A' and they are in 'A'.

Answer (3)**GEOGRAPHY**

77. Consider the following statements:
- A. Igneous rocks are responsible for the formation of black soil.
- B. Terai is a narrow belt of pebbles.
- C. The newer alluvial deposits of the northern plain are called khadar.
- Which of the above statements are correct ?
- (1) A, B and C
 - (2) A and B
 - (3) B and C
 - (4) A and C

Answer (4)

78. Black soils are generally poor in :
- (1) Calcium carbonate
 - (2) Phosphoric contents
 - (3) Magnesium
 - (4) Potash and lime

Answer (2)

79. Consider the following statements :
- A. Indian is believed to be the original home of this plant.
- B. It grows well in black soil.
- C. China is a largest producer of it.

Which of the following crops is mentioned in all the statements given above.

- (1) Jute
- (2) Cotton
- (3) Sugarcane
- (4) Rubber

Answer (2)

80. Consider the following statements :
- A. 52 percent of the people employed in I.T. and Electronics Industry are women.
- B. Bengaluru has emerged as the electronic capital of India.
- Which of the above statements is/are NOT correct?
- (1) B only
 - (2) Both A and B
 - (3) A only
 - (4) None of these

Answer (2)

81. Which type of forests are not found in Andhra Pradesh ?
- (1) Deciduous forests
 - (2) Mangrove forests
 - (3) Evergreen forests
 - (4) Thorn forests

Answer (2)

82. The Godavari is known as the 'Dakshin Ganga' because :
- (1) of its origin in Western Ghats
 - (2) of its making of waterfalls
 - (3) of its drainage into Bay of Bengal
 - (4) of its length and the area it covers.

Answer (4)

83. Consider the following countries:
- A. USA
- B. Egypt
- C. Brazil
- D. Mongolia
- E. Canada
- F. Uzbekistan
- Which of the above countries are smaller than India with respect to area ?

- (1) C and D only
- (2) A, B and F only
- (3) B, D and F only
- (4) C and F only

Answer (3)

84. Out of the following states, which one receives the South-West monsoon latest ?
- (1) Karnataka
 - (2) Kerala
 - (3) Maharashtra
 - (4) Gujarat

Answer (4)

85. Which of the following has recorded the highest sex-ratio according to Census 2011 ?

- (1) Kerala (2) Delhi
(3) Pondicherry (4) Haryana

Answer (1)

86. What were described as the "temples of modern India" by the 1st Prime Minister of India ?

- (1) Hospitals
(2) Railway stations
(3) Schools
(4) Dams

Answer (4)

87. The biggest port of India is :

- (1) Paradwip port (2) Kolkata port
(3) Mumbai port (4) Kandla port

Answer (3)

88. Per capita consumption of which energy source is considered as an index of development ?

- (1) Petroleum
(2) Electricity
(3) Natural gas
(4) Solar energy

Answer (2)

HISTORY

89. Consider the following Statements in connection with the printing press invented by Gutenberg.

- A. The first printed book was the Bible.
B. The new technology entirely displaced the existing art of producing books by hand.
C. At first the printed books closely resembled the written manuscripts in appearance.

Which of the statements given above are correct ?

- (1) A and C (2) A and B
(3) A, B and C (4) B and C

Answer (1)

90. The national colours of France are :

- (1) Green-Gold
(2) Saffron -White-Green
(3) Red-Blue-Green
(4) Blue -White-Red

Answer (4)

91. Which of the following features was NOT related to Stalin ?

- (1) Collectivization of agriculture
(2) Rapid industrialization
(3) Announcement of "The New Deal"
(4) Introducing five year plans.

Answer (4)

92. The African and 'Massai' means:

- (1) My pasture
(2) My Cattle
(3) My land
(4) My people

Answer (3)

93. Given the correct chronological order.

- A. Simon Commission
B. First round table conference
C. Gandhi- Irwin Pact
D. Re-launch of Civil Disobedience Movement.

- (1) A, B, C, D
(2) D, C, A, B
(3) C, B, A, D
(4) A, C, B, D

Answer (1)

94. In 1868 England was producing about 80 percent of the food it consumed. The increase in food-grain production was made possible mainly by :

- (1) The use of only bio-fertilizers
(2) Bringing new lands under cultivation.
(3) Extensive use of chemical fertilizers
(4) Radical innovations in agricultural technology

Answer (2)

95. A sanyasi, who had earlier been to Fiji as an indentured labourer, led a peasant movement. He used to recite verses from Tulasidas Ramanyana to rural audience' - who was 'He' referred to here ?

- (1) Jhinguri Singh
(2) Jadunandan Sharma
(3) Baba Ram Chandra
(4) Sahajanada Saraswati

Answer (3)

96. In 19th Century, the main destination(s) of Indian Indentured migrants was/were :

- (1) Fiji and Mauritius only
- (2) Fiji, caribbean island and Mauritius
- (3) Fiji and Caribbean islands only
- (4) Fiji only

Answer (2)

97. Which one of the following statments is correct ?

- (1) William-I was proclaimed King of united italy in 1861.
- (2) Victor Emmanuel-II was proclaimed German Emperor in 1861.
- (3) Victor Emmanuel-II was proclaimed King of united Italy in 1871.
- (4) William-I was proclaimed German Emperor in 1871.

Answer (4)

98. Who was the chairman of ' the Democratic Republic of Vietnam' ?

- | | |
|-----------------|-------------------|
| (1) Nguygen | (2) Bao Dai |
| (3) Ho Chi Minh | (4) Ngo Dinh Diem |

Answer (3)

99. Consider the following statements regarding the forrest policies implemented under the British rule :

- A. The first inspector General of Forests in India was a French expert appointed by the British government.
- B. Shifting agriculture in Sri Lanka was called 'Chena'.
- C. The People of forest communities benefited in many ways after the forest department took control of the forests.

Whihc of the above statements is/are correct ?

- | | |
|-------------|----------------|
| (1) B only | (2) A and C |
| (3) A and B | (4) A, B and C |

Answer (1)

100. Famous Enabling Act, was passed in Germany in 1933, With this Hitler :

- (1) restored the dignity of Germany
- (2) established socialism in Germany
- (3) became the chancellor of Germany
- (4) became the dictator of Germany

Answer (4)

