



# Aakash

Medical | IIT-JEE | Foundations

(Divisions of Aakash Educational Services Limited)

P1

GUJARAT

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## Answers & Solutions for NTSE (Stage-I) 2019-20

### INSTRUCTIONS TO CANDIDATES

Read the following instructions carefully before you open the question booklet.

- Use blue/black ballpoint pen only. There is no negative marking.
- Part I : MAT : 1 - 100 questions  
Part II : SAT : 1 - 100 questions
- This test booklet contains 200 questions of one mark each. All the questions are compulsory.
- Answer each question by darkening the one correct alternative among the four choices on the OMR SHEET with blue/black ballpoint pen.

Example :

Q. No.	Alternatives
Correct way : 1	(A) (B) ● (D)
Q. No.	Alternatives
Wrong way : 1	(X) (B) (C) (D)

Student must darkening the right oval only after ensuring correct answer on OMR Sheet.

- 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.
- Separate sheet has been provided for rough work in this test booklet.
- Please handover the OMR Sheet to the invigilator before leaving the Examination Hall.
- Darken completely the ovals of your answer on OMR Sheet in the time limit allotted for that particular paper.
- Your OMR Sheet will be evaluated through electronic scanning process. Incomplete and incorrect entries may render your OMR Sheet invalid.
- Use of electronic gadgets, calculator, mobile etc, is strictly prohibited.

**PART-I : MENTAL ABILITY TEST (MAT)**

**Instruction :** In each of the following question, numbers have been organized in a definite number series wherein one number is missing and a question mark (?) is given in its place. Find out the missing number by choosing the correct option. (Q.No. 1 to 10)

1. 1, 4, 13, 40, ?

- (A) 94 (B) 120  
(C) 111 (D) 121

**Answer (D)**

**Sol.**  $1 \times 3 + 1 = 4$

$4 \times 3 + 1 = 13$

$13 \times 3 + 1 = 40$

$40 \times 3 + 1 = 121$

2. 1, 10, 19, 28, ?, 46.

- (A) 33 (B) 37  
(C) 34 (D) 38

**Answer (B)**

**Sol.** Each Difference 9.

3. 12, 144, 1728, ?

- (A) 20,736 (B) 20,216  
(C) 20,466 (D) 20,376

**Answer (A)**

**Sol.**  $12^1 = 12$

$12^2 = 144$

$12^3 = 1728$

$12^4 = 20736$

4. 786, 514, 378, 310, 276, ?

- (A) 249 (B) 260  
(C) 259 (D) 250

**Answer (C)**

**Sol.** Difference Method

Difference is : 272, 136, 68, 34, 17

5. 2, 13, 67, 271, ?, 1639

- (A) 1067 (B) 1177  
(C) 817 (D) 1371

**Answer (C)**

**Sol.**  $2 \times 6 + 1 = 13$

$13 \times 5 + 2 = 67$

$67 \times 4 + 3 = 271$

$271 \times 3 + 4 = 817$

6. 3, 8, 20, 46, ?

- (A) 261 (B) 140  
(C) 189 (D) 100

**Answer (D)**

**Sol.**  $3 \times 2 + 2 = 8$

$8 \times 2 + 4 = 20$

$20 \times 2 + 6 = 46$

$46 \times 2 + 8 = 100$

7. 12, 6, 14, 12, 16, 18, 18, ?, ?.

- (A) 22, 20 (B) 24, 20  
(C) 20, 22 (D) 20, 24

**Answer (B)**

**Sol.**  $12, 6, 14, 12, 16, 18, 18, 24, 20$

8. 1728, 2744, 4096, 5832, ?, 10648.

- (A) 9261 (B) 8000  
(C) 6859 (D) 6400

**Answer (B)**

**Sol.**  $12^3, 14^3, 16^3, 18^3, 20^3, 22^3$

9. 79, 84, 81, 82, 83, ?, ?.

- (A) 80, 85 (B) 84, 85  
(C) 85, 84 (D) 85, 80

**Answer (A)**

**Sol.**  $79, 84, 81, 82, 83, ? (80) (85)$

10. 88, 64, 24, ?

- (A) 10 (B) 12  
(C) 8 (D) 14

**Answer (C)**

**Sol.**  $8 \times 8 = 64$

$6 \times 4 = 24$

$2 \times 4 = 8$

**Instruction :** In each of the following question, English alphabets and / or numbers have been organized in a definite number series wherein an alphabet or a group of alphabets is missing and a question mark (?) is given in its place. Find out the missing term by choosing the correct option. (Q.No. 11 to 20)

11. A, F, K, P, U, Z, E, J, O, ?

- (A) R (B) S  
(C) T (D) Q

**Answer (C)**

**Sol.**  $+5 +5 +5 +5 +5 +5 +5 +5$   
A, F, K, P, U, Z, E, J, O, T

12. AB, DE, GH, JK, ?

- (A) LM (B) NO  
(C) MN (D) PQ

**Answer (C)**

**Sol.**  $\overset{+3}{AB}, \overset{+3}{DE}, \overset{+3}{GH}, \overset{+3}{JK}, \overset{+3}{MN}$

13. AA, FFF, KK, ppp, U, ?

- (A) UU (B) U  
 (C) V (D) w

**Answer (J)**

**Sol.** No Option is Correct

14. PDZ, ?, RBX, SAW

- (A) QCY (B) OCY  
 (C) QCV (D) QYD

**Answer (A)**

**Sol.**  $\overset{-1}{PDZ}, \overset{-1}{QCY}, \overset{-1}{RBX}, \overset{-1}{SAW}$

15. D, H, Y, E, Y, Y, E, Y, H, ?

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

**Answer (D)**

**Sol.**  $\overset{+1}{D, H, Y, E, Y} \overset{+1}{Y, E, Y, H, D}$   
 Reverse order

16. A, D, I, P, Y, J, ?

- (A) Q (B) T  
 (C) W (D) R

**Answer (C)**

**Sol.** A, D, I, P, Y, J, W  
 $1^2 2^2 3^2 4^2 5^2 6^2 7^2$

17.  $\frac{B}{2}, \frac{E}{5}, \frac{I}{9}, \frac{N}{14}, ?$

- (A)  $\frac{S}{19}$  (B)  $\frac{R}{18}$   
 (C)  $\frac{I}{20}$  (D)  $\frac{U}{21}$

**Answer (J)**

**Sol.**  $\frac{B}{2}, \frac{E}{5}, \frac{I}{9}, \frac{N}{14}, \left(\frac{T}{20}\right)$

No Option is Correct

18. AB, I, BC, 6, CD, 12, DE, ?

- (A) 16 (B) 14  
 (C) 18 (D) 20

**Answer (J)**

**Sol.** Given pattern is incorrect if pattern would be

AB, 2 BC, 6, CD, 12, DE, ?

$AB = 1 \times 2 = 2$

$BC = 2 \times 3 = 6$

$CD = 3 \times 4 = 12$

$DE = 4 \times 5 = 20$

Then option D is correct

19. O, T, T, F, F, S, S, E, N, ?

- (A) O  
 (B) T  
 (C) F  
 (D) S

**Answer (B)**

**Sol.**  $\overset{1}{O}, \overset{2}{T}, \overset{3}{T}, \overset{4}{F}, \overset{5}{F}, \overset{6}{S}, \overset{7}{S}, \overset{8}{E}, \overset{9}{N}, \overset{10}{T}$

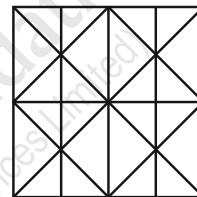
20. J, F, M, A, M, J, J, ?

- (A) J (B) F  
 (C) M (D) A

**Answer (D)**

**Sol.** Initial of name of months.

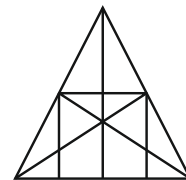
21. How many line segments are there in the given figure ?



- (A) 11 (B) 14  
 (C) 16 (D) 17

**Answer (B)**

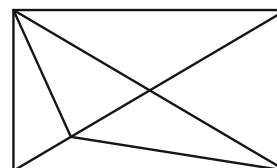
22. How many line segments are there in the given figure ?



- (A) 8 (B) 9  
 (C) 10 (D) 11

**Answer (B)**

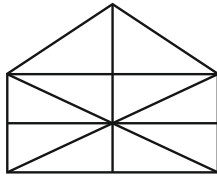
23. How many triangles are there in the given figure ?



- (A) 11 (B) 13  
 (C) 15 (D) 17

**Answer (C)**

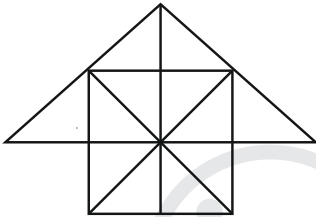
24. How many triangles are there in the given figure ?



- (A) 10 (B) 19  
(C) 21 (D) 23

**Answer (C)**

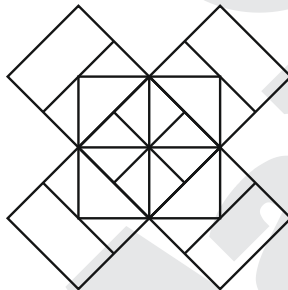
25. How many squares are there in the given figure ?



- (A) 4 (B) 5  
(C) 6 (D) 7

**Answer (C)**

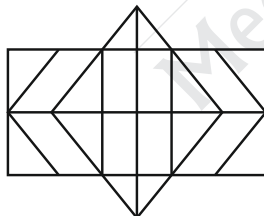
26. How many squares are there in the given figure ?



- (A) 18 (B) 14  
(C) 20 (D) 22

**Answer (A)**

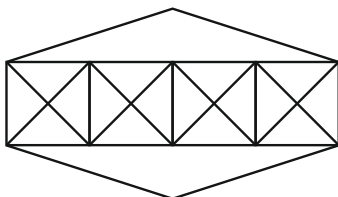
27. How many rectangles are there in the given figure?



- (A) 28 (B) 32  
(C) 14 (D) 30

**Answer (D)**

**Instruction :** (Question No. 28 to 30) Answer the questions on the basis of given figure.



28. How many line segments are there in the given figure ?

- (A) 18 (B) 19  
(C) 17 (D) 20

**Answer (B)**

29. How many triangles are there in the given figure ?

- (A) 40  
(B) 36  
(C) 38  
(D) 42

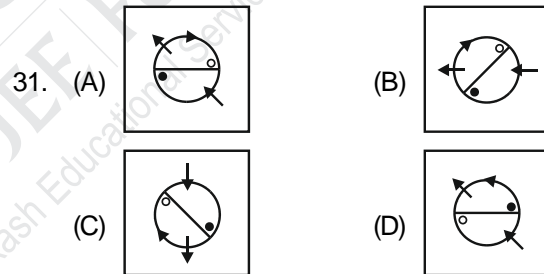
**Answer (A)**

30. How many squares are there in the given figure ?

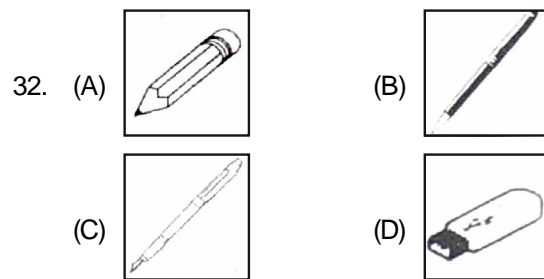
- (A) 5 (B) 9  
(C) 8 (D) 7

**Answer (D)**

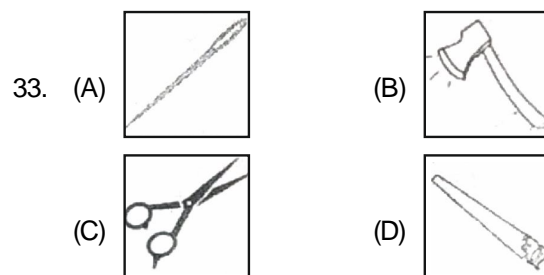
**Instruction :** (Question No. 31 to 40) Four figures are given in question no. 31 to 40. One of the figures differ from the rest. Find out the figure which is different from the rest of the figures.



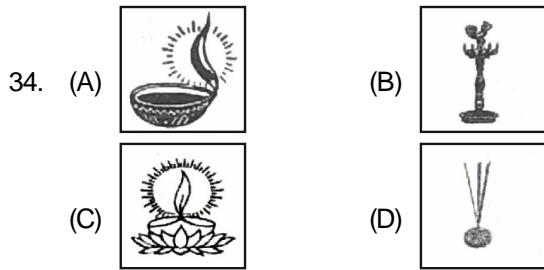
**Answer (D)**



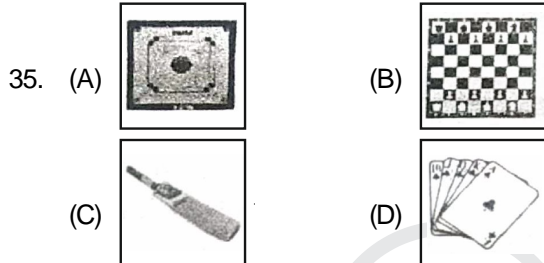
**Answer (D)**



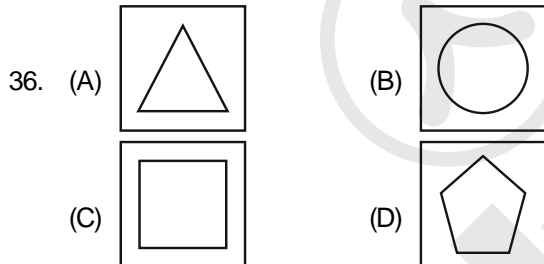
**Answer (A)**



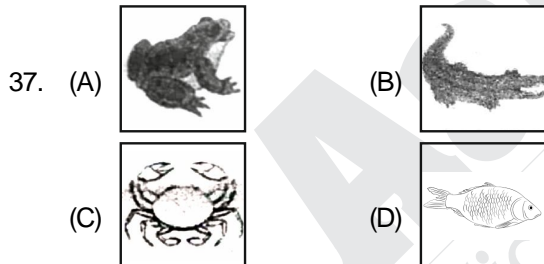
Answer (D)



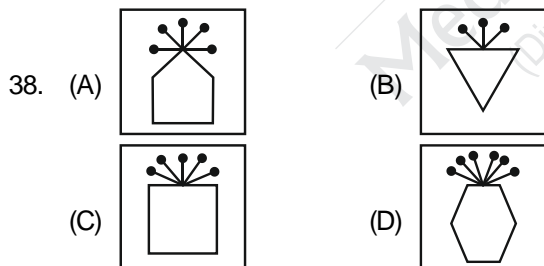
Answer (C)



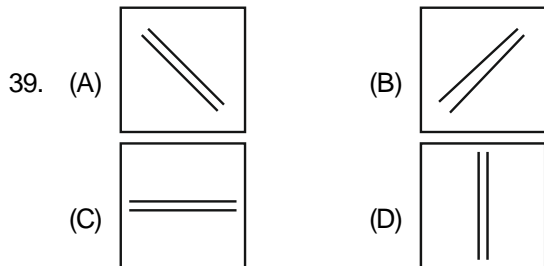
Answer (B)



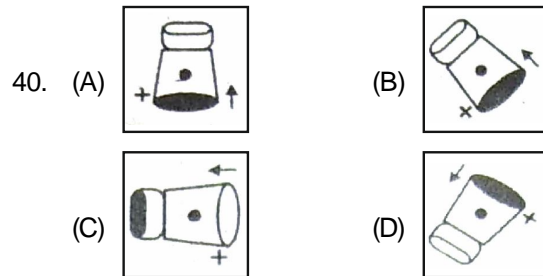
Answer (D)



Answer (C)

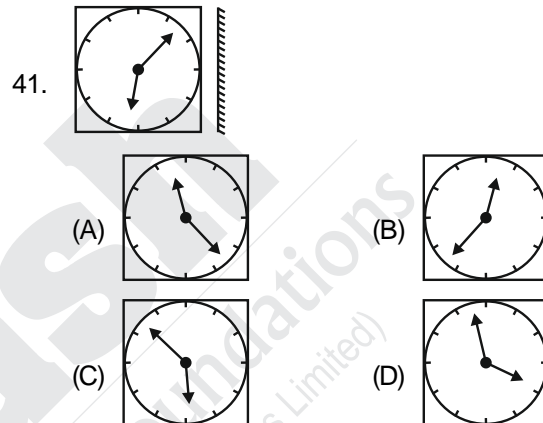


Answer (B)

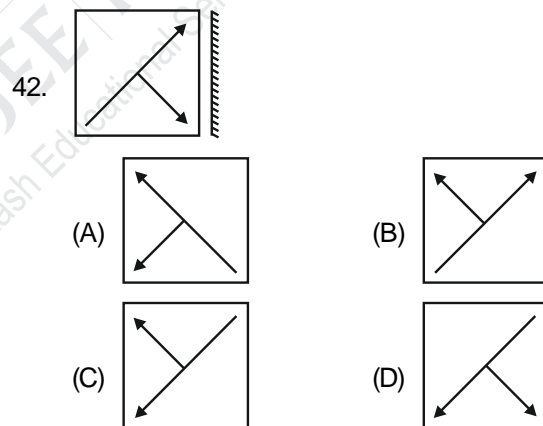


Answer (C)

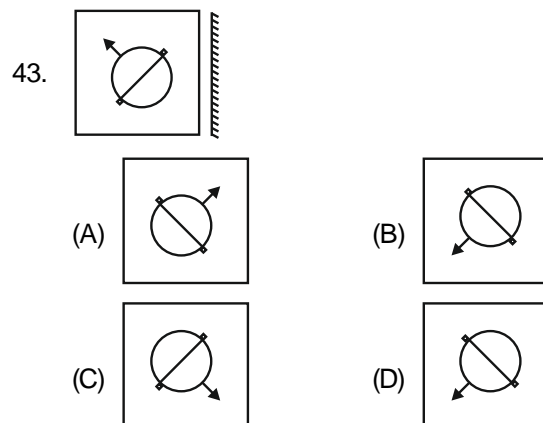
Instruction : Find out the correct mirror image of the image shown in question no. 41 to 45.



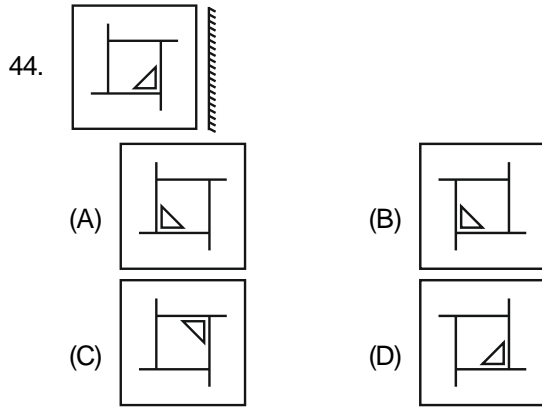
Answer (C)



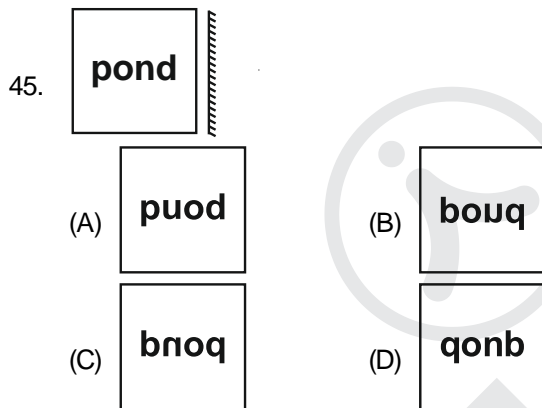
Answer (A)



Answer (A)

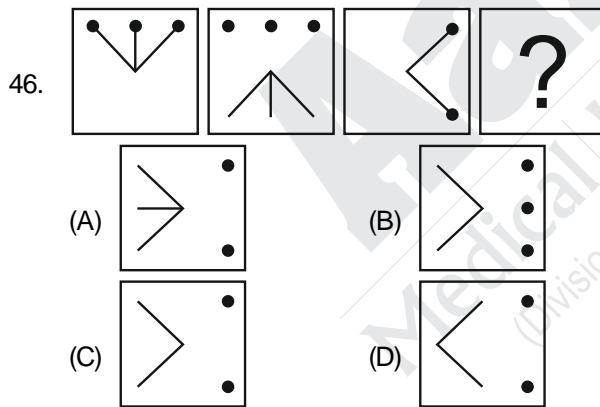


Answer (B)

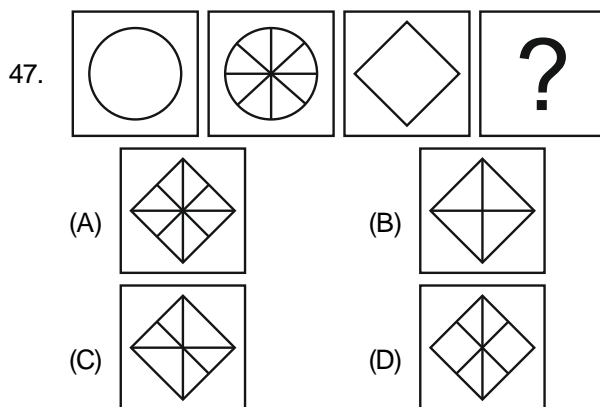


Answer (C)

Instruction : Find out the correct correlation and answer the question no. 46 to 47.



Answer (C)



Answer (A)

48. Delhi : Haryana, Orissa : ?

- (A) Jammu and Kashmir  
(B) Andhra Pradesh  
(C) Tamil Nadu  
(D) Nagaland

Answer (B)

49. Horse : Grass, Vehicles : ?

- (A) Smoke (B) Petrol  
(C) Lubricating Oil (D) Crude Oil

Answer (B)

50. Boat : Unship, Balloon : ?

- (A) Rubber (B) Nylon  
(C) Rope (D) Hot Air

Answer (D)

Instruction : Answer question no. 51 to 60 as shown in example and find out the correct code from the given options by converting the given words in a symbolic language.

51. If FACE = GBDF then BADE = ?

- (A) CBEF (B) CEBF  
(C) CFBE (D) CBFE

Answer (A)

Sol. CBEF



52. If RESULT = 798206 then LET = ?

- (A) 096 (B) 680  
(C) 092 (D) 086

Answer (A)

53. If ACE = ZXV then ? = YZW

- (A) BAD (B) ABD  
(C) EAC (D) SAD

Answer (A)

Sol. Opposite Alphabet

Y → B

Z → A

W → D

54. If LITTLE = MHUSMD then ? = NTUD

- (A) MUTE (B) MOVE  
(C) MITE (D) MATE

Answer (A)

**Sol.** LITTLE = MHUSMD

$\begin{matrix} +1 & +1 & +1 \\ \text{LITTLE} & = & \text{MHUSMD} \\ -1 & -1 & -1 \end{matrix}$

NTUD = MUTE

$\begin{matrix} -1 & +1 & -1 & -1 \end{matrix}$

55. If COUNTRY = EMWLVPA then ELECTORATE = ?

- (A) CJCEVQPYWC      (B) GJQERQTYVG  
(C) CNCERQPCRG      (D) GJGAVMTYVC

**Answer (D)**

**Sol.** Logic → +2, -2, +2, -2

56. If PORTUGESE = ESEGUTROP then MALAYALAM = ?

- (A) MALAYALAM      (B) MALAYALAM  
(C) MALAYALM      (D) MALAYLAM

**Answer (D)**

**Sol.** Option (A) and (B) are same and correct.

Reverse order

57. If MUSK = 146816 then ZERO = ?

- (A) 113811      (B) 122912  
(C) 15915      (D) 2651815

**Answer (B)**

**Sol.** MUSK = 146 816

Opposite alphabets numerical value

ZERO = 122 912

58. If MOTHERLAND = 9501623748 then DREAM = ?

- (A) 82697      (B) 86297  
(C) 82769      (D) 82679

**Answer (D)**

59. If SCIENTIST = ICSTNETSI then AMBULANCE = ?

- (A) MBUALNCEA      (B) BMAALUECN  
(C) MAUBALCNE      (D) UBMLAECNA

**Answer (B)**

**Sol.** First three letter reverse, again three reverse.....

60. If BOMBAY = GLRYFV then MADRAS = ?

- (A) RXIOFP  
(B) RIXOIP  
(C) RXIOXP  
(D) RXIOGQ

**Answer (A)**

**Sol.** BOMBAY = GLRYFV

$\begin{matrix} -3 & -3 & -3 \\ \text{BOMBAY} & = & \text{GLRYFV} \\ +5 & +5 & +5 \end{matrix}$

MADRAS = RXIOFP

**Instruction :** Four options are given in question no. 61 to 70. One of the options is different from the rest of the three options. Find it out

61. (A) Sodium      (B) Potassium  
(C) Gallium      (D) Calcium Sulphate

**Answer (D)**

**Sol.** All are element, only calcium sulphate is compound

62. (A) 1331      (B) 1728  
(C) 4096      (D) 5832

**Answer (A)**

**Sol.** 1331 – Prime number cube

Other – Composite number cube

63. (A) Tabla      (B) Drum  
(C) Pakhavaj      (D) Santoor

**Answer (D)**

**Sol.** Santoor

64. (A) Mars      (B) Mercury  
(C) Jupiter      (D) Pluto

**Answer (D)**

**Sol.** Option (B) Mercury has no moons

Option (D) Pluto is not planet

So, Both (B) & (D) are correct.

65. (A) Cone      (B) Circle  
(C) Triangle      (D) Rectangle

**Answer (A)**

**Sol.** Cone → 3D

66. (A) Kite      (B) Bird  
(C) Radar      (D) Aeroplane

**Answer (D)**

**Sol.** Bird → living, other are non-living

All except radar fly in sky

Hence, (B) & (C) are correct.

67. (A) Palm      (B) Shoulder  
(C) Knee      (D) Elbow

**Answer (D)**

**Sol.** All except palm are joints

All except knee are parts of hand

Hence, (A) & (C) are correct.

68. (A) Rabbit      (B) Crocodile  
(C) Sluggish      (D) Snails

**Answer (A)**



**Sol.** Except Rabbit all other moves very slow.

69. (A) Short vision (B) Spondylitis  
(C) Glaucoma (D) Conjunctivitis

**Answer (B)**

**Sol.** Spondylitis, other are eyes defect.

70. (A) Amsterdam (B) Europe  
(C) Antarctica (D) Australia

**Answer (A)**

**Sol.** Amsterdam → Other are continents.

**Instruction :** Find out the correct option by choosing logically appropriate sequence.

71. 1. Gujarat 2. Earth  
3. Somnath 4. Universe  
5. India  
(A) 32154 (B) 24135  
(C) 15243 (D) 31524

**Answer (D)**

72. 1. Mother 2. Child  
3. Milk 4. Crying  
5. Smile  
(A) 23145 (B) 12435  
(C) 24135 (D) 15243

**Answer (C)**

73. 1. Rainbow 2. Rain  
3. Sun 4. Happy  
5. Child  
(A) 42351 (B) 45123  
(C) 21435 (D) 23154

**Answer (D)**

74. 1. Table 2. Tree  
3. Wood 4. Seed  
5. Plant  
(A) 13245 (B) 45231  
(C) 45321 (D) 12345

**Answer (B)**

75. 1. Snake 2. Grass  
3. Eagle 4. Frog  
5. Insect  
(A) 32145 (B) 52143  
(C) 25413 (D) 24531

**Answer (C)**

**Instruction :** Follow the instruction and choose the correct option. (Q. No. 76 to 80)

76. If + means  $\div$ ,  $\div$  means  $-$ ,  $-$  means  $\times$  and  $\times$  means + then  $10 \div 2 - 15 + 3 \times 5 = ?$

- (A) 10 (B) 15  
(C) 25 (D) 5

**Answer (D)**

**Sol.**  $10 - 2 \times 15 \div 3 + 5 = 5$

77. If  $\Delta$  means +,  $\square$  means  $-$ ,  $\circ$  means  $\div$  and  $\star$  means  $\times$  then

$$13 \Delta 5 \star 20 \circ 10 \square 9 = ?$$

- (A) 26 (B) 14  
(C) 37 (D) 55

**Answer (B)**

**Sol.**  $13 + 5 \times 20 \div 10 - 9 = 14$

78. If A means +, B mean  $-$ , C means  $\div$  and D means  $\times$  then  $10 D 2 A 5 B 5 = ?$

- (A) 15 (B) 12  
(C) 20 (D) 10

**Answer (C)**

**Sol.**  $10 \times 2 + 5 - 5 = 20$

79. If  $P = 6$ ,  $J = 4$ ,  $L = 8$ ,  $M = 24$  then  $M \times J \div L + J = ?$

- (A) 8 (B) 36  
(C) 52 (D) 16

**Answer (D)**

**Sol.**  $24 \times 4 \div 8 + 4 = 16$

80. If  $\Delta$  means  $>$ ,  $\square$  means  $<$ ,  $\circ$  means  $=$  and  $\#$  means  $\neq$  and  $A \circ B$ ,  $C \Delta D$  as well as  $D \square A$ , then which of the following is true ?

- (A)  $C \# A$  (B)  $B \Delta D$   
(C)  $B \square D$  (D)  $A \square D$

**Answer (B)**

**Instruction :** Follow the instruction and choose the correct option. (Q. No.81 to 100)

81. If fourth Wednesday is on 25<sup>th</sup> of a month, what will be the date of Second Sunday of the same month ?

- (A) 8 (B) 14  
(C) 12 (D) 10

**Answer (A)**

82. Today is Sunday. What day will be there after 112 days ?

- (A) Friday  
(B) Sunday



- (C) Wednesday
- (D) Monday

**Answer (B)**

**Sol.** Today – Sunday + 0 = Sunday

$$\frac{112}{7} = \text{odd day} = 0$$

83. 15<sup>th</sup> August, 2019 was Thursday. What day will be there on 15<sup>th</sup> August, 2020 ?
- (A) Wednesday
  - (B) Friday
  - (C) Saturday
  - (D) Thursday

**Answer (C)**

**Sol.** Saturday →

84. Which of the following is a Leap Year ?
- (A) 1900 AD
  - (B) 2100 AD
  - (C) 1990 AD
  - (D) 2000 AD

**Answer (D)**

**Sol.** 2000 AD, divisible by 400

85. A box has 4 white, 5 green and 6 yellow balls in it. By how many ways can 3 balls be selected randomly from the box ?
- (A) 455
  - (B) 120
  - (C) 20
  - (D) 12

**Answer (A)**

**Sol.**  $\binom{15}{3} = 455$

86. If 40 persons shake their hands with one another, what will be the total number of shaking hands ?
- (A) 820
  - (B) 780
  - (C) 80
  - (D) 512

**Answer (B)**

**Sol.**  $\frac{n(n-1)}{2} = \frac{40 \times 39}{2} = 780$

87. Proportion ratio of the current age of A and B is 4 : 5. After 4 years, it will be 8 : 9. What will be the sum of the age of both A and B ?
- (A) 18 years
  - (B) 17 years
  - (C) 9 years
  - (D) 27 years

**Answer (C)**

**Sol.** 9 years

$$\left( \begin{array}{cc} 4 \times 1 & : & 5 \times 1 \\ 8 & : & 9 \end{array} \right) \xrightarrow{4 \times x1} 4$$

$$= 4 + 5 = 9$$

88. Sum of the current age of Jay and Vijay is 40 years. After 7 years, the proportion ratio of their age will be 4 : 5. What will be the current age difference of both Jay and Vijay ?

- (A) 5
- (B) 9
- (C) 13
- (D) 6

**Answer (D)**

**Sol.** J + V = 40

$$\frac{J+7}{V+7} = \frac{4}{5} \Rightarrow 5J + 35 = 4V + 28$$

$$5J - 4V = -7$$

$$+ \quad 4J + 4V = 140$$

$$+ \quad + \quad = +$$

$$9J = 153$$

$$J = \frac{153}{9} = 17$$

$$V = 23$$

$$\text{Difference} = 23 - 17 = 6$$

89. Father's age is four times more plus 3 years than son's age. Mother's age is 4 years more. Father's age is four times more plus 3 years than son's age than fathers age. If son's age is 5 years, what will be the age of mother ?

- (A) 19 years
- (B) 23 years
- (C) 27 years
- (D) 21 years

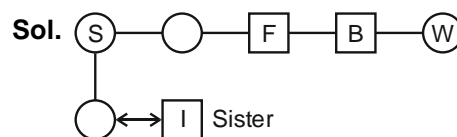
**Answer (C)**

90. What is your relationship with your uncle's wife's one and only sister - in - law's daughter ?

- (A) Paternal Aunt
- (B) Maternal Aunt
- (C) Niece
- (D) Sister

**Answer (D)**

(D) Sister

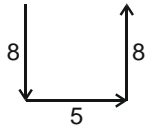


91. Tanvi walks 8 km in the south from her house. Then she turns left and walks 5 km. Again, she turns left and walks 8 km. How far is she from her house ?

- (A) 3 km (B) 8 km  
(C) 5 km (D) 13 km

**Answer (C)**

**Sol.** 5 km

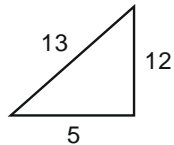


92. Rehan walks 5 km in the east. Then he turns perpendicularly left and walks 12 km. Now, at least how many kilometres will he have to walk to come back to the starting point ?

- (A) 7 km (B) 17 km  
(C) 8.5 km (D) 13 km

**Answer (D)**

**Sol.** 13



$$12^2 + 5^2 = 13^2$$

93. If East = South West and South East = West, then South = ?

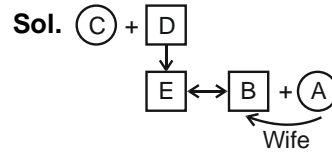
- (A) North West (B) North East  
(C) North (D) None of these

**Answer (A)**

94. 'A' is the sister - in - law of 'B' and daughter-in-law of 'C', 'D' is the father of 'E' and 'E' is the one and only brother of 'B'. Then, what is the relation of 'A' with 'E' ?

- (A) Sister-in-law (B) Wife  
(C) Mother (D) Aunty

**Answer (B)**



95. In a row, Saurav is at 10<sup>th</sup> position from the left side. In the same row, Rahul is at the 10<sup>th</sup> position from the right side. If both are beside each other, how many persons will be there in that row?

- (A) 28 (B) 19  
(C) 18 (D) None of the three

**Answer (C)**

96. In a row of 37 students, Yogesh is at 17<sup>th</sup> position from the left side. Then, what will be his position from the right side ?

- (A) 18<sup>th</sup> (B) 19<sup>th</sup>  
(C) 20<sup>th</sup> (D) 21<sup>st</sup>

**Answer (D)**

**Sol.**  $L + R - 1 = \text{total}$

$$17 + R - 1 = 37$$

$$R = 38 - 17 = 21$$

97. In a row, Joseph is at 15<sup>th</sup> position from the left side and at 13<sup>th</sup> position from the right side. How many boys will be there in that row ?

- (A) 29 (B) 28  
(C) 25 (D) 27

**Answer (D)**

**Sol.**  $13 + 15 - 1 = 27$

98. Basil is taller than Arbutus. Pomegranate is shorter than Hibiscus. Basil is taller than Pomegranate. If Arbutus is taller than Pomegranate, which will be the shortest plant ?

- (A) Pomegranate (B) Basil  
(C) Hibiscus (D) Arbutus

**Answer (A)**

99. 'M' is bigger than 'P'. 'R' is smaller than 'K'. If 'K' is smaller than 'M', then, who is the biggest among all ?

- (A) K (B) M  
 (C) P (D) R

**Answer (B)**

100. The Rajdhani is longer than the Shatabdi. The Deccan is longer than the Memu. The Shatabdi is longer than the Memu. Which train has the least length ?

- (A) Memu (B) Shatabdi  
(C) Rajdhani (D) Deccan

## PAPER-II : SCHOLASTIC APTITUDE TEST (SAT)

1. Find the remainder when  $x^4 - x^3 + 2x^2 - x - 1$  is divided by  $x + 1$
- (A) 2 (B) -2  
(C) 4 (D) 0

**Answer (C)**

**Sol.**  $f(-1) = (-1)^4 - (-1)^3 + 2(-1)^2 - (-1) - 1$   
 $= 1 + 1 + 2 + 1 - 1$   
 $= 4$

2. Number of zeros which are real numbers of the polynomial  $P(x) = x^3 + 1$ , is
- (A) 1 (B) 0  
(C) 3 (D) 2

**Answer (A)**

**Sol.**  $x^3 + 1 = 0$   
 $(x + 1)(x^2 + x + 1) = 0$   
 $\therefore x = -1, x^2 + x + 1 = 0$  Gives non real Zeros

3. The radius of hemisphere is \_\_\_\_ whose total surface area is  $4158 \text{ cm}^2$ .
- (A) 7 cm (B) 21 cm  
(C) 3.5 cm (D) 42 cm

**Answer (B)**

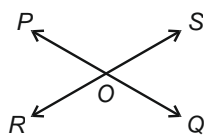
**Sol.**  $\therefore 3\pi r^2 = 4158$   
 $3 \times \frac{22}{7} r^2 = 4158$   
 $r^2 = 63 \times 7$   
 $r = 21 \text{ cm}$

4. Median of data 3, 4, -5, -3, 0, 7, 1, 5, 9 is \_\_\_\_
- (A) 3 (B) -3  
(C) 0 (D) 5

**Answer (A)**

**Sol.** -5, -3, 0, 1, 3, 4, 5, 7, 9  
 Median =  $5^{\text{th}}$  term  
 $= 3$

5. As shown in figure if  $\angle PQR : \angle ROQ = 5 : 7$  then  $m\angle SOQ =$  \_\_\_\_



- (A)  $105^\circ$  (B)  $75^\circ$   
(C)  $90^\circ$  (D)  $110^\circ$

**Answer (D)**

**Sol.** The given data is incorrect.  
 $\angle POR$  is needed in place of  $\angle PQR$ .

6. In the decimal expansion of a rational number  $\frac{14580}{625 \times 3}$ , there are \_\_\_\_ digits (nos) after decimal

- (A) 2 (B) 3  
(C) 4 (D) 5

**Answer (B)**

**Sol.**  $\frac{14 \times 50}{625 \times 3} = \frac{972}{125}$

$\therefore$  No of digits after decimal = 3

7. The HCF of 96 and 404 is 4 then their LCM is \_\_\_\_
- (A) 16016 (B) 9616  
(C) 1250 (D) 9696

**Answer (D)**

**Sol.**  $\text{LCM} \times 4 = 96 \times 404$   
 $\text{LCM} = 96 \times 101$   
 $= 9696$

8. For a quadratic polynomial  $-x^2 + 2x + 8$  sum of zeros is \_\_\_\_
- (A) -2 (B) 2  
(C) -8 (D) -4

**Answer (B)**

**Sol.** Sum of zeros =  $\frac{-2}{-1}$   
 $= 2$

9. Zeroes of quadratic polynomial  $P(x) = 2x^2 - 3x + (K - 1) = 0$  are inverse of each other then  $K =$  \_\_\_\_
- (A) 3 (B) 2  
(C)  $\frac{1}{2}$  (D) 1

**Answer (A)**

**Sol.**  $\therefore$  Product of zeros = 1  
 $\frac{K-1}{2} = 1$   
 $K = 3$

10. The pair of equation  $5x - 8y + 1 = 0$ ,  $3x - \frac{24}{5}y + \frac{3}{5} = 0$  has \_\_\_\_

- (A) Unique Solution  
(B) Infinitely many Solutions  
(C) Two Solutions  
(D) No solution

**Answer (B)**

**Sol.**  $\therefore \frac{5}{3} = \frac{-5}{-24} = \frac{1}{3}$

i.e.,  $\frac{5}{3} = \frac{5}{3} = \frac{5}{3}$

So, infinitely many solutions

11. After five years the sum of ages of father and his son will 70. Then four years ago sum of their ages was \_\_\_\_\_

- (A) 62 (B) 66  
(C) 56 (D) 52

**Answer (D)**

**Sol.** Let father and son's age be  $x$  and  $y$  respectively

$\therefore x + 5 + y + 5 = 70$

$x + y = 60$

$\therefore x - 4 + y - 4 = x + y - 8$   
 $= 60 - 8$   
 $= 52$

12. HCF of smallest prime number and smallest composite number is \_\_\_\_\_

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

**Answer (B)**

**Sol.** HCF (2, 4) = 2

13. 11<sup>th</sup> term of the A.P :  $-3, -\frac{1}{2}, 2, \dots$  is \_\_\_\_\_

- (A) 28 (B) 22  
(C) -38 (D)  $-48\frac{1}{2}$

**Answer (B)**

**Sol.**  $a = -3, d = \frac{-1}{2} - (-3)$

$= \frac{-1}{2} + 3$

$= \frac{5}{2}$

Now,

$a_{11} = -3 + (11 - 1) \left(\frac{5}{2}\right)$

$= -3 + 25$

$= 22$

14. The sum of the first 1000 positive integers is \_\_\_\_\_

- (A) 5050 (B) 50005  
(C) 500500 (D) 50500

**Answer (C)**

**Sol.**  $\therefore S_n = \frac{n(n+1)}{2}$

$S_{1000} = \frac{1000 \times 1001}{2}$

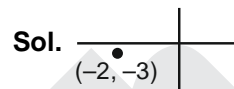
$= 500 \times 1001$

$= 500500$

15. Perpendicular distance of point  $(-2, -3)$  from  $y$ -axis is \_\_\_\_\_

- (A) 2 (B) 3  
(C)  $\sqrt{13}$  (D) 5

**Answer (A)**

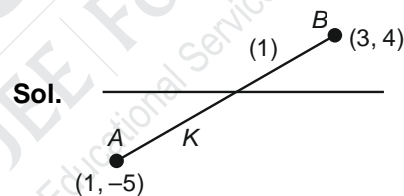


So Distance = 2

16. The ratio in which the line segment joining the points  $A(1, -5)$  and  $B(3, 4)$  is divided by  $X$  axis from  $A$ , is \_\_\_\_\_

- (A)  $-4 : 5$  (B)  $1 : 3$   
(C)  $5 : 4$  (D)  $-5 : 4$

**Answer (C)**



$\frac{4K - 5}{K + 1} = 0$

$4K = 5$

$K = \frac{5}{4}$

Required Ratio = 5 : 4

17. A die is thrown twice. The probability that 5 will come up at least once is \_\_\_\_\_

- (A)  $\frac{1}{6}$   
(B)  $\frac{5}{36}$   
(C)  $\frac{10}{36}$   
(D)  $\frac{11}{36}$

**Answer (D)**

**Sol.** Required probability =  $\frac{11}{36}$

18. Which of the following cannot be the probability of an event?

- (A)  $\frac{2}{3}$  (B) 15%  
 (C)  $\frac{3}{2}$  (D) 0.7

**Answer (C)**

**Sol.** Probability cannot be greater than 1

19. To draw "Less than" ogive we take \_\_\_\_\_ on X axis.

- (A) Cumulative frequency (B) Upper Limits  
 (C) Lower Limits (D) Midpoints

**Answer (B)**

20.  $\sum_{i=1}^9 (x_i - \bar{x}) =$  \_\_\_\_\_

- (A)  $8\bar{x}$  (B)  $9\bar{x}$   
 (C) 0 (D) 9

**Answer (C)**

**Sol.**  $\sum_{i=1}^9 (x_i - \bar{x}) = (x_1 + x_2 + x_3 + \dots + x_9) - 9\bar{x}$   
 $= 9\bar{x} - 9\bar{x}$   
 $= 0$

21. The water kept in an earthen pot (matka) become cool during summer by which process?

- (A) Diffusion (B) Sublimation  
 (C) Evaporation (D) Osmosis

**Answer (C)**

22. Which of the following compound cannot be sublimed?

- (A) Sodium Chloride (B) Ammonium Chloride  
 (C) Anthracene (D) Camphor

**Answer (A)**

23. What is the molar mass of Nitric acid ? [H = 1, N = 14, O = 16].

- (A) 31 u (B) 36 u  
 (C) 47 u (D) 63 u

**Answer (D)**

24. An isotope of which element is used in the treatment of cancer?

- (A) Lead (B) Cobalt  
 (C) Uranium (D) Iodine

**Answer (B)**

25. Who discovered the nucleus in the cell ?

- (A) Robert Brown (B) Robert Hooke  
 (C) Purkinje (D) Leeuwenhoek

**Answer (A)**

26. The lining of kidney tubules and duct of salivary glands are formed by which epithelium?

- (A) Squamous (B) Ciliated  
 (C) Columnar (D) Cuboidal

**Answer (D)**

27. Which of the following animal possesses jawless sucking mouth ?

- (A) Lamprey (B) Chameleon  
 (C) Sting ray (D) Salamander

**Answer (A)**

28. A train starting from rest attains velocity of  $72 \text{ kmh}^{-1}$  in 5 min, then find the acceleration (Assuming that the acceleration is uniform)

- (A)  $\frac{1}{15} \text{ ms}^{-2}$  (B)  $\frac{1}{10} \text{ ms}^{-2}$   
 (C)  $5 \text{ ms}^{-2}$  (D)  $10 \text{ ms}^{-2}$

**Answer (A)**

**Sol.** Given  $U = 0$ ,  $V = 72 \text{ Km/h}$  convert

it in  $\text{m/s} = 20 \text{ m/s}$

$T = 5 \text{ min} = 300 \text{ sec}$

$a = (v - u)/t = (20 - 0)/300 = 1/15 \text{ m/s}^2$

29. Which is the unit of Force?

- (A)  $\text{kg ms}^{-1}$  (B)  $\text{N.m}$   
 (C)  $\text{kg ms}^{-2}$  (D)  $\text{Pa}$

**Answer (C)**

30. What is the mass of 6 kg object on the moon?

- (A) 1 Kg (B) 36 Kg  
 (C)  $\frac{1}{6}$  Kg (D) 6 Kg

**Answer (D)**

31. 1 kwh = \_\_\_\_\_ J

- (A)  $36 \times 10^5 \text{ J}$  (B)  $3.6 \times 10^5 \text{ J}$   
 (C)  $36 \times 10^6 \text{ J}$  (D)  $3.6 \times 10^4 \text{ J}$

**Answer (A)**

**Sol.** 1 kwh =  $1000 \times 3600 = 36 \times 10^5 \text{ J}$

32. Which of the following animal produce Ultrasound?

- (A) Whale (B) Dolphin  
 (C) Elephant (D) Rhinoceroses

**Answer (B)**

33. Which of the following is not a bacterial disease?

- (A) Anthrax (B) T.B  
 (C) Dengue (D) Typhoid

**Answer (C)**

34. Which is responsible for increase in global temperature ?  
 (A) Ozone layer depletion  
 (B) Acide rain  
 (C) Green house effect  
 (D) Lightning

**Answer (C)**

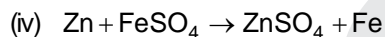
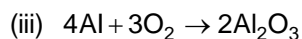
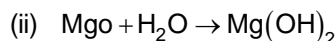
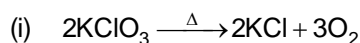
35. Which fish feeds in the middle zone of the pond ?  
 (A) Catla (B) Mrigal  
 (C) Common Carp (D) Rohu

**Answer (D)**

36. Which of the following gases can be used for storage of fresh sample of an oil for a long time ?  
 (A) Carbon dioxide or oxygen  
 (B) Nitrogen or Oxygen  
 (C) Carbon dioxide or helium  
 (D) Nitrogen or helium

**Answer (D)**

37. Which of the following are combination reaction ?



- (A) (i) and (iii) (B) (iii) and (iv)  
 (C) (ii) and (iv) (D) (ii) and (iii)

**Answer (D)**

38. Our tooth enamel is made up of \_\_\_\_\_

- (A)  $\text{Ca}_3(\text{PO}_4)_2$  (B)  $\text{Ca}_2(\text{PO}_4)_3$   
 (C)  $\text{Mg}(\text{OH})_2$  (D)  $\text{CaPO}_4$

**Answer (A)**

39. Which acid is present in tomato?

- (A) Citric acid (B) Acetic Acid  
 (C) Oxalic Acid (D) Tartaric Acid

**Answer (C)**

40. What is the common name of compound  $\text{CaOCl}_2$  ?

- (A) Quick lime (B) Bleaching powder  
 (C) Slaked lime (D) Baking powder

**Answer (B)**

41. Cinnabar is an ore of which metal ?

- (A) Hg (B) Pb  
 (C) Zn (D) Cu

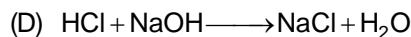
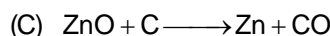
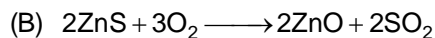
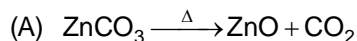
**Answer (A)**

42. Which is the alloy of copper and tin ?

- (A) Brass (B) Steel  
 (C) Solder (D) Bronze

**Answer (D)**

43. Which of the following is an example of roasting ?



**Answer (B)**

44. Which enzyme is present in pancreatic juice for digestion of proteins ?

- (A) Lipase (B) Trypsin  
 (C) Amylase (D) Ptyalin

**Answer (B)**

45. During the process of photosynthesis which of the following event does not occur ?

- (A) Absorption of light energy by chlorophyll  
 (B) Conversion of light energy to chemical energy  
 (C) Oxidation of carbon dioxide to carbohydrates  
 (D) Reduction of carbon dioxide to carbohydrates

**Answer (C)**

46. Which of the following is carried by lymph which is digested and absorbed from intestine ?

- (A) Fat (B) Protein  
 (C) Minerals (D) Carbohydrates

**Answer (A)**

47. In animals, control and co-ordination are provided by which tissues?

- (A) Skeletal and Muscular tissue  
 (B) Nervous and connective tissue  
 (C) Muscular and Epithelial tissue  
 (D) Nervous and Muscular tissue

**Answer (D)**

48. Which is the main thinking part of the brain ?

- (A) Forebrain  
 (B) Midbrain  
 (C) Hind Brain  
 (D) Pons

**Answer (A)**



49. Which hormone regulates metabolism for body growth ?

- (A) Adrenaline (B) Thyroxine  
(C) Growth hormone (D) Insulin

**Answer (B)**

50. Find the power of a concave lens of focal length 2m?

- (A) -0.5 D (B) +0.5 D  
(C) -4.0 D (D) +4.0D

**Answer (A)**

**Sol.** POWER =  $1 / f$

(Focal length of concave lens is negative)

51. The central point of a lens is known as

- (A) Centre of curvature  
(B) Principle focus  
(C) Optical centre  
(D) Pole

**Answer (C)**

52. For a young adult with normal vision, what is the value of least distance?

- (A) 25 cm (B) 25 mm  
(C) 25 m (D) 50 mm

**Answer (A)**

53. The idea that the sunlight is made up of seven colours was given by ?

- (A) Einstein (B) Newton  
(C) Tyndall (D) Dalton

**Answer (B)**

54. Calculate the number of electrons constituting one coulomb of charge.

- (A)  $6.25 \times 10^{19}$  (B)  $1.6 \times 10^{19}$   
(C)  $6.25 \times 10^{20}$  (D)  $6.25 \times 10^{18}$

**Answer (D)**

**Sol.**  $Q = ne^-$

55. If the value of resistance is doubled the current gets \_\_\_\_\_.

- (A) halved  
(B) doubled  
(C) four times  
(D) remains same

**Answer (A)**

**Sol.**  $V = IR$

56. An electric bulb is connected to a 220 V generator. The current is 500 mA. What is the power of the bulb?

- (A) 120 W (B) 100 W  
(C) 110 W (D) 500 W

**Answer (C)**

**Sol.** POWER = VI

57. What is the melting point of tungsten used for making bulb filaments ?

- (A) 3350 °C (B) 3380 °C  
(C) 3550 °C (D) 3580 °C

**Answer (B)**

58. A solar typical cell can produce about \_\_\_\_\_ watt of electricity.

- (A) 0.4 W (B) 0.5 W  
(C) 0.6 W (D) 0.7 W

**Answer (D)**

59. In which place of Gujarat, the nuclear power reactor is situated ?

- (A) Kakrapar (B) Ukai  
(C) Wanak bori (D) Gandhinagar

**Answer (A)**

60. Primary consumers form \_\_\_\_\_ trophic level.

- (A) First (B) Second  
(C) Third (D) Fourth

**Answer (B)**

61. Who were the first to arrive in India for trade ?

- (A) English (B) Dutch  
(C) Portuguese (D) Danish

**Answer (C)**

62. In which treaty had the seed of World War - II been sown ?

- (A) Frankfurt Treaty  
(B) Treaty of Versailles  
(C) Treaty of France and Britain  
(D) Treaty of Germany and Hungary

**Answer (B)**

63. Where is the head quarter of 'International Court of Justice' situated ?

- (A) Washington (America)  
(B) Moscow (Russia)  
(C) London (Britain)  
(D) Hague (Netherlands)

**Answer (D)**



64. Who sorted out the issue of merging the princely States in the Union of India ?
- (A) Sardar Vallabhbhai Patel  
(B) Jawaharlal Nehru  
(C) Mount Batten  
(D) Chakravarti C. Rajagopalchari

**Answer (A)**

65. Where have the goals of the United Nations been explained ?
- (A) In the manifesto of United Nations  
(B) In the human rights of the United Nations  
(C) In the constitution of United Nations' Security Council  
(D) In the preamble of the United Nations' Charter

**Answer (D)**

66. What is the capital of Goa?
- (A) Puducherry (B) Mahe  
(C) Panaji (D) Karaikal

**Answer (C)**

67. Who was the chairman of the Constituent Assembly?
- (A) Dr. Bhimrao Ambedkar  
(B) Dr. Rajendra Prasad  
(C) Kanaiyalal Munshi  
(D) Jawaharlal Nehru

**Answer (B)**

68. Who chairs the joint sitting of both the houses of the parliament?
- (A) Chairman of Loksabha (Speaker)  
(B) Chairman of Rajyasabha  
(C) Vice-President  
(D) Prime Minister

**Answer (A)**

69. Who appoints the Chief Justice of the Supreme Court?
- (A) Vice President (B) President  
(C) Prime Minister (D) Governor

**Answer (B)**

70. What is India's rank in terms of area in the world?
- (A) Seventh (B) Fifth  
(C) Third (D) Second

**Answer (A)**

71. Which type of soil is mostly found in Gujarat?
- (A) Red Soil (B) Laterite Soil  
(C) Black Soil (D) Mountain Soil

**Answer (C)**

72. How many kilometres distance is there between two successive latitudes?
- (A) 111 km (B) 120 km  
(C) 130 km (D) 100 km

**Answer (A)**

73. Where are Asiatic Lions found?
- (A) Gir (Gujarat)  
(B) Kanha (Madhya Pradesh)  
(C) Velavadar (Gujarat)  
(D) Kaziranga (Assam)

**Answer (A)**

74. What is the well-known dance of Tamil Nadu?
- (A) Lavni Dance (B) Kuchipudi  
(C) Bhangda (D) Bharat Natyam

**Answer (D)**

75. From where does the monsoon begin in India?
- (A) Mumbai (B) Karnataka  
(C) Kerala (D) Andhra Pradesh

**Answer (C)**

76. Where is the Kartik Poornima fair held?
- (A) Modhera (B) Somnath  
(C) Gimar (D) Bahucharaji

**Answer (B)**

77. Which Gujarati poet wrote colourful and emotional Garbis of Lord Krishna's love?
- (A) Narsinh Mehta (B) Narnad  
(C) Premanand (D) Dayaram

**Answer (D)**

78. Which ancient book of India has mentioned the value of  $\pi$  (pie)?
- (A) Aryabhattiyam (B) Aryasiddhanta  
(C) Algebra (D) Lilawati Ganit

**Answer (A)**

79. Between which two rivers is Lothal situated?
- (A) Narmada and Tapi  
(B) Shetrunji and Bhadar  
(C) Bhogavo and Sabarmati  
(D) Aji and Nari

**Answer (C)**

80. How many lions are there in the pillar of Sarnath?

- (A) Two (B) Three  
(C) Five (D) Four

**Answer (D)**

81. Where is the famous ancient sun temple of Gujarat situated?

- (A) Siddhpur (B) Modhera  
(C) Vadnangar (D) Patan

**Answer (B)**

82. Which is the most ancient book of Indian literature?

- (A) Samveda (B) Yajurveda  
(C) Rigveda (D) Atharvaveda

**Answer (C)**

83. The ruler of which dynasty patronized Vallabhipith?

- (A) Maitrak Dynasty (B) Maurya Dynasty  
(C) Shrung Dynasty (D) Gupta Dynasty

**Answer (A)**

84. Who is known as the 'Father of Mathematics' of India?

- (A) Acharya Nagarjun (B) Maharshi Charak  
(C) Aryabhata (D) Maharshi Patanjali

**Answer (C)**

85. Which sculpture of Elephanta is considered as one of the best sculpture in the world?

- (A) Smiling Lord Vishnu  
(B) Trimurti (Brahma, Vishnu and Mahesh)  
(C) Goddess Durga slaying Mahisasura  
(D) Kailash Temple

**Answer (B)**

86. Who built the step – well of Patan?

- (A) Queen Udaymati  
(B) Mayanalladevi  
(C) Siddharaj Jaysinh  
(D) Bhimdev-I

**Answer (A)**

87. Which department is responsible to look after the preservation of national monuments?

- (A) Revenue Department  
(B) Police Department  
(C) Public Works Department (PWD)  
(D) Department of Archaeology

**Answer (D)**

88. About how much area is covered by black soil out of total area of India?

- (A) 43% (B) 29%  
(C) 15% (D) 35%

**Answer (C)**

89. Which wild animal has totally extincted from Gujarat?

- (A) Tiger (B) Bear  
(C) Deer (D) Panther

**Answer (A)**

90. In which area of Gujarat is dry farming carried out?

- (A) North Gujarat (B) South Gujarat  
(C) Kutch (D) Bhal Region

**Answer (D)**

91. What is the name of the crop grown during summer?

- (A) Rabi crops (B) Zaid crops  
(C) Kharif crops (D) Horticultural crops

**Answer (B)**

92. Which of the following oil seeds has the highest content of oil?

- (A) Soyabean (B) Groundnut  
(C) Sesam / Til (D) Castor

**Answer (C)**

93. From which state of India is the maximum iron obtained?

- (A) Karnataka (B) Orissa  
(C) Jharkhand (D) Chhattisgarh

**Answer (A)**

94. What is the average rate of population growth in India?

- (A) 2.1% (B) 2.3%  
(C) 2.4% (D) 1.9%

**Answer (D)**

95. The price of which products are fixed by the government?

- (A) Cotton (B) Petroleum Product  
(C) Edible oil (D) Tea

**Answer (B)**

96. Who propounded the concept of Human Development Index?

- (A) Amartya Sen (B) Boyd Orr  
(C) Arun Jaitley (D) Dr. Hansaben Mehta

**Answer (A)**

97. How many percentages' reservation provision has Gujarat government made for women in government job?

- (A) 30%                      (B) 35%  
(C) 38%                      (D) 33%

**Answer (D)**

98. Who built the Red Fort of Delhi?

- (A) Babar                      (B) Akbar  
(C) Shahjahan              (D) Jahangir

**Answer (C)**

99. The index of which article of the constitution includes scheduled tribes?

- (A) Article-340              (B) Article-342  
(C) Article-330              (D) Article-335

**Answer (B)**

100. Who wrote 'Sangeet Makrand'?

- (A) Pt. Narad                (B) Pt. Saarang Dev  
(C) Pt. Ahobale              (D) Taansen

**Answer (A)**

