DATE : 04/11/2018 GOA

Aakash
Medical | IIT-JEE | Foundations
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Answers & Solutions

for

NTSE (Stage-I) 2018-19

INSTRUCTIONS TO CANDIDATES

1. PART-I Mental Ability Test — Time 120 Minutes — Maximum Marks 100
   PART-II Scholastic Aptitude Test — Time 120 Minutes — Maximum Marks 100
2. Write your Seat No. both in figure and in words on this Question Booklet (above) as Well as on the Answer Sheet supplied to you.
3. Each question carries one Mark.
4. All question are compulsory.
5. You have to mark your answer on Answer sheet provided with the Question Booklet. Each question is provided with four alternatives. Answer to each question is to be indicated by encircling the number of the correct alternative in the Answer sheet from amongs those given against the corresponding question in the Question Booklet.
6. The answer sheet have two parts:
   PART-I Mental Ability Test, Part-II Scholastic Aptitude Test. Answer to question of MAT (Part-I) are to be indicated in Part-I Portion of the Answer Sheet. Answer to question of SAT (PART-II) are to be indicated in Part-II portion of the Answer Sheet.
7. Rough work can be done any where in the question booklet.
   Please Note the Centre Codes:

1.	Bicholim	0001
2.	Bardez	0002
3.	Pernem	0003
4.	Sattari	0004
5.	Tiswadi	0005
6.	Ponda	0006
7.	Salcete	0007
8.	Sanguem	0008
9.	Cacacona	0009
10.	Quepem	0010
11.	Dharbandora	0011
12.	Mormugao	0012

PART-I : MENTAL ABILITY TEST (MAT)

1. Identify the missing number in the following sequence

   5, 13, 41, 85, ?, 221, 313

   (1) 163 (2) 179

   (3) 145 (4) 147

Answer (3)

Sol. $2^2 + 1^2$, $3^2 + 2^2$, $5^2 + 4^2$, $7^6 + 6^2$, $9^2 + 8^2$, $11^2 + 10^2$, $13^2 + 12^2$

2. If $\frac{36}{31} = 10$ and $\frac{48}{18} = 4$ then $\frac{64}{16}$ _____

   (1) 3 (2) 4

   (3) 5 (4) 6

Answer (2)

Sol. $\frac{5 \times 6}{3 \times 1} = 10$; $\frac{4 \times 8}{1 \times 8} = 4$; $\frac{6 \times 4}{1 \times 6} = 4$

3. If *AR* = 36, *CM* = 78, *GP* = 224, then ES = _____

   (1) 364 (2) 150

   (3) 190 (4) 320

Answer (3)

Sol. AR = 36, CM = 78, GP = 224; ES = 190

(1×8) × 2 (3×13) × 2 (7×16) × 2 (5×19) × 2

4. Boy facing east turbed left and run 200 metres then turn left and run 200 metres and take turn 45° towards right and went straight to cover 350 metres. Now boy is in which direction from starting point?

   (1) North–East (2) North–West

   (3) South–East (4) South–West

Answer (2)

Sol. North-West

5. In a basket the number of apples is five times the oranges and the number of bananas is six times the oranges. Which of the following can be the number of total fruits in the box?

   (1) 156 (2) 200

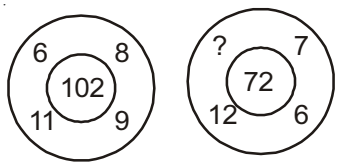
   (3) 140 (4) 136

Answer (1)

Sol. x × 5x + 6x = 12x

156 ÷ 12 = 13

6. Find the missing number in the second figure on the basis of the number arranged in the first figure.



   (1) 10 (2) 46

   (3) 12 (4) 36

Answer (1)

Sol. (11×8) – (9 × 6) = 34 × 3 = 102

7. Rakesh has six friends to invite. In how many ways can he send invitation cards to them, if he has three servants to carry the cards?

   (1) 156 (2) 243

   (3) 18 (4) 729

Answer (1)

Sol. Three people ⇒ Let *x*, *y*, *z*

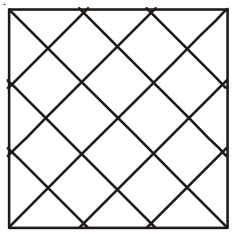
$x + y + z = 6$

No. of ways ⇒ $6 + 3 - 1c_{3-1}$

31 × 26 = 156 ⇒ 28 – 2

⇒ 26

8. Find the number of triangles in the figure.



   (1) 28 (2) 32

   (3) 36 (4) 40

Answer (3)

Sol. 40

9. How many lines of symmetry does a hendecagon have?

   (1) 13 (2) 7

   (3) 9 (4) 11

Answer (4)

Sol. Hendecagon - 11 sides (11side of symmetry)

10. A candidate attempted 12 questions and secured full marks in all of them. If he obtained 60% in the test and all questions carried equal marks, then what is the number of questions in the test?

(1) 20 (2) 25

(3) 36 (4) 42

Answer (1)

Sol. 60% of n = 12

$\frac{60}{100} \times n = 12$

n = 20

Directions:(Q. No:- 11–14)

In each of the following questions there are some blanks given. Choose from the options the set of letters that best completes the given series.

11. a __ c b c a __ a b __ b c __ c a c a b a b c

(1) cbab (2) bcab

(3) baba (4) ccca

Answer (2)

Sol. bcab abc/bc/cb/abc/bc

12. __ 9 9 5 __ 9 __ 9 5 __ 5

(1) 9595

(2) 5559

(3) 9995

(4) 5959

Answer (3)

Sol. 9995 9995/99995/55

13. I I __ II I __ I I II __ IIII __ D

(1) IIID (2) IDID

(3) DDDI (4) DIDI

Answer (3)

Sol. DDDI (IIDIIIDIIIIDIIIIID)

14. Watch : 110:: TIME: _____

(1) 112

(2) 54

(3) 68

(4) 94

Answer (4)

Sol. WATCH : (23+1+20+3+8) TIME : (20+9+13+5)

= 55 × 2 = (47) × 2

= 110 = 94

15. Two people run around circular track and take 42 sec and 30 sec to make one complete round. If they start together after how much amount of time will they meet again in the same place?

(1) 3 min 30 sec (2) 3 min 20 sec

(3) 4 min 30 sec (4) 4 min 20 sec

Answer (1)

Sol. LCM of 42 sec & 30 sec = 210 sec

16. At noon and at midnight the long and short hands of the clock are together. Between noon and midnight how many times the long hand overtakes the short hand?

(1) 12 (2) 11

(3) 10 (4) 9

Answer (2)

Sol. 11

17. Which of the following alternative will fit in place of T?

642, 1003, 1415, 1967, T, 32413

(1) 2569 (2) 2568

(3) 25611 (4) 25610

Answer (3)

Sol. 2,3,5,7,11 -

18. Find the odd one out of the following terms.

FH144, KM429, JL360, IK198

(1) FH144 (2) KM429

(3) JL360 (4) IK198

Answer (4)

Sol. IK198

19. The calendar for the year 1993 will be same for the year:

(1) 2004 (2) 1992

(3) 1998 (4) 2003

Answer (1)

Sol. 1993 ÷ 4 R = 3

93 + 11 = 2004

20. A watch which gains 5 seconds in 3 minutes was set right at 7 a.m. In the afternoon of the same day, when the watch indicated quarter past 4 o'clock, the true time is

(1) $59\frac{7}{12}$ min past 3 (2) 4 pm

(3) $58\frac{7}{11}$ min past 3 (4) $2\frac{3}{11}$ min past 4

Answer (2)

Sol. 7– 4 :15 = 9 hr 15 min = -----

_____

21. What was the day of the week on 28th May, 2006

(1) Thursday (2) Friday

(3) Saturday (4) Sunday

Answer (4)

22. A person needs to find the fastest two horses from 25 horses in a month. Only a race of 5 horses can be conducted at a time. What is the minimum number of races to be conducted to determine the fastest two?

(1) 7 (2) 6

(3) 5 (4) 10

Answer (2)

Sol. (A, A2, A3,A4,A5) (B, B2, B3, B4, B5) (C, C2, C3, C4, C5) (D, D2, D3, D4, D5) (E, E2, E3, E4, E5)

Final 6 Race to decide fastest two.

Directions:(Q. No:- 23–24)

23. Find from alternative the number which will replace the question mark (?).

25	13	229
24	13	161
18	16	35
19	13	?

(1) 218 (2) 115

(3) 58 (4) 97

Answer (4)

Sol. $\Rightarrow \frac{19^2 - 13^2}{2} + 1$

24.

15 G	L	7 O
9 Y	R	25 I
?	P	13 Q

(1) 17 Q (2) 17 M

(3) 17 R (4) 17 N

Answer (2)

Sol. 15 × G = 15 × 7 = 105 = 7 × 15 = 105

$\therefore$ 9 × 4 (25) = 225 = 25(I) = 225

25. In a class there are 40 students out of which 30 are 10 years old and out of the remaining 50% are 11 years old. 20% of the remaining are 12 years old and remaining students are 13 years old. What is the average age of the class?

(1) 11.50 (2) 12.25

(3) 10.475 (4) 14

Answer (3)

Sol.

30 – 10 years	300
5 – 11 years	55
1 – 12 years	12
4 – 13 years	52
TOTAL	419

$\frac{419}{40} = 10.475$

26. Tickets numbered 1 to 20 are mixed up and then a a ticket is drawn at random. What is the probability that the ticket drawn is not multiple of 3 and 5 ?

(1) 1/20 (2) 11/20

(3) 9/20 (4) 19/20

Answer (4)

Sol. Multiple of 3 and 5 = 15

$\therefore \frac{19}{20}$

27. Ramesh was asked how many balls he had in a box. He replied that there were all tennis balls but dozen, all cricket ball but dozen and all TT balls but dozen. How many balls had he in all?

(1) 24 (2) 12

(3) 18 (4) 30

Answer (3)

Sol. Tennis + Cricket + TT = 6 + 6 + 6 = 18

28. A five-digit number is formed by using digits 1, 2, 3, 4 and 5 without repetition. What is the probability that the number is divisible by 4?

(1) 5/6 (2) 4/5

(3) 1/5 (4) 0

Answer (3)

Sol. Possible options are 12, 32, 24, 52 in last two places.

Probability = $\frac{4!}{5!} = \frac{1}{5}$

29. Four dice are thrown simultaneously. Find the probability that all of them show the same face.

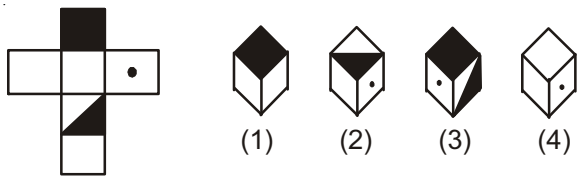
(1) 1/126 (2) 1/36

(3) 1/54 (4) 1/72

Answer (1)

Sol. $\frac{6}{6^4} = \frac{6}{216}$

30. Choose the box that is similar to the box formed from the given sheet of paper (X).



(1) 1 and 3 only (2) 2, 3 and 4 only

(3) 2 only (4) 3 and 4 only

Answer (3)

Sol. 2 only

Directions:(Q. No:- 31–33)

P, Q, R, S, T, U, V and W are sitting round the circle and are facing the centre:

P is second to the right of T who is the neighbour of R and V.

S is the not the neighbour of P.

V is the neighbour of U.

Q is not between S and W, W is not between U and S

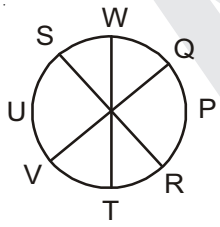
31. Which two of the following are not neighbours?

(1) RV (2) UV

(3) RP (4) QW

Answer (1)

Sol. RV



32. Which one is immediate right of V?

(1) P (2) U

(3) R (4) T

Answer (4)

Sol. T

33. Which one of the following is correct?

(1) P is to the immediate right of Q

(2) R is between U and V

(3) Q is to the immediate left of W

(4) U is between W and S

Answer (3)

Sol. Q is to the immediate left of W

34. Integer y on dividing by 3 leaves remainder 2, on dividing by 5 leaves remainder 3 and on dividing by 7 leaves remainder 5. What could be the minimum value of the integer y from the following options?

(1) 36 (2) 68

(3) 136 (4) 56

Answer (2)

Sol. 68

Directions:(Q. No:- 35–37)

If > stands for +, < stands for –, + stands for ÷, $\wedge$ stands for X, – stands for =, X stands for > and = stands for <, then which of the following statement is correct in each question

35. (1) $7 + 7 > 4 = 3$ (2) $8 > 8 < 8 + 8 = 17$

(3) $14 < 14 + 14 = 13$ (4) $6 \wedge 6 > 6 + 6 = 6$

Answer (2)

Sol. $8 > 8 < 8 + 8 = 17$

36. (1) $2 > 4 < 8 \wedge 6 = 32$

(2) $8 > 8 < 6 > 6 = 18$

(3) $6 \wedge 6 > 4 \wedge 4 > 2 \wedge 6 \wedge 4 = 104$

(4) All of the above

Answer (4)

37. (1) $52 < 24 > 28 < 26 - 4 \wedge 5 > 1$

(2) $88 + 4 > 4 + 4 \times 7 \wedge 2 \wedge 2 > 3 \wedge 2$

(3) $19 > 14 \wedge 2 < 46 + 2 = 25$

(4) $3 \wedge 10 < 5 > 4 < 7 \times 8$

Answer (3)

Sol. $19 > 14 \wedge 2 < 46 + 2 = 25$

38. Amar is at 10th position from top position in a class of 40 students. There are 5 Students between Amar and Archita. How many students may be there between Archita and last student in the class?

(1) 13 or 27 (2) 24 or 36

(3) 23 or 17 (4) 22 or 18

Answer (3)

Sol. 23 or 17

39. In a certain code, "REASON" is coded as 8, "BELOVED" is coded as 9. How would "GOVERNMENT" be coded ?

(1) 16 (2) 14

(3) 10 (4) 12

Answer (4)

Sol. Number of letters +2

40. At what angle are the hands of a clock inclined at 30 minutes past 6 ?

(1) 30º (2) 15º

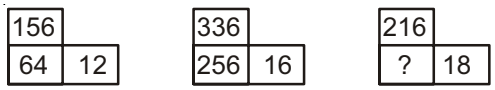
(3) 45º (4) (7.5)º

Answer (2)

Sol. 15º

Direction:- (Q No. :- 41 - 44)

The numbers in the first two figures are according to some order. Choose the correct answer from the alternatives and write at the place of question mark (?) for third figure

41. 

(1) 64 (2) 49

(3) 81 (4) 196

Answer (2)

Sol. $156 \div 12 = 13$

$82 = 64$

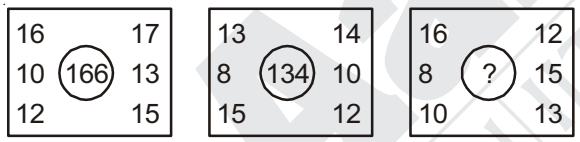
$8 + 5 = 13$

$336 \div 16 = 21$

$16^2 = 256$

$16 + 5 = 21$

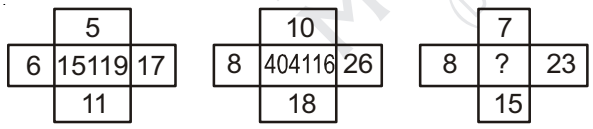
$\therefore\ 216 \div 18 = 12 - 5 = 7$ and $7^2 = 49$

42. 

(1) 208 (2) 314

(3) 510 (4) 145

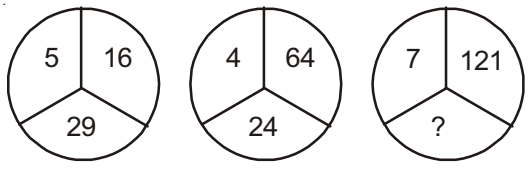
Answer (*)

43. 

(1) 45281 (2) 33648

(3) 28141 (4) 13243

Answer (3)

44. 

(1) 60 (2) 45

(3) 42 (4) 14

Answer (1)

Sol. $16 = 4^2$

$5^2 + 4 = 29$

$(11)^2 = 121$

$(7)^2 + 11 = 60$

45. In a school 40 girls have registered for singles badminton tournament. Each match eliminates one player. How many matches are to be played to determine the champion ?

(1) 36 (2) 39

(3) 40 (4) 20

Answer (2)

Sol. 39

Direction:- (Q No. :- 46 - 47)

Each of these questions is based on the following information:

M % N means M is the son of N.

M @ N means M is the sister of N.

M $ N means M is the father of N.

46. Which of the following shows the relation that C is the granddaughter of E ?

(1) C % B $ F $ E

(2) B $ F $ E % C

(3) C @ B % F % E

(4) E % B $ F $ C

Answer (3)

Sol. C @ B % F % E

47. Which of the following shows the relation that S is the father of Q

(1) S @ P $ Q

(2) Q @ P % S

(3) Q $ $ @ P

(4) None of these

Answer (2)

Sol. Q @ P % S

48. In a group of buffaloes and ducks the numbers of legs are 24 more than twice the number of heads. What is the number of buffaloes in the group ?

(1) 6 (2) 18

(3) 12 (4) 24

Answer (3)

Sol. $4x + 2y = 2x + 2y + 24$

$x = 12$

49. A sum of Rs. 1890 has to be used to give 9 prize to the customers of a super market for their overall academic purchases. If each prize is Rs. 30 less than its preceding price, What is the least value of the price ?

(1) 90 (2) 95

(3) 85 (4) 80

Answer (1)

Sol. x = least

$x + (x + 30) + (x + 60) + ... = 1890$

Terms = 9

$T_9 = x + (9 - 1)30$ (AP)

$= x + 240$

Sum of AP = $\frac{n}{2}(a + l)$

$1890 = \frac{9}{2}(x + x + 240)$

$x = 80$

50. In a Cricket match, five batsmen P, Q, R, S and T scored an average of 36 runs. S Scored 5 more than T; T scored 8 fewer than P; Q scored as many as S and T combined: and Q and R scored 107 between them. How many runs did T score ?

(1) 20 (2) 29

(3) 28 (4) 24

Answer (1)

Sol. $a + b + c + d + e = 36 \times 5 = 180$

$b + c = 107$

$a = x$

$e = x - 8$

$d = x - 3$

$3x - 11 + 107 = 180$

$3x = 84$

$x = 20$

51. A man fills a basket with eggs in such a way that the number of eggs added on each successive day is the same as the number already present in the basket. This way the basket gets completly filled in 24 days. After how many days the basket was 1/4th full ?

(1) 27 (2) 22

(3) 26 (4) 32

Answer (2)

Sol. 22nd day. [24 days - full, 23 day half, 22 days $-\frac{1}{4}$]

52. A person has 4 coins each of different denomination. What is the number of different sums of money the person can form (using one or more coins at a time)?

(1) 16 (2) 18

(3) 15 (4) 20

Answer (3)

Sol. $4c_1 = 4$

$4c_2 = 6$

$4C_3 = 6$

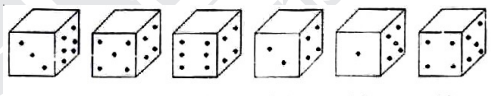
$4C_4 = 4$

$4C_4 = 1$

$\therefore 4 + 6 + 4 + 1 = 15$

Directions :- (Q. No :- 53-55)

Six dice with upper faces erased are as shows.



(I) (II) (III) (IV) (V) (VI)

The sum of the numbers of dots on the opposite face is 7.

53. If even numbered dice have even number of dots on their top faces, then what would be the total number of dots on the top faces of their dice ?

(1) 12 (2) 14

(3) 18 (4) 24

Answer (3)

Sol. Number of dots on top face (II) = 6

Number of dots on top face (IV) = 6

Number of dots on top face (VI) = 6

$\therefore 6 + 6 + 6 = 18$

54. If the odd numbered dice have even number of dots on their top faces, then what would be the total number of dots on the top faces of their dice ?

(1) 8 (2) 10

(3) 12 (4) 14

Answer (1)

Sol. Odd No are II, III, V

$\therefore 2 + 2 + 4 = 8$

55. If the even numbers of dice have odd number of dots on their top faces and odd numbered dice have even of dots on their bottom faces, then what would be the total number of dots on their top faces ?

(1) 12 (2) 14

(3) 16 (4) 18

Answer (3)

Sol. No of dots on top II = 1, I = 5

IV = 1, III = 5

VI = 1, V = 3

56. A person traveled a distance of 50 km in 8 hours. He covered a part of the distance on foot at the rate of 4 km per hour and a part on a bicycle at the rate of 10 km per hour. How much distance did he travel on foot ?

(1) 32km (2) 28km

(3) 24km (4) 20km

Answer (4)

Sol. $t_1 + t_2 = 8$

$$\frac{x}{4}+\frac{50-x}{10}=8$$

x = 20 km

57. A person X has four notes of Rupee 1, 2, 5 and 10 denomination. The number of different sums of money she can form from them is _____

(1) 45 (2) 15

(3) 25 (4) 35

Answer (2)

Sol. $4c_1 + 4c_2 + 4c_3 + 4c_4$

4 + 6 + 4 + 1

15

58. A person travels 12 km due North, then 15 km due East, after that 15 km due West and then 15 km due South. How far is he from the starting points ?

(1) 6km (2) 10km

(3) 15km (4) 12km

Answer (Error) 3 Km South

59. A question paper had ten questions. Each question could only be answred as True (T) or False (F). Each candidate answered all the questions. Yet, no two candidates wrote the answers in an identical sequence. How many different sequences of answers are possible ?

(1) 1024 (2) 2048

(3) 512 (4) 256

Answer (1)

Sol. $2^{10} = 1024$

60. Four metal rods of lengths 78 cm, 104 cm, 117 cm and 169 cm are to be cut into parts of equal length. Each part must be as long as possible. What is the maximum number of pieces that can be cut ?

(1) 36 (2) 28

(3) 24.5 (4) 42.5

Answer (1)

Sol. HCF = 36

Directions :- (Q. No.:- 61-63)

Study the pattern and find the missing in each of the following series.

1

2 3 4

5 6 7 8 9

10 11 12 13 14 15 16

17 18 19 20 21 22 23 24 25

61. 1, 2, 7, 12, ?

(1) 18 (2) 6

(3) 20 (4) 21

Answer (4)

62. 17, 10, 19, 12, 21, 14, ?

(1) 15 (2) 22

(3) 27 (4) 23

Answer (4)

63. 10, 14, 12, 22, 14, 20, ?

(1) 18 (2) 19

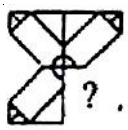
(3) 16 (4) 14

Answer (3)

Sol. 16

Directions :- (Q. No.:- 64 - 66)

In each of the following questions, select a figure from amongst the four alternatives, which when placed in the blank space of figure (X) would complete the pattern.

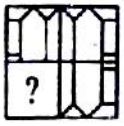
64. 

(X)

(1)  (2) 

(3)  (4) 

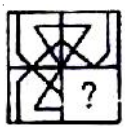
Answer (3)

65. 

(1)  (2) 

(3)  (4) 

Answer (3)

66. 

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

Answer (3)

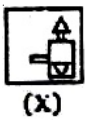
Directions :- (Q. No.:- 67-68)

In each of the following questions, choose the water imgae of the Fig. (X) from amongst the four alternatives (1), (2), (3) and (4) given along with it.

67. 
(X)

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

Answer (2)

68. 
(X)

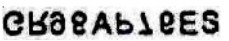
(1) 
(2) 
(3) 
(4) 

Answer (4)

Directions :- (Q. No:- 69 - 70)

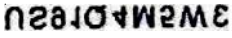
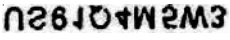
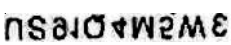
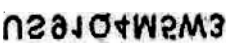
Choose the correct water images from the option given

69. GR98AP76ES

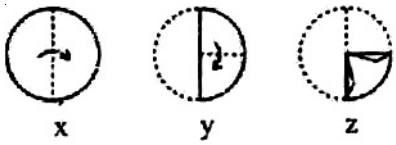
(1) 
(2) 
(3) 
(4) 

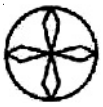
Answer (3)

70. US91Q4M5W3

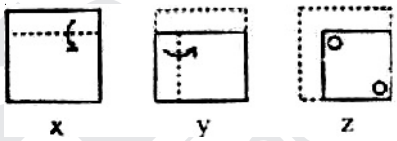
(1) 
(2) 
(3) 
(4) 

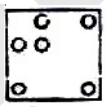
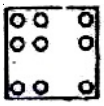
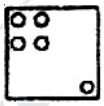
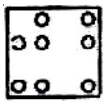
Directions: (Q. No.:- 71-73) : Each of the following questions consists of a set of three figures X, Y and Z showing a sequence of folding of a piece of paper. Figure (Z) shows the manner in which the folded paper has been cut. These three figures are followed by four anser figures from which of youg have the choose a figure whcih would most closely resemble the unfolded form of figure (Z).

71. 
x y z

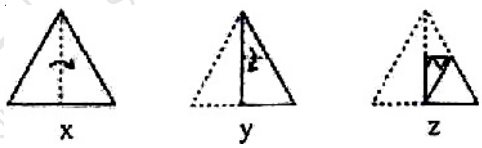
(1) 
(2) 
(3) 
(4) 

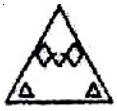
Answer (4)

72. 
x y z

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

Answer (2)

73. 
x y z

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

Answer (1)

74. A train overtakes two persons walking along a railway track. The first one walks at 4.5 km/hr. The other one walks at 5.4 km/hr. The train needs 8.4 and 8.5 seconds respectively to ovetake them. What is the speed of the train if both the persons are walking in the same direction as the train ?

(1) 66km/hr
(2) 72km/hr
(3) 78km/hr
(4) 81km/hr

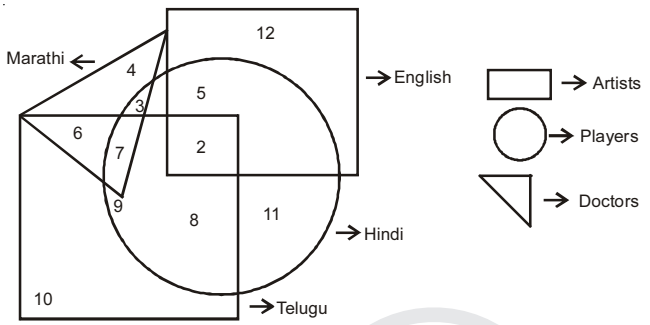
Answer (4)

Sol. $(x - 1.25) \times 8.4 = (x - 1.5) \times 8.5$

$x = 81$ km/hr

Directions :- (Q. No.:- 75-79)

In the following figure small square represents the persons who know English, triangle to those who know Marathi, big square to those who know Telgu and circle to those who know Hindi. In the different regions of the figures from 1 to 12 are given.



75. How many persons can speak English and Hindi both the languages only?

(1) 5 (2) 8

(3) 7 (4) 18

Answer (1)

76. How many persons can speak Marathi and Telgu both ?

(1) 10 (2) 11

(3) 13 (4) 15

Answer (3)

77. How many persons can speak only English

(1) 9 (2) 12

(3) 7 (4) 19

Answer (2)

78. How may persons can speak English, Hindi and Telugu ?

(1) 8 (2) 2

(3) 7 (4) 5

Answer (2)

79. How many persons can speak all the languages ?

(1) 1 (2) 8

(3) 2 (4) None

Answer (4)

Sol. None

80. In a certain code language COMPUTER is written as RFUVQNPC. How will MEDICINE be written in that code language ?

(1) MFEDJJOE (2) EOJDEJFM

(3) MFEJDJOE (4) EOJDJEFM

Answer (4)

81. In a certain code language,

'134' means 'good and tasty';

'478' means 'see good pictures' and

'729' means 'pictures are faint'.

Which of the following digits stands for 'see'?

(1) 9 (2) 2

(3) 1 (4) 8

Answer (4)

82. If FRIEND is coded as HUMJTK, how is CANDLE written in that code ?

(1) EDRIRL (2) DCQHQK

(3) ESJFME (4) EDQJQM

Answer (1)

Sol. EDRIRL

C A N D L E

2+3+4+5+6+7

83. If Z = 2197 and R = 729. How would J be written in that code ?

(1) 216 (2) 124

(3) 512 (4) 125

Answer (4)

Sol. $Z = \frac{26}{2} = 13 \therefore (13)^3 = 2197$

$R = \frac{18}{2} = 9 \quad 9^3 = 729$

$J = \frac{10}{2} = 5 \quad \therefore 5^3 = 125$

84. Directions: (Q. No:-84-86)

In each of the following questions some statements are given. On the basis of statements which conclusion/s is/are true.

Statements:

Maths is tough.

I don't study maths

Conclusions:

I. I study easy subjects

II. I have failed in maths

(1) Only I follows

(2) Only II Follows

(3) Either I or II follows

(4) Neither I Nor II follows

Answer (4)

85. Statements:

All dogs are reptiles

Some cats are reptiles

Conclusions:

I. Some dogs are cats

II. Some cats are not reptiles

(1) Only I follows

(2) Only II follows

(3) Both I and II follows

(4) Neither I nor II follows

Answer (4)

Sol. Neither I nor II follows

86. Statements:

Cricket is sports

Sports is passion

Conclusions:

I. Cricket is passion

II. Passionate people play cricket

(1) Only I follows

(2) Only II follows

(3) Both I and II follows

(4) Neither I nor II follows

Answer (1)

Sol. Only I follows

87. If A + B = 2C and C + D = 2A, then

(1) A + C = B + D (2) A + C = 2D

(3) A + D = B + C (4) A + C = 2D

Answer (1)

Sol. A + B = 2C

C + D = 2A

A + B + C + C = 2(C + A)

B + D = C + A

88. Find out the two signs to be interchanged for making following equation correct $5 + 3 \times 8 - \frac{12}{4} = 3$

(1) + and – (2) – and ÷

(3) + and × (4) + and ÷

Answer (2)

Sol. $5 + 3 \times \frac{8}{12} - 4 = 3$

89. If Q means 'add to', J means 'multiply by', T means 'subtract from' and K means 'divide by' then

30K2Q3J6T5 = ?

(1) 18

(2) 28

(3) 31

(4) 103

Answer (2)

90. A, B, C, D and E play a game of cards. A syas to B, "If you give me three cards, you will have as many as E has and if I give you three cards, you will have as many as D has." A and B together have 10 cards more than what D and E together have. If B has two cards more than what C has and the total number of cards be 133, how many cards does B have ?

(1) 22

(2) 23

(3) 25

(4) 35

Answer (3)

Sol. B – 3 = E

B + 3 = D

A + B = D + E + 10

B = C + 2

A + B + C + D + E = 133

$\therefore$ B = 25

91. A number of friends decided to go on a picnic and planned to spend Rs. 96 on eatables. Four of them, however, did not turn up. As a consequence, the remaining ones had to contribute Rs. 4 each extra. The number of those who attended the picnic was _____

(1) 8

(2) 12

(3) 16

(4) 24

Answer (1)

Sol. $\frac{96}{X-4} - \frac{96}{X} = 4$

$\therefore$ X = 8

92. Two bus tickets from city A to B and three tickets from city A to C cost Rs. 77 but three tickets from city A to B and two tickets from city A to C cost Rs. 73. What are the fares for cities B and C from A ?

(1) Rs. 4, Rs. 23 (2) Rs. 13, Rs. 17

(3) Rs. 15, Rs. 14 (4) Rs. 17, Rs. 13

Answer (2)

Sol. $2x + 3y = 77$ (x fare of city B, y = fare of city c)

$3x + 2y = 73$

$\therefore$ $y = 17$ & $x = 13$

93. A bus starts from city X. The nubmer of women in the bus is half of the number of men. In city Y, 10 men leave the bus and five women enter. Now, number of men and women is equal. In the beginning, how many passengers entered the bus ?

(1) 15 (2) 30

(3) 36 (4) 45

Answer (4)

Sol. Women = x

Men = 2x

$2x - 10 = x + 5$ or $x = 15$

total = $(x + 2x) = 3x = 45$

94. A student got twice as many sums wrong as he got right. If he attempted 48 sums in all, how many did he solve correctly ?

(1) 12

(2) 16

(3) 18

(4) 24

Answer (2)

Sol. $x + 2x = 48$

$x = 16$

95. The last two digits of 2151^{415} ?

(1) 81 (2) 61

(3) 51 (4) 91

Answer (3)

96. Find the Value of ?

$5.11^{2.2} + 5.5.5^{3.3} + 6.3^{1.4} + 7.2^{2.001} = ? \times 3.34$

(1) 55 (2) 48

(3) 73 (4) 89

Answer (4)

97. If A + B means A is the mother of B; A – B means A is the brother B; A % B means A is the father of B and A × B means A is the sister of B, which of the following shows that P is the maternal uncle of Q ?

(1) Q – N + M × P

(2) P + S × N – Q

(3) P – M + N × Q

(4) Q – S % P

Answer (3)

Sol. P – M + N × Q

98. B5D means B is the father of D.

B9D means B is the sister of D.

B4D means B is the brother of D.

B3D means B is the wife of D.

Which of the following means F is the mother of K?

(1) F3M5K (2) F5M3K

(3) F9M4N3K (4) F3M5N3K

Answer (1)

Sol. F3M $\rightarrow$ F is wife of M

M5K M is father of K

99. If in a certain code $\frac{16}{13} = 13 = 13, \frac{15}{8} = 17$ then $\frac{19}{7} = ?$

(1) 22 (2) 32

(3) 12 (4) 18

Answer (3)

100. Two friends A and B simultaneously start running around a circular track. They run in the same direction. A travels at 6 m/s and B runs at b m/s. If they cross each other at exactly two points on the circular track and b is a natureal number less than 30, how many values can b take ?

(1) 3 (2) 4

(3) 7 (4) 5

Answer (1)

Sol. $\frac{T}{\text{relspeed}} = \frac{T}{6-b} Q \frac{T}{b-6}$

Time to Meet $\left(\frac{I}{6}, \frac{I}{b}\right) = \frac{T}{HCF(6,b)}$

PAPER-II : SCHOLASTIC APTITUDE TEST (SAT)

1. A solid cube of aluminum (density 2.7 g/cm3) has a volume of 0.20 cm3. how many aluminum atoms are contained in the cube? (27gm of Aluminum contains 6.023×10^{23})

   (1) 12×10^{2}

   (2) 1.2×10^{22}

   (3) 2.4×10^{22}

   (4) 24×10^{22}

Answer (2)

Sol. Given, density of Aluminium = 2.7 g/cm^3

Volume of cube = 0.20 cm^3

N_A = 6.023 x 10^{23} for 27 g of Al

Mass = P x V = 2.7 x 0.2

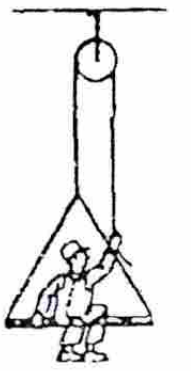
$$\text{No. of moles} = \frac{m}{M} = \frac{\text{mass of substance}}{\text{Molar mass of substance}}$$

$$= \frac{2.7 \times 0.2}{27} = 0.02$$

Number of atoms = n x N_A = 0.02 x 6.023 x 10^{23}

= 1.2 x 10^{22}

2. A painter of mass 80 kg sits in a bosun's chair of mass 10 kg. He pulls on the rope he is holding in order to accelerate himself up. In so doing, he presses down on the sear with a force of 392 N. Which is the following two statements are true?



   (A) The seat pushes the painter upwards with force 392N.

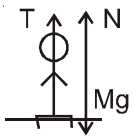
   (B) The tension in the rope held by painter is downwards.

   (C) The tension in the rope held by painter is downwards

   (D) The painter lifts with acceleration 9.8 m/sec^2

Answer (2)

Sol. Painter FBD

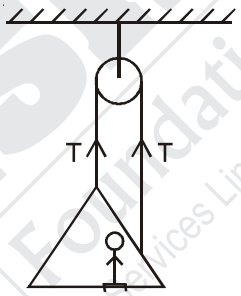


Pan FBD

2T = Mg

$$T = \frac{Mg}{2}$$

Now  painters pushes down with force 392 normal.



Given mass = 50 kg

g = 9.8 m/s2

mass of chair = 10 kg

M_{total} = 90 kg

Weight = m_{tot} g = 90 x 9.8

= 9 x 9.8 = 882 N

3. A women is wearing her seat belt while driving 60km/h. She finds it necessary to slam on her brakes, and she slows uniformly to a stop in 1.60 s. What is the average acceleration experienced by her?

   (1) –10.4 m/sec^2

   (2) 10.4 m/sec^2

   (3) 1.04 m/sec^2

   (4) –1.04 m/sec^2

Answer (1)

Sol. Given U = 60 km/n = $60 \times \frac{5}{18}$ m/s = $\frac{50}{3}$ m/s

t = 1.6 , v = 0

$$a = \frac{V-U}{t} = \frac{0-\frac{50}{3}}{1.6} = \frac{-50}{3\times1.6} = \frac{-100}{3\times3.2} = \frac{-1000}{96}$$

= –10.4 m/s^2

4. For a particle executing uniform circular motion, which of the following statement is correct-

(A) Velocity is radial, acceleration is transverse and the force is toward centre

(B) Velocity is radial, acceleration is transverse and the force is radially outwards

(C) Velocity is transverse, acceleration is radial and the force is toward centre

(D) Velocity is transverse, acceleration is radial and the force is radially outwards

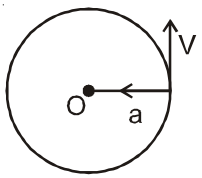
(1) Statement (B) is true

(2) Statement (A) is true

(3) Statement (D) is true

(4) Statement (C) is true

Answer (4)

Sol. 

Velocity is transerve, acceleration is radial and force is a $\rightarrow$ towards the centre

F $\rightarrow$ towards the centre.

5. If the radius of the earth were to shrink by 1% and its mass remaining the same, the acceleration due to gravity on earth's surface would-

(1) Decrease

(2) Increase

(3) Remain unchanged

(4) Will decrease by 9.8%

Answer (2)

Sol. $g = \frac{GM_e}{R_e^2} \Rightarrow g \propto \frac{1}{R^L}$ if M_e is constant and R_e decreases then g is as R_e is denominator.

6. A cannon of mass 1200 kg fires a 64-kg shell with a muzzle velocity of 62 m/s (this is the speed of the shell with respect to the cannon). Immediately after firing, what is the velocity V of the cannon and the velocity v of the shell with respect to the earth?

(1) V = – 3.14 m/sec; v = 58.9 m/sec

(2) V = 3.14 m/sec; v = – 58.9 m/sec

(3) V = 58.9 m/sec; v = – 3.14 m/sec

(4) V = – 58.9 m/sec; v = 3.14 m/sec

Answer (1)

Sol. Given Mass of cannon M_c = 1200 kg

Mass of shell M_c = 64 kg $\quad \vec{V}_{cannon} \quad \vec{V}_s$

Velocity of shell w.o.t to cannon, $\vec{V}_{s/c}$ = 62 m/s

$\vec{V}_{S/C} = \vec{V}_S - \vec{V}_C$

$\vec{V}_S = \vec{V}_{S/C} + \vec{V}_C = (62 + V_C)$

According to law of conservation of linear momentum

$M_C V_C = -M_s V_s = -M_S (62 + V_C)$

$M_C V_C = -M_s \times 62 - M_S V_C = -M_S \times 62$

$M_C V_C + M_S V_C = -M_S \times 62$

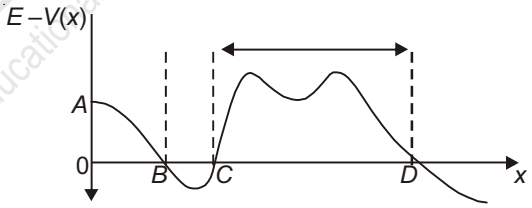
$(M_C V_S) V_C = -M_S \times 62$

$V_C = \frac{-64 \times 62}{1264} = -3.1392$

$V_S = \vec{V}_{S/C} + \vec{V}_C = 62 - 3.14 = 58.860$

=58.9 m/s

7. The following graph shows a plot of total energy minus potential energy of the particle as a function of the position. Which of the statement/s are true?



(A) The graph is also a plot of Kinetic energy of the particle as a function of position.

(B) The allowed regiom is between AB and BC

(C) The allowed regiom is between AB and CD

(D) The allowed regiom is between BC

(1) Statement (B) & (D) are true

(2) Statement (A) & (C) are true

(3) Statement (A) & (B) are true

(4) Statement (C) & (D) are true

Answer (2)

Sol. E–V(x)

The graph is also a plot of kinetic energy of the particle as a function of position and the allowed region is AB and CD because K, E is always a positive.

8. Which of the following two statements are true?

(A) Pressure is vector quantity as P=*F/A.* ,as force is vector.

(B) Pressure is scalar quantity as P=*F/A.* ,as pressure acts in all possible direction.

(C) Pressure iguage reading of a flat tyre will be zero.

(D) Pressure guage reading of a flat tyre will show atmospheric pressure.

(1) Statement (B) & (D) are true

(2) Statement (A) & (C) are true

(3) Statement (B) & (C) are true

(4) Statement (C) & (D) are true

Answer (3)

Sol. Pressure is scalar quantity. Pressure guage reacting of a flat tyre well show atmosphere pressure.

9. Which of the options shows correct match of the following pairs?

Waves	Description
(a) Mexican wave	(i) A self-reinforcing wave
(b) Tsunami wave	(ii) A ripple in the space
(c) Mexican wave	(iii) A harbour wave
(d) Mexican wave	(iv) A human wave

(1) (a)-(i), (b)-(ii), (c)-(iii) & (d)-(iv)

(2) (a)-(iiii), (b)-(iv), (c)-(i) & (d)-(ii)

(3) (a)-(ii), (b)-(iv), (c)-(iii) & (d)-(i)

(4) (a)-(iv), (b)-(iii), (c)-(ii) & (d)-(i)

Answer (4)

Sol. (i) Maxican wave D a human wave (eg. foot ball stadium)

(ii) Isunan a harbour wave

(iii) Gravitational wave D ripple in space

(iv) Soliton wave D self reirfoscing wave

10. If you are having two cells each of 12 V and 1 A each. If 24 W power is required to be delivered to the load, then it has to be connected as -------

(1) (ii) (2) (iii)

(3) (iv) (4) (i)

Answer (2)

11. Light travelling from vacuum enters water. Which of the following characteristics of light remain unchanged?

(1) velocity (2) wmplitude

(3) frequency (4) wavelength

Answer (3)

Sol. Frequency is depends on source and independent of medium.

12. The buoyancy depends on:

(1) Mass of liquid displaced

(2) Viscosity of the liquid

(3) Pressure of the liquid displaced

(4) Depth of immersion

Answer (1)

Sol. Buyoncy = V_3P_cg = Mg

Buyoncy depends on Mass

13. If two bodies one light and other heavy equal kinetic energies, which one has greater momentum

(1) Heavy body

(2) Light body

(3) Both have equal momentum

(4) It depends on the actual velocities

Answer (1)

Sol. $K.E = \frac{P^2}{zm}$ $P = \sqrt{2K.E.m}$

if $\frac{P_1}{P_2} = \frac{\sqrt{m_1}}{\sqrt{m_2}}$ if K.E is same

$P \propto \sqrt{m}$

14. Which of the following oxide is most acidic?

(1) BeO (2) MgO

(3) CaO (4) BaO

Answer (1)

Sol. In agroup from Be to Ba the basic nature of oxide increases. So BeO is more acidic.

15. As compared to nitrogen, oxygen is

(1) Less electronegative and less reactive

(2) More electronegative and less reactive

(3) More electronegative and more reactive

(4) Less electronegative and more reactive

Answer (3)

Sol. Oxygen electronegativity is 3.5, where as Nirtrogen-3.0. Due to high bond dissociation energy of N_2. Nitrogen is less reactive than oxygen.

16. Which hybrid state cannot be shown by Carbon?

(1) Sp^3d

(2) Sp

(3) Sp^2

(4) Sp^3

Answer (1)

Sol. Carbon has no vacant d orbitals.

17. Two oxides of an element contain 57.1% and 72.7% of oxygen. If the first oxide is second oxide is____

(1) MO (2) M_2O

(3) MO_3 (4) M_2O_3

Answer (*)

Sol.

First oxide MO

Weight of metal = 42.9

Weight of Oxygen = 57.1

$$\frac{\text{Number of moles of metal}}{\text{Number of moles of oxygen}} = 1:1$$

So (let as assume weight of metalis x)

$$\text{So } \frac{\frac{42.9}{x}}{\frac{57.1}{16}} = 1:1 \Rightarrow \frac{42.9}{x} \times \frac{16}{57.1} = 1$$

$57.1x = 42.9 \times 16$

$$x = \frac{42.9 \times 16}{57.1} = 12.02\text{gm}$$

Second Oxide

Number of moler of metal

Weight of metal = 27.3

Weight of Oxygen = 72.7

$$\frac{\text{Number of moles of metal}}{\text{Number of moles of oxygen}} = \frac{\frac{27.3}{12.02}}{\frac{72.7}{16}}$$

$$= \frac{27.3}{12.02} \times \frac{16}{72.7} = \frac{1}{2}$$

So mole ratio of metal and oxygen 1 : 2.

Hence it is MO_2

18. The number of water molecules present in a drop of water weighing 0.018g is___

(1) 6.02×10^{26} (2) 6.02×10^{23}

(3) 6.02×10^{20} (4) 6.02×10^{22}

Answer (3)

Sol.

$$\text{number of moles of water} = \frac{\text{Weight}}{\text{Gram Molecular mass}}$$

$$\text{number of moles} = \frac{0.018}{18} = \frac{18 \times 10^{-3}}{18} = 10^{-3}\text{moles}$$

number of moleculars = number of moles × 6.022 × 10^{23}

$= 10^{-3} \times 6.02 \times 10^{23} = 6.02 \times 10^{20}$

19. The pH of a solution is 5.9. If hyrogen ion concentration is decreased hundred times the solution will be

(1) more acidic

(2) neutral

(3) basic

(4) of the same acidic

Answer (3)

Sol. When hudrogen ion concentration decreases the P^H value increases. So the solution changes to more basic.

20. Which of the following is most stable

(1) $BeCO_3$ (2) $SrCO_3$

(3) $MgCO_3$ (4) $CaCO_3$

Answer (2)

Sol. In a group from calcium to strantium the size of cation increases the stability increases.

21. A solid compound 'X' on heating gives CO_2 gas and a residue. The residue mixed with water forms 'Y'. On passing an excess of CO_2 throught 'Y' in water, a clear solution 'Z' is observed. On boiling 'Z', compund 'X' is formed. The compound 'X' is ___

(1) Na_2CO_3 (2) $CaCO_3$

(3) K_2CO_3 (4) $Ca(HCO_3)_2$

Answer (2)

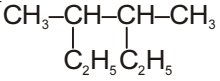
Sol.

$$\underset{X}{CaCO_3} \longrightarrow \underset{\text{residue}}{CaOCO_2}$$

$$\underset{\text{residue}}{CaO} + H_2O \longrightarrow \underset{Y}{Ca(OH)_2} + H_2O + CO_2 \longrightarrow \underset{Z}{Ca(HCO_3)_2}$$

$$\underset{Z}{Ca(HCO_3)_2} \longrightarrow \underset{Y}{CaCO_3} + H_2O + CO_2$$

22. The IUPAC name of the following compound



is

(1) 2,3 -Diethyl butane

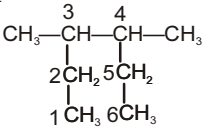
(2) 2,3 -Dimethyl pentane

(3) 2,3 -Dimethyl hexane

(4) 2,3 -Dimethyl hexane

Answer (4)

Sol.



3, 4 - dimethylhexane

23. The general formula of cycloalkane is

(1) (2)

(3) (4)

Answer (1)

Sol. Fact

24. An atom has electronic configuration 2,8,7.

To which of the following elements would i be chemically similar?

(Atomic numbers are given in parentheses)

(1) N(7) (2) P(15)

(3) F(9) (4) Ar(18)

Answer (3)

Sol. Fluorine (2, 7) and chlorine (2, 8, 7) have similar electronic configuration.

25. The fragrances of flower is due to the presence of steam volatile organic compound called essential oils. These are generally insoluable in water at room temperature but are miscible with water vapour in vapour phase. A suitable method for the extraction od these oils from the flower is

(1) Distillation

(2) Crystallisation

(3) Distillation under reduced pressure

(4) Steam distillation

Answer (4)

Sol. Fact

26. According to Mendeleev's Periodic Table element which was discovered later having properties similar to Eka--aluminium is

(1) scandium (2) gallium

(3) platinum (4) germanium

Answer (*)

27. Kidney stones are mainly formed by which of the following compound?

(1) Sodium Chloride (2) Silicates

(3) Calcium bicarbonate (4) Calcium Oxalate

Answer (4)

Sol. Calcium is most abundant mineral found in our body. Excessive dose of spinach, potato chips, beans accmulate the oxalate in body and cause stone.

28. Who discovered the Polio vaccine?

(1) Louis Pasteur (2) Jonas Salk

(3) Konrad Zuse (4) Eli Whitney

Answer (2)

Sol. Jonas Edward Salk, an American scientist, discovered the polio vaccine in 1953.

29. Exchange of genetic material takes place in

(1) vegetative reproduction

(2) asexual reproduction

(3) sexual reproduction

(4) budding

Answer (3)

Sol. In sexual reproduction, 2 parents are involved. So, at the time of gamete formation through meiosis exchange of genetic material takes place between homologous chromosomes.

30. Which of the following is an abiotic component?

(1) animals

(2) Plants

(3) micro-organisms

(4) soil

Answer (4)

Sol. Abiotic means non-living component.

31. Salivary glands secrete which of these enzymes?

(1) Amylase (2) Lipase

(3) Pepsin (4) Trypsin

Answer (1)

Sol. Salivary gland secretes ptyalin, also called salivary anylase which acts on starch to form maltose sugar.

32. In our country vast tracts of forests and a single species of plants is cultivated. This practice promotes___

(1) biodiversity in that area

(2) growth of natural forest

(3) monoculture in that area

(4) preserve the natural ecosystem in the area

Answer (3)

Sol. Monoculture is the cultivation of a single crop in a given area.

33. Which of the following is a group of invertebrate animals?

(1) mammals

(2) pisces

(3) reptiles

(4) arthropods

Answer (4)

Sol. Vertebral column is absent in invertebrates. so arthropods are invertebrates.

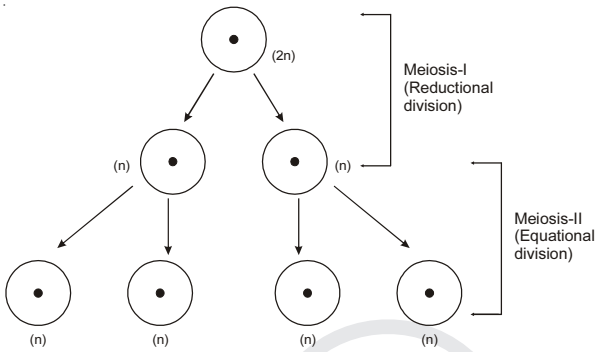
34. The number of daughter cells formed at the end of meiosis from a cell____

(1) 2 hapliod cells (2) 2 diploid cells

(3) 4 hapliod cells (4) 4 diploid cells

Answer (3)

Sol.



35. Breakdown of pyruvate to yield CO_2, H_2O and energy takes place in

(1) cytoplasm (2) Mitochondrion

(3) chloroplast (4) nucleus

Answer (2)

Sol. Kreb's cycle takes place in mitochondria.

36. Which of the following is not a compomemt of respiratory system in humans?

(1) pharynx (2) Larynx

(3) hypothalamus (4) trachea

Answer (3)

Sol. Hypothalamus is a part of forebrain.

37. How many of the following are involved in Nitrogen fixation?

Nostoc, Anabaena, Rhizobium, Azotobacter

(1) 1 (2) 2

(3) 3 (4) 4

Answer (4)

Sol. Rhizobium is a symbiotic nitrogen fixing bacteria.

38. The primary source of synthesis of carbohydrates in plants is

(1) atmospheric CO_2 (2) Lipids

(3) fats (4) proteins

Answer (1)

Sol. Atmospheric CO_2 is fixed to form glucose in the dark reaction of photosynthesis.

39. Insectivorous plants digest the bodies of insects by secreting which type of enzymes?

(1) carbohydrases (2) Esterases

(3) proteolytic enzymes (4) none of the above

Answer (3)

Sol. Insectivorous plants need nitrogen for their growth so they get nitrogen from insects.

40. Which one among the following vitamins is necessary for blood clotting?

(1) Vitamin - A (2) Vitamin - D

(3) Vitamin - K (4) Vitamin - C

Answer (3)

Sol. Vitamin K produce proteins that helps the blood to clot. Its deficiency can lead to excessive bleeding.

41. Which of the following is the book of Gandhiji?

(1) My Experiment with Truth

(2) Hind Swaraj

(3) Discovery of India

(4) Main Kampf

Answer (1)

Sol. Gandhiji gives a personal, spiritual account of his life upto 1920.

42. Who among the following proved that the Earth is round by circumnavigating it?

(1) Bartholomew Dias (2) Fernando Magellan

(3) Vasco da Gama (4) Christopher Columbus

Answer (2)

Sol. Fernando Magellan was a portuguese explorer who organised spanish expedition to the east indies from 1519-1522, resulting in the first circumnavigation of the earth, completed by Juan Sebastian Elcano.

43. It issued a warning to the miners when the levels of Carbon dioxide in the mines would increase and there was a danger to their lives.

(1) Safety lamp

(2) Steam Locomotive Rocket

(3) Power Loom

(4) Mule

Answer (1)

Sol. Safety lamp provides illumination and operate in air with coal dust or gases which is flammable or explosive.

44. At which place Gandhiji started the Satyagraha movement against the indigo plantation system?

(1) Champaran (2) Porbandar

(3) Chilka (4) Assam

Answer (1)

Sol. It was farmer's uprising that took place in Bihar during Indian Independence movement.

45. Which among the following was the reason for Indian opposition to the Rowlatt Act-1919?
(1) It was passed hurriedly
(2) It gave the government enormous powers.
(3) Local leaders were picked up and arrested.
(4) It authorised the government to imprison people without trial.

Answer (4)

Sol. Police/Indian army can arrest any person and can punish them without any legal trial.

46. Who initiated a reign of terror in France after the execution of King Louis XVI in 1793?
(1) Napoleon Bonparte (2) Louis XIV
(3) Robespierre (4) Louis XV

Answer (3)

Sol. It began with the overthrow of the girondins and the ascendancy of the Jacobins.

47. Who was the first Secretary of the Indian National Congress established in 1885?
(1) Kashinath Trimbak Telang
(2) Allan Octavian Hume
(3) Peter Alvares
(4) Dr. Ram Hegde

Answer (2)

Sol. On 28th Dec 1885, hume became the first general secretary.

48. Dhangars were an important patoral community in ___
(1) Uttar Pradesh (2) Maharashtra
(3) Himachal Pradesh (4) None of these

Answer (2)

Sol. Dhangar is a herding caste of people in Maharashtra.

49. Why did feeding the cattle became a presistent problem for the Massais?
(1) Because continuous grazing in small area deteriorated the quality of pasture.
(2) Because Massais were confined to a small area.
(3) Because Massais lived in an arid zone without any grass.
(4) Because Massais began to cultivate pastoral land.

Answer (1)

Sol. The best grazing lands of cattles were taken over for white settlement.

50. Whi among these offered Chancellorship to Hitler in Germany?
(1) Churchill (2) Goebbels
(3) Helmuth (4) Hindenburg

Answer (4)

Sol. Hindenburg offered highest position of chancellorship to hilter in weimar republic in Reichstag (German Parliment).

51. Which of the following country was reffered as 'the mother of the Industrial Revolution'?
(1) Germany (2) France
(3) England (4) Italy

Answer (3)

Sol. First Industrial Revolution in morthwest and midlands of England started in 18th century.

52. Who wrote the book "The Invisible Man"?
(1) Jane Austen (2) Charles Dickens
(3) H.G.Well (4) Jonathan Swift

Answer (3)

Sol. It is a science fiction novel.

53. The revolutionaries in Bengal raided the Chittagong Armouries under the leadership of ___
(1) Surya Sen
(2) Khan Abdul Gaffar Khan
(3) Abbas Tyabji
(4) Sukhdev

Answer (1)

Sol. Chittagong Armouries also called as Chittagong uprising on 18th April 1930.

54. Who was the "Father of Goa's freedom movement"?
(1) Purushottam Kakodkar
(2) Luis de Menezes Braganca
(3) P.P.Shirodkar
(4) Dr.T.B Cunha

Answer (4)

Sol. First goan to be tried by the portuguese military court.

55. On 19th October 1781, in the Battle of Yoktown, George Washington accepted the surrender on the side of British forces from____
(1) Lord Dalhousie (2) Lord Cornwallis
(3) Lordn Wellesley (4) Lord Curzon

Answer (2)

Sol. Cornwallis surrendered his army of 8000 man.

56. Which factor is not a physical factor influencing land use in an area?
(1) Slope of the land
(2) Absence of soilm water
(3) Drainage of the land
(4) Population density

Answer (4)

57. Which one of the following minerals is formed by the decompostition of rocks leaving a residual mass of weathered material?
(1) Coal (2) Bauxite
(3) Gold (4) Zine

Answer (2)

Sol. Bauxite is formed due to decomposition of wide variety of rocks rich in aluminium silicate.

58. Which of the following is a new arrival on the transportational map of India?
(1) Pipeline transportation Network
(2) Waterways transportation network
(3) Railways Transportation network
(4) Airlines transportation network

Answer (1)

Sol. Pipeline transportation network is used to transport crude oil, petroleum product and natural gas.

59. Which one of the following rivers is also known as 'Dakshin Ganga'?
(1) Krishna (2) Mahanadi
(3) Godavari (4) Kavery

Answer (3)

Sol. It is largest peninsular river.

60. Which one of the following states share a common border with Goa?
(1) Gujarat and Maharashtra
(2) Karnataka and Kerala
(3) Maharashtra and Karnataka
(4) Maharashtra and Madhya Pradesh

Answer (3)

61. The Alpine grassland of the Himalayas are extensively used for grazing by nomadic tribes called
(1) Masai (2) Bakarwals
(3) Bedouins (4) Kirghiz

Answer (2)

Sol. They have attained legal rights.

62. The magnitude of population growth refers to
(1) Total population of an area
(2) The rate at which population increases
(3) The number of females per thousand males
(4) The number of persons added each year

Answer (4)

63. Which one of the following is the characteristic of cold weather season?
(1) North East trade winds prevail over the country
(2) South West trade winds prevail over the country
(3) Low pressure develops in the northern part of the country
(4) Clear skies and rise in temperature

Answer (1)

64. A 'mushroom rock' is a landform caused by the action of-----
(1) Sea waves (2) Moving ice
(3) Wind erosion (4) Running water

Answer (3)

Sol. A rock pedestal or gour is typical mushroom shaped landform formed by action of wind.

65. Hanging valleys are carved out by the action of
(1) Rivers (2) Glaciers
(3) Wind (4) Ocean Waters

Answer (2)

66. The earth's axis is inclined to the plane of the orbit at an angle of----
(1) 66½ degree (2) 23½ degree
(3) 90 degree (4) 45 degree

Answer (2)

67. The largest units of Coir industries are located in
(1) Andhra Pradesh (2) Kerala
(3) Gujarat (4) Kolkata

Answer (2)

Sol. Kerala is largest producer of coir giving employment to over a million of people.

68. Most of the weather phenomena occur in the layer of atmosphere called---
(1) Exosphere (2) Ionosphere
(3) Stratosphere (4) Troposphere

Answer (4)

Sol. It is lowest layer of earth's atmosphere extends upto 8-20 KM.

69. What is the time at Chennai 80 degree East longitude, when it is noon at Greenwich?

(1) 3.20 p.m. (2) 3.20 a.m

(3) 5.20 p.m (4) 5.20 a.m

Answer (3)

Sol. 1degree =4 mins

4 x 80degree =320 mins which is 5.20 hrs.

70. Which of the following ports is an inland riverine tidal port?

(1) Kolkata (2) Vishakapatnam

(3) Kandla (4) Kochi

Answer (1)

Sol. Kolkata port is located on Hooghly river.

71. Which of these is not a good reason to say that Indian election is democratic?

(1) India has the largest number of voters in the world

(2) Indian Election Commision is very powerful.

(3) In India, everyone above the age of 18 has a right to vote.

(4) In India, the losing parties accept the electoral verdict.

Answer (1)

72. Union council of Ministers include following types on Minister. Choose the correct option.

(i) Cabinet of Ministers.

(ii) Chief Minister.

(iii) Minister of State with independent charges.

(iv) Minister of State

(1) (i) and (ii) (2) (ii)

(3) (iii) (4) (i) (iii) and (iv)

Answer (4)

73. Which is the main productive activity in village across India?

(1) Transportation (2) Small scale

(3) Fishing (4) Farming

Answer (4)

74. Economic activities have two part market activities and _____

(1) Same activities (2) Post activities

(3) Profit activities (4) First activity

Answer (3)

75. Rural Employment Generation programme was launched in_____

(1) 1990 (2) 2000

(3) 1991 (4) 2002

Answer (*)

76. Hunger is another aspect indicating____

(1) Pool insecurity (2) Paint insecurity

(3) Flood insecurity (4) Food insecurity

Answer (4)

77. The term BMI stands for____

(1) Boy mass Index (2) Body mass Index

(3) Body movement Index (4) Body message Index

Answer (2)

78. Workers in the _____sector do not produce goods.

(1) Primary (2) Secondary

(3) Tetany (4) Final

Answer (4)

Sol. As this sector is called service sector

79. In a barter system goods are directly exchanged without the use of

(1) Funny (2) Honey

(3) Money (4) People

Answer (3)

Sol. Barter system is exchange of goods which has double coincidence of wants

80. Rapid integration between countries is called____

(1) Nationalisation (2) Mutual Share

(3) Globalisation (4) Open Share

Answer (3)

Sol. It is a process of rapid integration through foreign trade and foreign investments.

81. The sum of all the possible remainders which can be obtained when square of a natural number is divided by 3 is _____

(1) 0 (2) 1

(3) 2 (4) 3

Answer (2)

82. The sum of zeros of a polynomial

$(3x^2 + x^3 - 35 - 29x) - (x + 5)(x - 7)$

(1) 31 (2) 70

(3) –31 (4) –70

Answer (*)

Sol. $\propto +\beta + r = \frac{-b}{a} = -\frac{4}{1}$

83. A boat running upstream takes 4 hours 150 minutes to cover a certain distance 2 hours, 88minutes and 120 seconds less to cover the same distance running downstream. The ratio of speed of the boat in downstream to the speed of the boat in upstream..

(1) 13:6 (2) 19:7

(3) 17:8 (4) 11:5

Answer (1)

Sol. $\frac{x+y}{x-y}=\frac{65}{30}=\frac{13}{6}$

84. Two quadratic equations $x^2 - 9x + c = 0$ and $x^2 - bx - 18 = 0$ have common roots. If the sum of the remaining roots of first and second equation is -2 then the common root is _____

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

(3) -4 (4) 2

Answer (*)

85. A small terrace at a uphill temple has 100 steps each of Which is 108 m long and built of solid concrete. Each step has a rise of $\frac{1}{3}$ m and has a tread of $\frac{2}{3}$ m. The total volume of the concrete required to build the terrace will be _____

(1) 188100 m^3 (2) 256000 m^3

(3) 144000 m^3 (4) 121200 m^3

Answer (4)

Sol. $V_1=\frac{1}{3}\times\frac{2}{3}\times 108=24$

Total $100 \times 24 + 99 \times 24 + \ldots + 1 \times 24$

$=\frac{100\times 101}{2}\times 24$

86. If one side of an isosceles triangle inscribed in a circle passes through the centre of a circle with radius $\frac{P}{4}$ then perimeter of a triangle is _____

(1) $\frac{p(\sqrt{2}+1)}{2}$ (2) $\frac{p(\sqrt{2}-1)}{4}$

(3) $\frac{p(2\sqrt{2}-1)}{6}$ (4) $\frac{p(\sqrt{2}+2)}{2}$

Answer (1)

Sol. $2a+2r=Perimeter$

$2\sqrt{2}\frac{P}{2}+2\frac{P}{2}Perimeter$

$\left(\frac{\sqrt{2}+1}{2}\right)P=Perimeter$

87. If α and β are complementary angles and $18\sin^2\alpha - 12\sin\propto = -2$ then $\sin\beta$ is

(1) $\frac{2\sqrt{2}}{3}$ (2) $\frac{\sqrt{14}}{4}$

(3) $\frac{5\sqrt{2}}{6}$ (4) $\frac{2\sqrt{10}}{7}$

Answer (1)

Sol. $(\alpha+\beta)=90$

$\alpha=90-\beta$

$18\cos^2\beta-12\cos\beta+2=0$

$solving(3\cos\beta-1)^2=0$

$\cos\beta=1/3$

$\therefore\sin\beta=\frac{2\sqrt{2}}{3}$

88. IF m and n are the roots of the quadratic equation $pt^2+qt+r=0$ with coefficient of t^2 as 3, coefficient of t as -4 and constant term as -8 then the equation for which the roots are $\frac{2}{m}$ and $\frac{2}{n}$ is _____

(1) $3y^2-y-4=0$ (2) $2y^2+2y-3=0$

(3) $y^2-2y-24=0$ (4) $4y^2-y-3=0$

Answer (2)

89. Positive integers from 5 to 40 are arranged in four groups of 9 integers each in some particular order. The highest possible mean of the medians of these four groups is _____

(1) 29 (2) 22.5

(3) 28.5 (4) 19

Answer (2)

90. PQR is a field in the form of an equilateral triangle. Two vertical poles of height 50 metres and 32 metres are erected at P and Q respectively. The angles of elevation of the top of the two poles from are complementary to each other. There is a point S on PQ such that from it the angles of the top of the two poles are equal then QS is _____

(1) $15\frac{25}{41}$ (2) $18\frac{17}{40}$

(3) $19\frac{21}{23}$ (4) $16\frac{19}{25}$

Answer (1)

91. A solid metallic block of volume 2 :ubic metres is melted and recast into a rectangular bar of length 32 metres having a square base. If the weight of the block is 160kg and the biggest cube is cut off from the bar then the weight of the cube is _____

(1) 3.5 kg (2) 4 kg

(3) 6 kg (4) 2.5 kg

Answer (4)

92. If a and b arc two non-negative integers such that $16b+24a—128 = 0$. The product of the maximum and minimum values of a + b is ____

(1) 36 (2) 42

(3) 54 (4) 48

Answer (4)

93. R is any point on the graph 9x—3y=12. The coordinates of point T are (5,–3),If N divides MT in the ratio 1:3 then coordinates of R are_____

(1) (4,0) (2) (2,–5)

(3) (–1,–7) (4) (4,–5)

Answer (*)

94. MNP is an isosceles triangle with MN = NP. Point R is on NP such that PR = 4 cm Then length of NR is_____

(1) $2\sqrt{5}-2$ (2) $6\sqrt{3}+1$

(3) 5 (4) 6.2

Answer (*)

95. The last two digits of the expression $2^{12n}—6^{4n}$ where n is a positive integer are_____

(1) 12 (2) 28

(3) 00 (4) 63

Answer (3)

96. If $3^{2x+1}–3^x=3^{x+3}–3^2(4^2+5^{04})°$ where x is a negative integer then the value of 2x — 3 is _____

(1) —12 (2) —5

(3) —16 (4) —19

Answer (*)

97. If $a^x=b$ then in logarithmic form it is written as $\log_a b=x$. Also $\log_y m^n=n \log_y m$. Then the value of $\log_4 64$ is _____

(1) 3 (2) 4

(3) 12 (4) 9

Answer (1)

Sol. $\log_4 4^3= 3\log_4 4=3$

98. In an examination minimum of marks is to be scored in each six subjects to pass. In how many ways can a student fail ?

(1) 6

(2) 63

(3) 7

(4) 64

Answer (2)

Sol. $2^6 – 1$

$=63$

99. If in a race over some fixed distance P can beat Q by 25 metres. Q can beat R by 15 metres and P can beat R by 35 metres. Then twice the fixed distance is _____

(1) 50 (2) 100

(3) 150 (4) 200

Answer (*)

100. Three circles each of diameter $2x$ are drawn inside an equilateral triangle with perimeter $3y$ such that each circle touches the other two and also other two sides then the ratio of radius of a circle to side of a triangle is_____

(1) 5 (2) $\sqrt{5}+\sqrt{2}$

(3) $(3\sqrt{3}+2)$ (4) $(2\sqrt{3}+1)$

Answer (*)

Sol. Corret answer is $\frac{1}{2\sqrt{3}+1}$, because radius of circle on will always be smaller than the sides of triangle.

❑ ❑ ❑