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OPSC ASO

Previous Year Paper
(Maths & Reasoning) 27
Aug, 2022



0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

(A) TEST OF REASONING & MENTAL ABILITY

1. In a certain code, MOTHER is written as ONHURF. How will ANSWER be written in that code?

- (A) NBXSSE
- (B) NBWRRF
- (C) MAVSPE
- (D) NBWTRF

2. Find the odd one out :

- (A) Platform
- (B) Dock
- (C) Bus-stand
- (D) Park

3. Find the odd one out :

- (A) Lion
- (B) Tiger
- (C) Fox
- (D) Deer

4. A doctor said to his compounder "I go to see the patients at their residence after every 3 hours 30 minutes. I have already gone to the patient 1 hour 20 minutes ago and next time I shall go at 1 : 40 P.M." At what time this information was given to the compounder by the doctor?

residence after every 3 hours 30 minutes. I have already gone to the patient 1 hour 20 minutes ago and next time I shall go at 1 : 40 P.M." At what time this information was given to the compounder by the doctor?

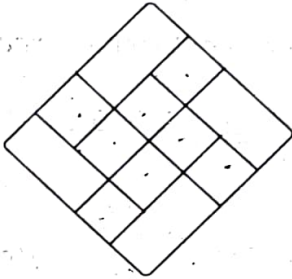
- (A) 11 : 30 A. M.
- (B) 11 : 20 A. M.
- (C) 10 : 10 A. M.
- (D) None of these

5.

If in the word SEPTUAGENARIAN first three and then next three letters are written in reverse order and the rest of the letters are written as they appear in English alphabet, the positions of how many letters get changed in the new arrangement?

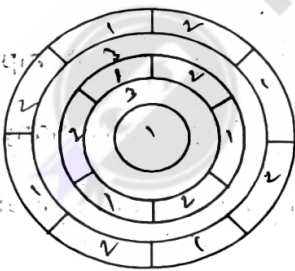
- (A) Nil
- (B) 2
- (C) 10
- (D) 12

6. How many rhombuses are in the figure ?



- (A) 16
(B) 13
(C) 14
(D) 17

7. What is the minimum number of different colours required to paint the given figure such that no two adjacent regions have the same colour ?



- (A) 3
(B) 4
(C) 5
(D) 6

8. Seven years from now, Anamika will be as old as Malini was 4 years ago. Srinidhi was born 2 years ago. The average age of Anamika, Malini and Srinidhi 10 years from now will be 33 years. What is the present age of Anamika ?

- (A) 30 years
(B) 31 years
(C) 29 years
(D) 28 years

$$\begin{aligned} A+7 &= M-4 \\ S &= 12 \\ A-M &= -11 \\ A+M+S &= 99 \\ A+M &= 87 \\ A-M &= -11 \\ \hline 2M &= 98 \\ M &= 49 \\ A &= 38 \end{aligned}$$

9. Nurture : Neglect :: Denigrate : ?

- (A) Reveal
(B) Extol
(C) Recognise
(D) Calumniate

Directions (Q. Nos. 10 to 12) : In each of the following questions, one term in the number series is wrong. Find out the wrong term.

10. 1, 3, 12, 25, 48 :

- (A) 3
(B) 12
(C) 25
(D) 48

11. 105, 85, 60, 30, 0, -45, -90 :

(A) 105
(B) 60
(C) 0
(D) -45

12. 325, 259, 204, 160, 127, 105, 96 :

(A) 325
(B) 127
(C) 105
(D) 96

13. Latex is related to Rubber as Flax is to _____.

(A) Linen
(B) Wool
(C) Jute
(D) Cotton

14. In a certain code language, "GOAT" is written as "45" and "COAT" is written as "41". How is "BOAT" written in that code language ?

(A) 40
(B) 41

GOAT - 45
COAT - 41
BOAT - 40

(C) 42

(D) 43

15. In a certain code language, TUTORIAL is written as DODNGLCF and DANCE is written as YCJMZ, how is EDUCATION written in that code ?

(A) ZYMODCLNJ
(B) ZYOMCDLNJ
(C) ZYOMDCLNJ
(D) ZYOTNLCMD

16. The door of Aditya's house faces the East. From the back side of his house, he walks straight 50 meters, then turns to the right and walks 50 meters again. Finally, he turns towards left and stops after walking 25 meters. Now, Aditya is in which direction from the starting point ?

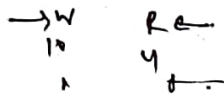
(A) South-East
(B) North-East
(C) South-West
(D) North-West



17. A man is facing towards West and turns through 45° clock-wise, again 180° clock-wise and then turns through 270° anti clock-wise. In which direction is he facing now ?

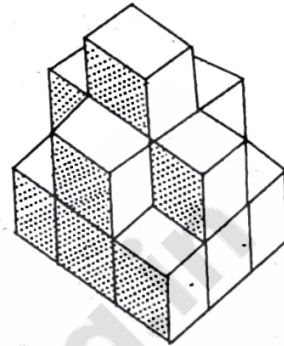
- (A) West
- (B) North-West
- (C) North
- (D) South-West

18. In a row of thirty boys, R is 4th from right end and W is 10th from the left end. How many boys are there between R and W ?



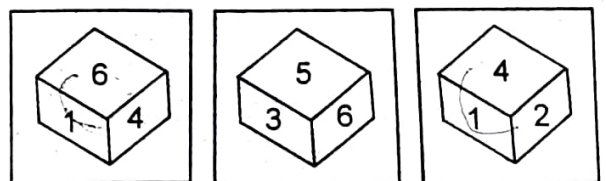
- (A) 15
- (B) 16
- (C) 17
- (D) Cannot be determined

19. How many cubes are there in the figure ?



- (A) 15
- (B) 9
- (C) 12
- (D) 8

20. Three positions of a dice are given. Find out which number is found opposite the number 2 in the given cube ?



- (A) 6
- (B) 5
- (C) 3
- (D) 1

Directions (Q. Nos. 21 & 22) : These questions are based on five words given

below:

~~THE~~ ~~MOD~~ ~~CPU~~ ~~RAM~~ ~~SHE~~

THE MOD CPU RAM SHE

21. If the third alphabet in each of the word is changed to the next alphabet in English alphabetical order, how many words thus formed have more than two vowel ?

- (A) None
- (B) One
- (C) Two
- (D) Three

22. If the given words are arranged in the order as they would appear in the English dictionary from left to right, which of the following will be the fourth from the left ?

- (A) THE
- (B) MOD
- (C) CPU
- (D) RAM

23. Select the option in which the numbers are related in the same way as are the numbers of the following set, (24, 10, 392) :

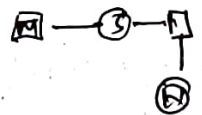
- (A) (29, 18, 242)
- (B) (27, 15, 480)
- (C) (26, 12, 369)
- (D) (21, 18, 234)

24. If REQUEST is written as S2R52TU, then how will ACID be written ?

- (A) 1394
- (B) IC94
- (C) BDJE
- (D) ID3E

25. Nandini is the only daughter of Madan's sister Sangita's brother. How is Nandini related to Madan ?

- (A) Daughter
- (B) Niece
- (C) Cousin
- (D) Niece or Daughter



26. Choose the alternative which closely resembles the mirror image of the given combination :

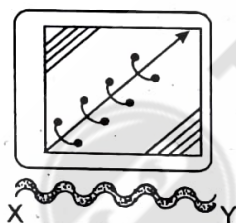
TARAIN1014A A A T O T W

- (I) A A T O T I A R A I
(II) A T O T A I A R A T
(III) A T O T A T A R A I
(IV) A A T O T I A R A T

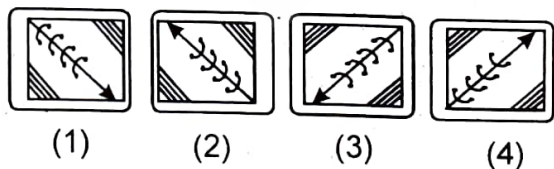
- (A) 1
(B) 2
(C) 3
(D) 4

27. Choose the correct water image of the question figure, from the given answer figures (assume that water is along XY) :

Question figure :



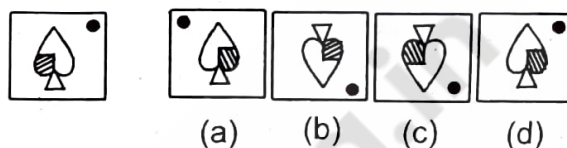
Answer figures :



- (A) 1

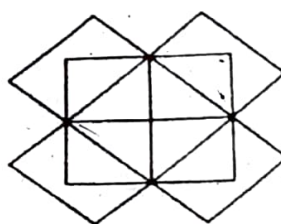
- (B) 2
(C) 3
(D) 4

28. Choose the correct mirror image from the answer figures (a), (b), (c) and (d) :



- (A) (a)
(B) (b)
(C) (c)
(D) (d)

29. How many rectangles are there in the given diagram ?



- (A) 20
(B) 26
(C) 21
(D) 14

30. A clock seen through a mirror show quarter past three. What is the correct time shown by the clock ?

- (A) 9 : 45
- (B) 9 : 15
- (C) 8 : 45
- (D) 3 : 15

31. Select the correct option that indicates the arrangement of the given words in the order in which they appear in a telephone directory :

- ✓ (I) Krishanmurthy ^{Krish}
- (II) Krishnamurthy
- (III) Krishnmurthi
- ① (IV) Krishanmurthy
- (V) Krishnamurti

- (A) (IV), (I), (II), (V), (III)
- (B) (IV), (I), (II), (III), (V)
- (C) (IV), (V), (II), (III), (I)
- (D) (IV), (III), (V), (III), (II)

32. In a certain code language, 'VIRTUE' is coded as '201' and 'TRAGEDY' is coded as '218'. How will 'PROFANE' be coded in that language ?

- (A) 570
- (B) 342
- (C) 432
- (D) 456

Directions (Q. Nos. 33 to 35) :

One hundred and twenty five cubes of the same size are arranged in the form of a cube on a table. Then a column of five cubes is removed from each of the four corners. All the exposed faces of the rest of the solid (except the face touching the table) are coloured red. Now, answer these questions based on the above statement :

33. How many small cubes are there in the solid after the removal of the columns ?

- (A) 120
- (B) 110
- (C) 105
- (D) 100

34. How many cubes do not have any coloured face ?

- (A) 12
- (B) 24
- (C) 36
- (D) 48

35. How many cubes have only one red face ?

- (A) 40
- (B) 25
- (C) 20
- (D) 15

36. David gets on the elevator at the 11th floor of a building and rides up at the rate of 57 floors per minute. At the same time, Albert gets on an elevator at the 51st floor of the same building and rides down at the rate of 63 floors

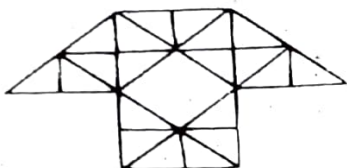
per minute. If they continue travelling at these rates, then at which floor will their paths cross ?

- (A) 19
- (B) 28
- (C) 30
- (D) 37

37. An egg vendor calls on his first customer and sells half his eggs and half an egg. To the second customer, he sells half of what he has left with and half an egg, and to the third customer, he sells half of what he was then left with and half an egg. However, he did not break any egg. If in the end, the vendor was left with three eggs. How many eggs did he have initially ?

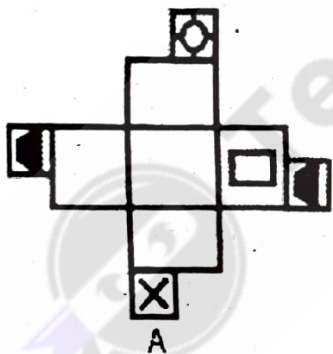
- (A) 26
- (B) 31
- (C) 39
- (D) None of these

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



- (A) 29
(B) 38
(C) 40
(D) 35

39. Choose the box that is similar to the box formed from the given sheet of paper :



1	2	3	4

- (A) 1, 2 and 3

- (B) 1, 2 and 4

- (C) 2 and 3

- (D) 2, 3 and 4

40. Select the option in which the numbers are related in the same way as are the numbers of the following set, (24, 10, 392) :

- (A) (29, 18, 242)

- (B) (27, 15, 480)

- (C) (26, 12, 369)

- (D) (21, 18, 234)

41. There are deer and peacocks in a zoo. By counting heads they are 80. The number of their legs is 200. How many peacocks are there ?

- (A) 20

- (B) 30

- (C) 50

- (D) 60

$$\begin{aligned}
 & \text{Let } x = \text{deer} \text{ and } y = \text{peacocks} \\
 & x + y = 80 \quad \text{(1)} \\
 & 4x + 2y = 200 \quad \text{(2)} \\
 & \text{From (1): } x = 80 - y \\
 & \text{Substitute in (2): } 4(80 - y) + 2y = 200 \\
 & 320 - 4y + 2y = 200 \\
 & -2y = 200 - 320 \\
 & -2y = -120 \\
 & y = 60
 \end{aligned}$$

6 → 11 + 5
 2 + 5 → 7 → ⑥ → ③
 21 → 4 + 1 → ③

42. What day of the week was 31st January, 2007 ?

- (A) Tuesday
- (B) Monday
- (C) Thursday
- (D) Wednesday

43. Arrange the following words in the order in which they appear in an English dictionary :

- (I) Meticulous
- (II) Metric
- (III) Method
- (IV) Mettle
- (V) Meter

- (A) (V), (III), (I), (IV), (II)
- (B) (V), (III), (I), (II), (IV)
- (C) (III), (IV), (V), (I), (II)
- (D) (V), (I), (III), (II), (IV)

44. Rasik walked 20m towards north. Then he turned right and walks 30m. Then he turns right and walks 35m. Then he turns left and walks 15m. Finally he turns left and walks 15m. In which direction and how many metres is he from the starting position ?

- (A) 15m West
- (B) 30m East
- (C) 30m West
- (D) 45m East

45. How is 'sure' written in a code language ?

- I. 'he is sure' written as 'ja ha main in that code language
- II. 'is she sure' written as 'Ka ja main in that code language

- (A) Ja
- (B) Ja or ma
- (C) Ma
- (D) Ha



46. Pointing to a woman, Nirmal said, "She is the daughter of my wife's grandmother's only child". How is the woman related to Nirmal if she is not the wife of Nirmal ?

- (A) Wife
- (B) Sister-in-law
- (C) Sister
- (D) None of these

47. IF ZIP = 198 and ZAP = 246, then how will you code VIP ?

- (A) 174
- (B) 222
- (C) 888
- (D) 990

Directions (Q. Nos. 48 to 50) : Read the information given below to answer these questions :

Rani and Shreshtha are a married couple having two daughters, Medha and Deepti. Deepti is married to Anurag who is the son of Garima and Tarun. Nidhi is the

daughter of Anurag. Komal, who is Anurag's sister, is married to Harshit and has two sons, Aman and Prem. Prem is the grandson of Garima and Tarun.

48. What is the relationship between Aman and Nidhi ?

- (A) Cousins
- (B) Husband-Wife
- (C) Father-Daughter
- (D) Uncle-Niece

49. How is Komal related to Deepti ?

- (A) Aunt
- (B) Sister-in-law
- (C) Sister
- (D) None of these

50. Which of the following is true ?

- (A) Tarun is Deepti's maternal uncle
- (B) Aman is the son of Medha
- (C) Garima is Harshit's mother-in-law
- (D) Nidhi is cousin of Komal

(B) MATHEMATICS

51. For what value of α does the equations $\alpha x + y = 3$, $2x - 3y = 5$ has no solution ? $\frac{\alpha}{2} = \frac{1}{3}$

(A) $-2/3$

(B) $3/4$

(C) $1/5$

(D) $3/5$

52. The discriminant of the quadratic equation $3x^2 - 5x + 3 = 0$ is :

(A) -5

(B) 3

(C) -11

(D) -1

53. If a pair of linear equations is given

by $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y$

$+ c_2 = 0$ where $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$ then :

(A) The pair of linear equation is consistent

(B) The pair of linear equation is inconsistent

(C) The pair of linear equation is independent

(D) The pair of linear equation is dependent

54. If the 7th and 13th terms of an A. P.

be 34 and 64 respectively, then its

18th term is :

(A) 87

(B) 88

(C) 89

(D) 100

55. If the sum of n terms of an A. P. is

$3n^2 + 5n$ then which of its terms is

164 ?

(A) 26th

(B) 27th

(C) 30th

(D) None of these

56. If the sum of n terms of an A. P. be

(B) 300

$3n^2 + n$ and the common difference

(C) 175

is 6, then its 1st term is :

(D) 500

(A) 2

(B) 3

(C) 1

(D) 4

59. In a cricket match, a batsman

hits a boundary 15 times out of 60

balls he plays. Find the probability

that he didn't hit a boundary in next

ball :

(A) 0.75

(B) 0.15

(C) 0.60

(D) 0.18

57. What is the sum of all odd terms

between 2 and 100 ?

(A) 2687

(B) 2600

(C) 2768

(D) 2967

58. In a group of 500 students, there are

475 students who can speak Hindi

and 200 can speak English. What is

the number of students who can

speak Hindi only ?

(A) 475

60. Find the probability that a non-leap

year has 53 Sundays :

(A) $2/7$

(B) $5/7$

(C) $1/7$

(D) $6/7$

61. If a number is selected from numbers 1 to 25, then find the probability that it is a prime number :

- (A) $3/5$
- (B) $1/5$
- (C) $7/25$
- (D) $9/25$

62. How many natural numbers are there between 23 and 100 which are exactly divisible by 6 ?

- (A) 8
- (B) 11
- (C) 13
- (D) 12

$$\begin{aligned} a &= 24 \\ L &= 96 \\ 96 &= 24 + (n-1)6 \\ 96 &= 24 + 6n - 6 \\ \frac{72}{6} &= n-1 \end{aligned}$$

63. If a set has 5 elements, then the power set of that set has _____ elements.

- (A) 25

(B) 32

(C) 10

(D) None of these

64. A bag contains 3 green, 4 blue and 2 orange marbles. If a marble is picked at random then find the probability of not getting an orange

marble :

- (A) $4/9$
- (B) $7/9$
- (C) $1/4$
- (D) $1/3$

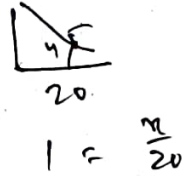
$$\begin{aligned} & \frac{4}{9} \\ & \frac{9C_2 \times 4}{9C_2 \times 4 + 2} \\ & \frac{6 \times 4}{6 \times 4 + 2} \\ & \frac{24}{26} \\ & \frac{12}{13} \end{aligned}$$

65. If x is any number chosen from 1, 2, 3 and y is selected from the numbers 1, 4, 9, then $P(xy < 9) = ?$

- (A) $2/3$
- (B) $5/9$
- (C) $7/9$
- (D) $1/3$

66. If the angle of elevation of the top of tower from a point 20m away from the foot is 45° , then find height of the tower:

- (A) 40m
(B) 20m
(C) 30m
(D) 25m



- (B) $2 : \sqrt{3}$
(C) $3 : 2$
(D) $4 : 3$

67. If a circle and a semi-circle have the same radius as 14 cm, then the ratio of their perimeters is _____.

- (A) 5 : 1
(B) 6 : 7
(C) 11 : 9
(D) 12 : 9

$$\frac{2\pi \times 14}{\pi \times 14 + 2 \times 14}$$

$$\frac{2\pi \times 14}{14(\pi + 2)}$$

$$\frac{2\pi}{\pi + 2}$$

$$\frac{2}{1 + \frac{2}{\pi}}$$

69. A single letter is drawn at random from the word "ASPIRATION" the probability that it is a vowel is:

- (A) $1/2$
(B) $1/3$
(C) $1/4$
(D) 0

$$\frac{3}{10}$$

68. If the height of the cone is twice of the radius of its base circle then find the ratio of the area of base with total surface area:

- (A) $1 : \sqrt{5}$

70. If 4 coins are tossed once then what is the probability of getting exactly 2 heads?

- (A) $7/8$
(B) $5/8$
(C) $1/2$
(D) $3/8$

$$\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2}$$

$$H, T$$

$$\frac{1}{4}$$

BH - 2C/21

$$h = 2r$$

(16)

$$\frac{\pi r^2}{\pi r^2 + 2\pi rh} = \frac{1}{5}$$

Contd.

71. A and B are two independent events

(B) 38

such that $P(A \cup B') = 0.8$, and $P(A)$

(C) 42

$= 0.3$, then $P(B) = ?$

(D) 46

(A) $2/7$

(B) $2/3$

(C) $3/8$

(D) $1/8$

$$\begin{aligned} A &= 0.3 \\ A \cup B' &= 0.8 \\ B' &= 0.8 - 0.3 \\ &= 0.5 \\ B &= 0.5 \end{aligned}$$

72. Find the probability of getting a

number greater than 3 in rolling of a

dice once :

(A) $1/2$

(B) $1/3$

(C) $1/4$

(D) $1/5$

73. What is the sum of two consecutive

even numbers, the difference of

whose squares is 84 ?

(A) 34

$$\begin{aligned} x^2 - y^2 &= 84 \\ 2n + 2n + 2 \end{aligned}$$

BH - 2C/21

$$\begin{aligned} 4n^2 - 4n^2 - 4 + 8n &= 84 \\ 8n &= 88 \\ n &= 11 \end{aligned}$$

74. What is the geometric mean of 4 and

16 ?

(A) 2

(B) 4

(C) 6

(D) 8

75. The average of 30 numbers is 12.

The average of the first 20 of them is

11 and that of the next 9 is 10. The

last number is :

(A) 60

(B) 45

(C) 50

(D) 40

$$\begin{aligned} 30 \times 12 &= 360 \\ 20 \times 11 &= 220 \\ \hline 90 \\ 210 \end{aligned}$$

(Turn over)

76. The average of two numbers A and B is 20, that of B and C is 19 and of C and A is 21. What is the value of A?

(A) 20

(B) 24

(C) 22

(D) 18

$$\begin{aligned} A + B &= 40 \\ B + C &= 38 \\ C + A &= 42 \\ \hline A + B + C &= 120 \\ A + B &= 40 \\ \hline C &= 80 \\ A + B &= 40 \\ \hline A &= 24 \end{aligned}$$

77. Find the sum of deviations of the variate values 3, 4, 6, 7, 8 and 14 from their mean?

(A) 0

(B) 3

(C) 4

(D) 6

$$\begin{aligned} \frac{3+4+6+7+8+14}{6} &= 7 \\ -4+3-1+0+1+7 &= 0 \end{aligned}$$

78. What is the mean of 1st 5 multiple of 7?

(A) 28

(B) 35

(C) 14

(D) 21

$$\begin{aligned} 7+14+21+28+35 &= 105 \\ \frac{105}{5} &= 21 \end{aligned}$$

79. Find out the algebraic sum of deviation of a set of P values from their mean:

(A) $P - 1$

(B) 0

(C) P

(D) $P + 1$

80. The median of the following data:

Class interval Frequency

0 - 10 8

10 - 20 16

20 - 30 36

30 - 40 34

40 - 50 6

(A) 27.22

(B) 24

(C) 50

(D) 36

81. $\frac{1}{1.3} + \frac{1}{3.5} + \frac{1}{5.7} + \frac{1}{7.9} = ?$

(A) 5/11

(B) 6/11

(C) 9/4

(D) 4/9

$$\begin{aligned} \frac{5 \times 7 \times 9 + 7 \times 9 + 3 \times 9}{1 \times 3 \times 5 \times 7 \times 9} &= \frac{235 + 63 + 27}{15 \times 7 \times 9} \\ \frac{325}{15 \times 7 \times 9} &= \frac{325}{15 \times 63} \\ \frac{325}{945} &= \frac{65}{189} \end{aligned}$$

82. Determine the smallest 3-digit number which is exactly divisible by

6 and 12 ?

(A) 96

(B) 84

(C) 108

(D) 120

83. What is the HCF of $\frac{1}{5}$, $\frac{2}{7}$ and

$\frac{3}{11}$?

(A) $\frac{1}{385}$

(B) 6

(C) $\frac{1}{35}$

(D) $\frac{5}{77}$

84. 0.03×0.0165 is equal to :

(A) 4.95×10^{-3}

(B) 4.95×10^{-4}

(C) 4.95×10^{-5}

(D) 4.95×10^{-6}

85.
$$\frac{(799 + 267)^2 - (799 - 267)^2}{799 \times 267} = ?$$

(A) 532

(B) 1066

(C) 2

(D) 4

86. $\overline{0.68} + \overline{0.73} = ?$

(A) $\overline{1.41}$

(B) $\overline{1.42}$

(C) $\overline{0.141}$

(D) None of these

87. Two numbers are 20% and 40%

more than the third number

respectively. The ratio of first and

second number is :

(A) 7 : 6

(B) 7 : 5

(C) 6 : 7

(D) 5 : 7

58

88. A fruit seller had some oranges. He sells 30% oranges and still has 140 oranges. Originally he had :

- (A) 140 oranges
- (B) 420 oranges
- (C) 200 oranges
- (D) 60 oranges

89. 11 oranges are bought for Rs. 10 and 10 oranges for Rs. 11. What is the gain in percentage ?

- (A) 11%
- (B) 21%
- (C) 25%
- (D) 28%

$$\begin{aligned}
 11 &\rightarrow 10 \\
 1 &\rightarrow \frac{10}{11} \\
 10 &\rightarrow 11 \\
 1 &\rightarrow \frac{11}{10} \\
 \frac{11}{10} - \frac{10}{11} &= \frac{1}{110} \\
 \frac{1}{110} \times 100 &= 9.09\% \approx 9\%
 \end{aligned}$$

- (C) 1000
- (D) None of these

91. A can finish a work in 18 days and B can do the same work in 15 days. B worked for 10 days and left the job. In how many days will 10 women complete it ?

- (A) 5
- (B) $5\frac{1}{2}$
- (C) 6
- (D) 8

$$\begin{aligned}
 A &- 18 \\
 B &- 15 \\
 &\rightarrow 90 \\
 &\rightarrow 150 \\
 &\rightarrow 240 \\
 &\rightarrow 360
 \end{aligned}$$

92. The ratio between the speeds of two trains is 7 : 8. If the second train runs 400 kms in 4 hours, then the speed of first train is :

- (A) 70 km / h
- (B) 75 km / h
- (C) 84 km / h
- (D) 87.5 km / h

$$\begin{aligned}
 7 &: 8 \\
 8 &\rightarrow 400 \\
 1 &\rightarrow 50 \\
 7 &\rightarrow 350 \\
 &\rightarrow 350 \times \frac{25}{8} \\
 &= \frac{8750}{8} = 1093.75
 \end{aligned}$$

90. The difference between Compound Interest and Simple Interest for 2 years at 5% per annum is Rs. 2.50. Find the sum :

- (A) 500
- (B) 1500

$$\begin{array}{r} 125 \times 125 = 2 \\ \underline{625} \\ 250 \\ \underline{125} \\ 15625 \end{array}$$

93. $\sqrt{1.5625} = ?$

(A) 1.05

(B) 1.25

(C) 1.45

(D) 1.55

94. If α and β are the roots of quadratic

equation such that $\alpha + \beta = 12$ and

$\alpha - \beta = 4$, then the equation is :

(A) $x^2 - 12x + 32 = 0$

(B) $x^2 - 12x - 32 = 0$

(C) $x^2 + 12x + 32 = 0$

(D) $x^2 + 12x - 32 = 0$

$$\begin{array}{l} \alpha + \beta = 12 \\ \alpha - \beta = 4 \\ \hline 2\alpha = 16 \\ \alpha = 8 \\ \beta = 4 \\ x^2 - (12x) + 32 \end{array}$$

95. If for $p \neq 1$, $p^{5x+3} = 1$ then $x = ?$

(A) $-2/5$

(B) $3/5$

(C) $-3/5$

(D) $2/5$

$$\begin{array}{l} p^1 = 1 \\ 5x + 3 = 0 \\ x = -3/5 \end{array}$$

96. If n is a natural number, then

$(6n^2 + 6n)$ is always divisible by :

(A) 6 only

(B) 6 and 12 only

(C) 12 only

(D) 18 only

$$\begin{array}{l} 6n(n+1) \\ 6(2) \\ 12 \times 3 \\ 18 \times 4 \end{array}$$

97. If $\frac{x}{5} = \frac{y}{9}$ then $(x+5) : (y+9) = ?$

(A) 3 : 5

(B) 13 : 8

(C) 5 : 9

(D) 9 : 5

$$\begin{array}{l} \frac{x+5}{y+9} = \frac{\frac{x}{5} + 1}{\frac{y}{9} + 1} \\ \frac{x+5}{y+9} = \frac{\frac{x}{5} + \frac{5}{5}}{\frac{y}{9} + \frac{9}{9}} \\ \frac{x+5}{y+9} = \frac{\frac{x+5}{5}}{\frac{y+9}{9}} \\ \frac{x+5}{y+9} = \frac{9(x+5)}{5(y+9)} \end{array}$$

98. The fourth proportional to 5, 8, 15 is :

(A) 18

(B) 21

(C) 19

(D) 24

$$\begin{array}{l} \frac{5}{8} = \frac{15}{x} \\ \frac{5}{8} = \frac{4}{9} \\ \frac{x+5}{5} = \frac{y}{5} \end{array}$$

99. If $\begin{vmatrix} x+y & y \\ 3-x & 3 \end{vmatrix} = \begin{vmatrix} 2 & -1 \\ 0 & 3 \end{vmatrix}$ then the value of

x and y is :

(A) 3, -1

(B) -3, -1

(C) -3, 1

(D) 3, 1

$xy = -1$
 $x+y = 2$
 $x = 2+1 = 3$

100. If $M = \begin{vmatrix} -1 & 0 \\ 2 & 3 \end{vmatrix}$, $N = \begin{vmatrix} 0 & -2 \\ -2 & 3 \end{vmatrix}$, then

$2M + N$ is :

(A) $\begin{vmatrix} -2 & -2 \\ 2 & 6 \end{vmatrix}$

(B) $\begin{vmatrix} -2 & -2 \\ -2 & 9 \end{vmatrix}$

(C) $\begin{vmatrix} -2 & 2 \\ 2 & 9 \end{vmatrix}$

(D) $\begin{vmatrix} -2 & -2 \\ 2 & 9 \end{vmatrix}$

$\begin{vmatrix} -2 & 0 \\ y & 6 \end{vmatrix} + \begin{vmatrix} 0 & -2 \\ -2 & 3 \end{vmatrix} = \begin{vmatrix} -2 & -2 \\ 2 & 9 \end{vmatrix}$