DO NOT OPEN THIS BOOKLET UNTIL YOU ARE ASKED TO DO SO.

2023

TEST BOOKLET

PAPER - VI
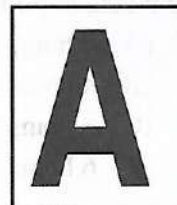
Time allowed : 3 hours

Full marks : 200

Answer *all* the questions.

Questions are of equal value.

TEST BOOKLET SERIES

A

Serial No. ....

Roll No.:

Signature of the Candidate:

INSTRUCTIONS

Candidates should read the following instructions carefully before answering the questions:

1. This booklet consists of 28 pages including this front page, containing 200 questions. **Verify the Page Nos. and Test Booklet series on each page and bring at once to the Invigilator's notice any discrepancy.**

2. Answers will have to be given in the OMR Sheet supplied for the purpose.

3. Before you proceed to mark in the OMR Sheet in response to various items in the Test Booklet, you have to fill in some particulars in the OMR Sheet. *Do not fold the OMR Sheet as this will result in error in your marks.*

4. All questions are of multiple-choice answer-type. You will find *four* probable answers (A), (B), (C) and (D) against each question. Find out which of the four answers appears to you to be **correct or the best**. Now darken the circle corresponding to the letter of the selected answer in the Answer-Sheet with **Black Ball Point Pen** as per instructions printed in the reverse **of the Admit Card** and in the Answer-Sheet.

5. One and only one circle is to be fully blackened for answer. Any spot in any other circle (multiple circle) or in wrong circle will be considered as wrong answer. If more circle is encoded for a particular answer, it will be treated as a wrong answer.

6. *There will be negative marking of 0·25 mark for each wrong answer.*

7. *There are blank pages at the end of this Booklet for Rough Work.*

8. *The Special Answer-Sheet should be handed over to the Invigilator before leaving the Examination Hall. You are permitted to take away the used Test Booklet after completion of the examination.*

33288

Please Turn Over

1. On a river, B is equidistance from both ends A and C. If a boat can go from A to B and back in 6 hours and from A to C in 8 hours, how long would it take to go from C to A?

(A) 2 hours

(B) 4 hours

(C) 5 hours

(D) 6 hours

2. A and B can do a work in 12 days, B and C in 15 days, C and A in 20 days. If A, B and C work together, they will complete the work in

(A) 5 days

(B) 10 days

(C) 12 days

(D) 18 days

3. A shopkeeper sold an article at 20% loss. Had he sold it at ₹ 200 more, he could have earned a profit of 5%. What is cost price of the article?

(A) 800

(B) 8,000

(C) 700

(D) 600

4. A man borrowed ₹ 2,500 at 4% p.a. and ₹ 1,800 at 5% p.a. simple interest for the same period. If he pays ₹ 570 as total interest, find the time for which the sums were borrowed.

(A) 2 years

(B) 3 years

(C) 4 years

(D) 5 years

Direction: In the question same codes have been used to write words. Try to find out the rule of coding in each case and answer as per direction in the OMR Answer Sheet.

5. In a coding system. TIE = 34, NOW = 52, then what will be code for WAX = ?

(A) 47

(B) 46

(C) 48

(D) 45

Direction: In the question there are two words separated by ':' and the other two separated from the first two by the symbol '::'. Find the relation between two sets of words and select one word from the right side of ':' which have the same relation as left side of the word of '::', find the circle of the letter denoting your selected answer on the OMR Answer Sheet.

6. Ocean : Water : : Glacier : ?

(A) Mountain

(B) Cave

(C) Ice

(D) Refrigerator

7. If 35 is removed from data 30, 34, 35, 36, 37, 38, 39, 40 then the median increases by :

(A) 2

(B) 1·5

(C) 1

(D) 0·5

8. The salary of a man is decreased by 50% and then in the next year it is increased by 60%, then the resultant increment of his salary is:

(A) 10%

(B) 15%

(C) −20%

(D) −25%

9. ₹ 2,820 is to be divided among A, B and C such that 3 times A's share is equal to 4 times B's share and 5 times C's share. Find A's share.

(A) ₹ 1,200

(B) ₹ 950

(C) ₹ 705

(D) ₹ 1,655

10. What is the ratio between times taken by a train 240m long to cross an electric pole and a bridge of 80m length?

(A) 2 : 3

(B) 3 : 4

(C) 4 : 5

(D) 5 : 6

11. The difference between the interest receive from two different bank on ₹ 500 for 2 years is ₹ 2·5. Find the difference between their rate of interest.

(A) 25%

(B) 20%

(C) 15%

(D) 10%

12. If a person walks at 14 km/hr instead of 10 km/hr, he would have walked 20 km more. The actual distance travelled by him is

(A) 50 km

(B) 56 km

(C) 70 km

(D) 80 km

13. In how many years will a sum of money double itself at $6\frac{1}{4}$% simple interest per annum?

(A) 16 years

(B) 15 years

(C) 10 years

(D) 20 years

14. ₹ 10,000 is borrowed at 20% p.a., interest compounded half-yearly. Find the amount repayable after one year.
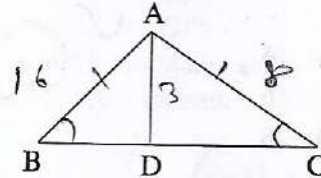
(A) ₹ 11,000

(B) ₹ 12,000

(C) ₹ 12,100

(D) ₹ 14,400

15. $\sum_{i=1}^{10} (10 \times i) = ?$

(A) 650

(B) 450

(C) 550

(D) 750

16. A, B and C together undertook a work for ₹ 550. A and B together done $\frac{7}{11}$ of the work. Find C's share.
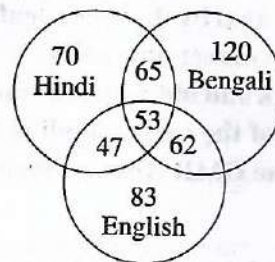
(A) ₹ 50

(B) ₹ 150

(C) ₹ 200

(D) ₹ 350

17. In the adjoining figure, if $\angle ACB = \angle BAD$, AC = 8 cm, AB = 16 cm and AD = 3 cm, then BD = ?

(A) 3 cm

(B) 6 cm

(C) 2 cm

(D) None of the above

Direction: The diagram shows the survey on a sample of 500 persons with respect to their knowledge of Bengali, Hindi and English.

18. How many persons know all the three Languages?

(A) 65

(B) 62

(C) 53

(D) 47

Please Turn Over

19. The monthly incomes of two persons are in the ratio 2 : 3 and their monthly expenses are in the ratio 5 : 9. If each of them saves ₹ 600 per month, then their monthly incomes are

(A) ₹ 1,500; ₹ 2,250

(B) ₹ 1,200; ₹ 1,800

(C) ₹ 1,600; ₹ 2,400

(D) ₹ 1,400; ₹ 2,100

20. In a hotel 60% had vegetarian lunch while 30% had non-vegetarian lunch and 15% had both types of lunch. If 96 people were present, how many did not eat either type of lunch?

(A) 20

(B) 24

(C) 26

(D) 28

21. $\dfrac{1}{a+b+x} = \dfrac{1}{a} + \dfrac{1}{b} + \dfrac{1}{x}$, $x \neq 0$, $x = ?$

(A) a

(B) b

(C) $-a, -b$

(D) a, b

Direction: In question, numbers are placed in figures on the basis of some rules. One place in the figure is indicated by the interrogation sign (?). Find out the correct alternative to replace the question mark and indicate your answer by filling the circle of the corresponding letter of alternatives in the OMR Answer Sheet.

22.

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      9              8              9
13─( 7 )─15  16─( 9 )─14  15─( ? )─17
      12             13             14
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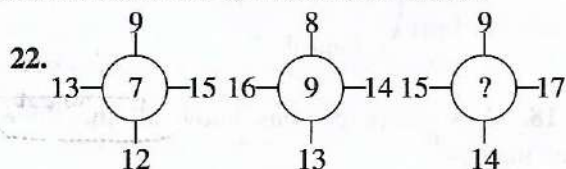
(A) 8

(B) 7

(C) 9

(D) 6

23. The shape of the lower portion of a solid is hemisphere and the shape of upper portion of it is right circular cone. If the surface areas of two parts are equal, find the ratio of the radius and height of the cone

(A) $1 : \sqrt{3}$

(B) $\sqrt{3} : 1$

(C) $2 : \sqrt{3}$

(D) $\sqrt{3} : 2$

Direction: The diagram shows the survey on a sample of 500 persons with respect to their knowledge of Bengali, Hindi and English.
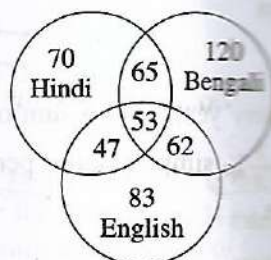
24. How many persons who do not know Hindi Language?

(A) 265

(B) 200

(C) 255

(D) 201

25. At the beginning of a year A and B jointly started a business by investing ₹ 17,000 and ₹ 20,000 respectively. After four months, A made a further investment of ₹ 4,000 in this business. If the profit was ₹ 9,520 at the end of the year, find the share of profit of A.

(A) ₹ 4,800

(B) ₹ 4,620

(C) ₹ 4,720

(D) ₹ 4,820

26. The average marks obtained by a group of 10 students is 41 marks. Find the new average if a new student who scored 63 marks is also included in the group.

(A) 39

(B) 40

(C) 43

(D) 45

27. The area of the circum circle of the equilateral triangle is 154 cm^2. The length of the longest side of the triangle

(A) $7\sqrt{3}$ cm

(B) 7 cm

(C) 3·5 cm

(D) 28 cm

28. Two vessels contain mixture of milk and water in the ratio 5 : 2 and 3 : 1 respectively. Find the ratio of milk and water in the new solution, if two mixtures are mixed in equal amount.

(A) 5 : 2

(B) 3 : 1

(C) 8 : 3

(D) 41 : 15

29. The average of 11 results is 32. The average of first five result is 27 and that of the last five result is 34. The sixth result is:

(A) 48

(B) 50

(C) 47

(D) 52

30. A retailer professes to sell his goods at cost price. If using a false weight, he still gains 25%, find the weight he uses in place of 1kg.

(A) 200 grams

(B) 600 grams

(C) 750 grams

(D) 800 grams

31. Ramesh and Rahman can do a work in 20 and 25 days respectively. After doing collectively 10 days of work, they leave the work due to illness and Suresh completes the rest of the work in 3 days. How many days Suresh alone can take to complete the whole work?

(A) 30 days

(B) 32 days

(C) 28 days

(D) 29 days

32. In an examination, 60% of the candidates passed in English, 70% in Maths and 40% in both subjects. How many students failed in both subjects?

(A) 10%

(B) 20%

(C) 30%

(D) 40%

33. If selling price of a commodity is increased by ₹ 35, the profit is increased by 7%. Find cost price of the article.

(A) ₹ 245

(B) ₹ 350

(C) ₹ 500

(D) ₹ 700

34. A and B can do a work in 12 and 15 days respectively. They started the work together but A left after 4 days due to illness. The remaining work was finished by B in:

(A) 5 days

(B) 6 days

(C) 10 days

(D) 12 days

Please Turn Over

35. The external diameter of a conical-coronet made off thermocol is 21 cm in length. To wrap up the outer surface of the coronet with foil, the expenditure will be ₹ 57·75 at the rate of 10p per cm². The height of the coronet is

(A) 14 cm

(B) 28 cm

(C) 7 cm

(D) 10 cm

36. The roots of the quadratic equation $5x^2 + 13x + k = 0$ are reciprocal to each other, then value of k will be

(A) 5

(B) 0

(C) 4

(D) 6

37. By selling 60 articles a vendor gains the selling price of 15 articles. His gain in percentage is:

(A) 25

(B) $33\frac{1}{3}$

(C) 20

(D) $28\frac{4}{7}$

38. If $x + \frac{1}{x} = -1$, $x^3 - 1 = ?$

(A) 0

(B) 1

(C) −1

(D) 2

39. Sourima ranks 8th in a class of 35 students. What is his rank from the last?

(A) 26th

(B) 27th

(C) 29th

(D) 28th

40. In an examination 50% of the candidates passed in English and 68% passed in Mathematics but 17% failed both in Math and English. If 2150 candidates passed in both the subjects then how many candidates appeared in the examination?

(A) 5000

(B) 6000

(C) 5050

(D) None of the above

41. PST : 1 : : NPR : ?

(A) 3

(B) 4

(C) 1

(D) 7

42. On a certain some of money the simple interest for 2 years is ₹ 350 at the rate of 4% per annum. If it was invested at compound interest at the same rate for the same duration as before, how much more interest would be earned

(A) ₹3.50

(B) ₹7

(C) ₹14

(D) ₹35

43. A shopkeeper earns a profit of 12% on selling a book at 10% discount on the printed price. The ratio of the cost price to the printed price of the book is

(A) 45:56

(B) 50:61

(C) 55:69

(D) 99:125

44. If $x - y \propto \frac{1}{z}$, $y - z \propto \frac{1}{x}$, $z - x \propto \frac{1}{y}$, then sum of three variation constant is:

(A) −1

(B) 0

(C) 1

(D) ±1

45. The external bisectors of ∠ABC and ∠ACB of ∆ABC meet at O. ∠BAC = 70°, value of ∠BOC = ?

(A) 45°
(B) 55°
(C) 65°
(D) 75°

46. A certain sum of money amounts to ₹ 600 in 2 years and ₹ 700 in 4 years at a certain rate of simple interest. Find the rate of interest.

(A) 5%
(B) 8·16%
(C) 10%
(D) 16·33%

47. The ratio of the number of boys and girls is 3 : 2. If 20% of the boys and 30% of the girls are scholarship holders, then the percentage of students who do not get scholarship is

(A) 50
(B) 72
(C) 75
(D) 76

48. 4 men and 6 women can complete a work in 8 days, while 3 men and 7 women can complete it in 10 days. In how many days will 10 women complete it?

(A) 35
(B) 40
(C) 45
(D) 50

49. A shopkeeper sold sarees at ₹ 266 each after giving 5% discount on labelled price. If he did not give the discount, he will be able to earn a profit of 12% on the cost price. What was the cost price of each saree?

(A) ₹ 280
(B) ₹ 250
(C) ₹ 240
(D) ₹ 260

50. Money : Misappropriation : : Writing : ?

(A) Deception
(B) Mistake
(C) Plagiarism
(D) Theft

Following question is based on letter series. In each series some letters are missing. The missing letters are given in the proper sequence as one of the alternatives. Find the correct alternative in each case and mark the right alternative on the OMR Answer Sheet.

51. abca__bcaab__aab__aa__ca

(A) ccaa
(B) accb
(C) abac
(D) abba

52. A sum of ₹ 5,000 amounts to ₹ 6,050 after 2 years at compound interest, interest compounded annually. What is the rate of interest per annum?

(A) 5%
(B) 9%
(C) 10%
(D) 11%

53. A tap can fill a tank in 6 hours. After half the tank is filled, three more similar taps are opened. What is the total time taken to fill the tank completely?

(A) 4 hours
(B) 4 hours 15 minutes
(C) 3 hours 15 minutes
(D) 3 hours 45 minutes

54. If it is Saturday on January 1, 2000, then January 1, 2001 will be

(A) Monday
(B) Tuesday
(C) Friday
(D) Saturday

Please Turn Over

55. If the sum of three number is 92, 1st and 2nd in the ratio 2 : 3 and 2nd and 3rd in the ratio 3 : 4. The 1st number is:

(A) 20

(B) 22

(C) 24

(D) 26

56. If the sum of ₹ 500 amounts to ₹ 575 in 3 years, how much will ₹ 600 to in 4 years at the same rate of simple interest?

(A) ₹ 120

(B) ₹ 620

(C) ₹ 650

(D) ₹ 720

Direction: In the question there are two words separated by ':' and the other two separated from the first two by the symbol '::'. Find the relation between two sets of words and select one word from the right side of ':' which have the same relation as left side of the word of '::', find the circle of the letter denoting your selected answer on the OMR Answer Sheet.

57. AB : ZY :: CD : ?

(A) UV

(B) WX

(C) VU

(D) XW

58. A person lent two equal amounts of money at 12% p.a. for 3·5 years and 5·5 years respectively. If difference between two interests is ₹ 1,800, find total sum lent.

(A) ₹ 6,000

(B) ₹ 7,500

(C) ₹ 12,000

(D) ₹ 15,000

59. The difference between simple interest and compound interest on ₹ 1,200 for one year at 10% per annum reckoned half-yearly is

(A) ₹ 2·50

(B) ₹ 3

(C) ₹ 3·75

(D) ₹ 4

60. In how many years will ₹ 2,000 amount to ₹ 2,420 at 10% per annum compound interest?

(A) 3

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

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

(D) 2

61. Rate of income tax is increased from 4% to 5%. However, the total tax liability of a person remains the same as was in the last year. If his income for the last year was ₹ 1,00,000, find his present income.

(A) ₹ 1,25,000

(B) ₹ 90,000

(C) ₹ 80,000

(D) ₹ 75,000

62. In how many years a sum of ₹ 2,500 at 18% simple interest per annum will earn same interest at ₹ 1,500 earns at 10% p.a. in 12 years?

(A) 3 years

(B) 4 years

(C) 5 years

(D) 6 years

Direction: In the following question, a number series is given with one term missing. Choose the correct alternative that will continue the same pattern and answer on the OMR Answer Sheet by filling the circle.

63. 2, 8, 18, 32, 50, ?

(A) 60

(B) 66

(C) 72

(D) 82

64. A sum of ₹ 1,540 is divided among A, B and C in such a way that A receives $\frac{2}{9}$ as much as B and C together receive, and B receive $\frac{3}{11}$ of what A and C together receive. Find the share of C.

(A) ₹ 280

(B) ₹ 330

(C) ₹ 930

(D) ₹ 980

65. The ratio of measurement of an interior angle and an exterior angle of a polygon is 3:2. The number of sides of a polygon is

(A) 5

(B) 10

(C) 15

(D) 20

66. If $4 \times 5^x = 500$, then the value of x^x is—

(A) 8

(B) 1

(C) 64

(D) 27

67. 20% loss on selling price is what percent loss on the cost price?

(A) 25%

(B) 15%

(C) $16\frac{2}{3}\%$

(D) $16\frac{1}{3}\%$

68. At what rate percent per annum will a sum of money double in 16 years?

(A) $6\frac{1}{4}\%$

(B) $6\frac{1}{2}\%$

(C) 6%

(D) $5\frac{1}{4}\%$

69. A man rows down a river 15 km is 3 hrs. with the stream and returns in $7\frac{1}{2}$ hrs. The rate at which he rows in still water is

(A) 2·5 km/hr

(B) 1·5 km/hr

(C) 3·5 km/hr

(D) 4·5 km/hr

70. If the measures of two angles of a triangle are 65°20′3″ and 54°39′57″, then the circular value of third angle is:

(A) π^c

(B) $\frac{\pi^c}{2}$

(C) $\frac{\pi^c}{3}$

(D) $\frac{2\pi^c}{3}$

71. What sum of money will amount to ₹ 3,528 in 2 years at 5% per annum compound interest?

(A) 3,000

(B) 3,200

(C) 32,000

(D) None of the above

72. Two trains, one from Howrah to Patna and other from Patna to Howrah, start simultaneouly. After they meet, the trains reach their destinations after 9 hours and 16 hours respectively. The ratio of their speeds is

(A) 2 : 3

(B) 4 : 3

(C) 6 : 7

(D) 9 : 16

Please Turn Over

73. 5 men started a business contributing ₹ 20,000 each. Later on 6th men joined the partnership contributing ₹ 2,000 less than the average contribution of all the 6 men. Find the amount contributed by the 6th partner.

(A) ₹ 2,000

(B) ₹ 17,600

(C) ₹ 19,600

(D) ₹ 20,500

74. If food prices go up by 10%, by how much should a man reduce his consumption so as not to increase his expenditure?

(A) $9\frac{1}{11}\%$

(B) 10%

(C) $11\frac{1}{9}\%$

(D) 11%

75. If the radius of a sphere is increased by 2 cm, then its surface area increases by 352 cm^2. The radius of the sphere before the increase was

(A) 3 cm

(B) 4 cm

(C) 5 cm

(D) 6 cm

76. Sum of present ages of A, B and C is 72 years. If 4 years ago, their ages were in the ratio 1 : 2 : 3, find A's present age.

(A) 7 years

(B) 10 years

(C) 12 years

(D) 14 years

77. When water is frozen to ice, its volume increases by 10%. What percent of the volume of ice decreases when it melts to water?

(A) $10\frac{1}{11}\%$

(B) $6\frac{1}{5}\%$

(C) $9\frac{1}{11}\%$

(D) 11%

78. Salary of a person is increased by 20%, then it is decreased by 20%. Change in his salary is:

(A) 4% decreased

(B) 4% increased

(C) 8% decreased

(D) remains same

79. Train A took 35 minutes to cover a distance of 50 km. If the speed of train B is 25% faster than train A, it will cover the same distance in:

(A) 25 minutes

(B) 28 minutes

(C) 30 minutes

(D) 36 minutes

80. Pipe A can fill a tank in 15 minutes and pipe B can drain 40 litres per minute. If both the pipes are opened together, the cistern is full in 45 minutes, find the capacity of the cistern.

(A) 600 litres

(B) 750 liters

(C) 900 liters

(D) 1800 liters

81. A man had 100 kgs of sugar, part of which he sold at 7% profit and rest at 17% profit. He gained 10% on the whole. How much did he sell at 7% profit.

(A) 65 kg

(B) 35 kg

(C) 30 kg

(D) 70 kg

82. Two pipes A and B can fill a cistern in 60 minutes and 48 minutes respectively. Both pipes are opened together. The cistern will be filled in half an hour, if the pipe B is turned off after:

(A) 6 minutes
(B) 18 minutes
(C) 20 minutes
(D) 24 minutes

83. The average of marks of 28 students in Mathematics was 50. Eight students left the school and then this average is increased by 5. What is the average of marks obtained by the students who left the school?

(A) 37·5
(B) 42·5
(C) 45
(D) 50·5

84. A group of 15 persons spends ₹ 4,500 in 6 months, find total expenditure of a group of 25 persons in 4 months, if expenditure per person is same in both the cases.

(A) ₹ 2,000
(B) ₹ 3,000
(C) ₹ 4,000
(D) ₹ 5,000

85. Some sweets were to be distributed equally among 175 students of a school. But due to absence of 35 students, each child got 4 more sweets. How many sweets were distributed?

(A) 2400
(B) 2800
(C) 2480
(D) 2680

Direction: In the question three out of four figures are alike in same respect and one is different from others. Find out the odd figure and indicate your answer by filling the circle of the letter denoting your selected answer on the OMR Answer Sheet.

86.
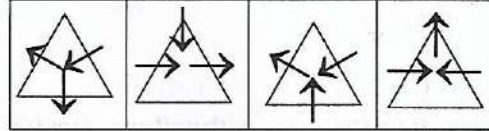
    (A)   (B)   (C)   (D)

87. A merchant mixes two varieties of wine containing 25% and 13% alcohol. The resultant mixture contains 17% alcohol. Find the quantity of second mixture, if 8 litre of first mixture is taken.

(A) 4 litres
(B) 16 litres
(C) 24 litres
(D) 32 litres

88. P, Q and R can do a job in 20, 30 and 60 days respectively. The number of days P can do the job if he is assisted by Q and R every third day is

(A) 11 days
(B) 15 days
(C) 17 days
(D) 16 days

89. Find the missing number:
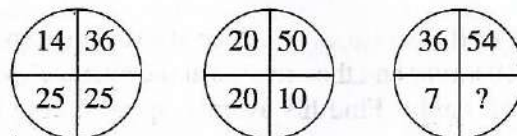
(A) 1
(B) 0
(C) 2
(D) 3

Please Turn Over

90. The ratio between two numbers is 5:3. If 3 is added to both the numbers, the ratio becomes 14 : 9. Find the smaller number.

(A) 15

(B) 18

(C) 25

(D) 28

91. A train travelling with uniform speed crosses two bridges of lengths 300m and 240m in 21 seconds and 18 seconds respectively. The speed of the train is

(A) 72 km/hr

(B) 68 km/hr

(C) 65 km/hr

(D) 60 km/hr

92. A man lent ₹ 2,000 partly at 5% and the balance at 4%. If he receives ₹ 92 towards annual interest, find the amount lent at 5%.

(A) ₹ 800

(B) ₹ 900

(C) ₹ 1,000

(D) ₹ 1,200

93. The 5th and 11th term of an A.P. are 41 and 20 respectively. The first term is

(A) 45

(B) 65

(C) 35

(D) 55

94. If a man goes to a place at an average speed of 10 km/hr and then returns at the average speed of 15 km/hr. Find his average speed during the whole journey.

(A) 12 km/hr

(B) 12·5 km/hr

(C) 13 km/hr

(D) 15 km/hr

95. A alone can do a piece of work in 21 days. B who is 40% more efficient than A, will finish the work in:

(A) 10 days

(B) 12 days

(C) 15 days

(D) 18 days

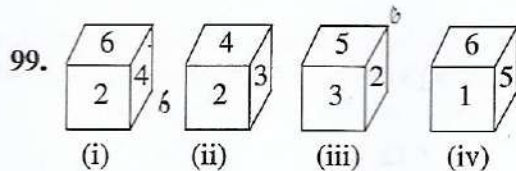96. If $\dfrac{9^n \times 3^5 \times (27)^3}{3 \times (81)^4} = 27$, then value of n is

(A) 0

(B) 2

(C) 3

(D) 4

97. A does half as much work as B in three-fourth of the time. If together they take 18 days to complete a work, how much time shall B take to do it alone?

(A) 30 days

(B) 35 days

(C) 40 days

(D) 45 days

98. 24576, 6144, 1536, 386, 96, 24. Find the odd number of the above series.

(A) 96

(B) 386

(C) 1536

(D) 6144

99.

    (i)   (ii)   (iii)   (iv)

Which number is at the opposite face of number 2?

   (A) 4

   (B) 1

   (C) 5

   (D) 3

100. A circular swimming pool is surrounded by a concrete wall 4 ft wide. If the area of the concrete wall surrounding the pool is $\frac{11}{25}$ that of the pool, then the radius of the pool is

   (A) 8 ft

   (B) 16 ft

   (C) 20 ft

   (D) 30 ft

101. $\frac{2}{3}$ rd of a number is 26. Find out 25% of the number.

   (A) 9·35

   (B) 9·45

   (C) 9·55

   (D) 9·75

102. The angle of elevation of a ladder leaning against a wall is 60° and the foot of the ladder is 4·7 m away from the wall. The length of the ladder is :

   (A) 4·7 m

   (B) 9·4 m

   (C) 8·4 m

   (D) 9·7 m

103. A house worth ₹ 1,50,000 is sold by X at a 5% profit to Y, Y sells the house back to X at a 2% loss. Then find profit and loss in the entire transaction.

   (A) X gains ₹ 4,350

   (B) X loses ₹ 4,350

   (C) X loses ₹ 3,150

   (D) X gains ₹ 3,150

104. The diagonal of a square is $4\sqrt{2}$ cm. The diagonal of another square whose area is double that of the first square, is

   (A) 8 cm

   (B) $8\sqrt{2}$ cm

   (C) 16 cm

   (D) $4\sqrt{2}$ cm

105. A shopkeeper purchased a chair marked at ₹ 800, at two successive discounts of 10% and 15% respectively. He spent ₹ 28 on transporation and sold the chair for ₹ 800. His gain percent is :

   (A) 40%

   (B) 30%

   (C) 25%

   (D) 14%

Here the four fundamental operations +, –, × and ÷ are represented by symbols from the usual one. You have to solve the problem by substituting the real symbol accordingly and indicate your answer by filling the circle of the letter denoting your selected answer on OMR Answer Sheet.

106. If L denotes ×, M denotes ÷, P denotes + and Q denotes –, then 7P24M8Q6M2L3

   (A) 1

   (B) 2

   (C) 3

   (D) 4

Please Turn Over

107. Due to an increase of 50% in the price of eggs, 4 eggs are available for ₹24. The present rate of eggs per dozen is:

   (A) ₹ 24

   (B) ₹ 27

   (C) ₹ 36

   (D) ₹ 42

108. If the ratio of boys and girls in a city is 7:4, which of the following can not be the total number of boys and girls in the city?

   (A) 29435417

   (B) 57463822

   (C) 28444625

   (D) 29434526

109. If the cost price of 120 mangoes is equal to the selling price of 110 mangoes, find the gain or loss percent.

   (A) 9%

   (B) 10%

   (C) $11\frac{1}{9}$ %

   (D) $9\frac{1}{11}$ %

Direction: Read the following information and answer the question given below:

There are six children playing football namely A, B, C, D, E, F. A and E are brothers; F is the sister of E; C is the only son of A's uncle; B and D are the daughters of the brother of C's father.

110. How C is related to F?

   (A) Brother

   (B) Uncle

   (C) Son

   (D) Cousin

111. On selling an article for a certain price, a man loses 30%. What is his loss/profit percent, if he sells the article for double the price?

   (A) 60% loss

   (B) 15% loss

   (C) 40% profit

   (D) 30% profit

Direction: In question, numbers are placed in figures on the basis of some rules. One place in the figure is indicated by the interrogation sign (?). Find out the correct alternative to replace the question mark and indicate your answer by filling the circle of the corresponding letter of alternatives in the OMR Answer Sheet.

112.

   11   5   15   9   21   16

      96   144   ?
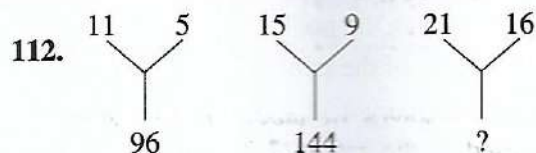
   (A) 185

   (B) 165

   (C) 175

   (D) 195

113. 7th term of the A.P. 5, 12, 19, ... is

   (A) 45

   (B) 47

   (C) 40

   (D) 33

114. A pipe can fill a tank with water in 3 hours. Due to leakage in bottom, it takes $3\frac{1}{2}$ hours to fill it. In what time the leak will empty the fully filled tank?

   (A) 12 hours

   (B) 21 hours

   (C) $6\frac{1}{2}$ hours

   (D) $10\frac{1}{2}$ hours

115. A student gets 29% marks of an examination but fails by 24 marks. If the pass percentage is 35%, the maximum marks are

(A) 200

(B) 300

(C) 400

(D) 500

116. Two pipes A and B can fill a tank in 15 minutes and 20 minutes respectively. Both the pipes are opened together, but after 4 minutes pipe A is turned off. What is the total time required to fill the tank?

(A) 10 min

(B) 11 min 45 sec

(C) 12 min 30 sec

(D) 14 min 40 sec

117. The wages of labourers in factory has increased in the ratio 22:25 and their number decreased in the ratio 3 : 2. What was the original wages bill of the factory if the present bill is ₹ 5,000?

(A) ₹ 4,000

(B) ₹ 6,000

(C) ₹ 8,000

(D) ₹ 6,600

118. The value of a machine depreciates @25% p.a. If its present value is ₹ 14,400, what will be its worth after 2 years.

(A) ₹ 8,100

(B) ₹ 9,216

(C) ₹ 10,200

(D) ₹ 10,800

119. The present population of a city is 180000. If it increases at the rate of 10% per annum, its population after 2 years will be:

(A) 207800

(B) 227800

(C) 217800

(D) 237800

120. The value of

$$\frac{1}{\sqrt{1}+\sqrt{2}}+\frac{1}{\sqrt{2}+\sqrt{3}}+\frac{1}{\sqrt{3}+\sqrt{4}}\cdots+\frac{1}{\sqrt{80}+\sqrt{81}}$$ is

(A) 9

(B) 7

(C) 8

(D) $\sqrt{80}$

121. A cylindrical vessel of radius 4cm contains water. A solid sphere of radius 3cm is lowered into the water until it is completely immersed. The water level in the vessel will rise by

(A) $\frac{2}{9}$cm

(B) $\frac{4}{9}$cm

(C) $\frac{9}{4}$cm

(D) $\frac{9}{2}$cm

122. If selling an article for ₹ 990 causes 10% loss on the selling price, find its cost price.

(A) ₹ 891

(B) ₹ 900

(C) ₹ 1,100

(D) ₹ 1,089

123. The ratio of investments of two partners is 11 : 12 and the ratio of their profits is 2 : 3. If A invests the money for 8 months, find for how much time B invests his money?

(A) 11 months

(B) 8 months

(C) 4 months

(D) 3 months

124. Rahim walks 15 km towards North. From there he walks 9 km towards South. Then he walks 8 km towards East. How far and in which direction is he now from his starting point?

(A) 7 km North-East

(B) 10 km North-East

(C) 10 km South-West

(D) 7 km South-East

Please Turn Over

125. The average of runs of a cricket player of 10 innings was 32. How many runs must he make in his next innings so as to increase his average of runs by 4?

(A) 76

(B) 70

(C) 4

(D) 2

Study the figure carefully and answer the question. The triangle represents doctors, the circle represents players and the rectangle represents artists.
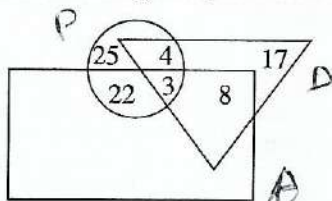
126. How many artists are players?

(A) 30

(B) 29

(C) 25

(D) 17

127. The sum of two numbers is 2490. If 6·5% of one number is equal to 8·5% of the other, the greater number is

(A) 1079

(B) 1380

(C) 1411

(D) 1250

128. A solution of salt and water contains 15% salt. If 4kg of water is evaporated, solution contains 18% salt. Find the original quantity of solution.

(A) 12 kg

(B) 18 kg

(C) 24 kg

(D) 36 kg

129. Walking at $\frac{5}{4}$ th of the usual speed, a person reaches his office 12 minutes too early. What is the usual time?

(A) 48 minutes

(B) 60 minutes

(C) 70 minutes

(D) 80 minutes

Study the figure carefully and answer the question. The triangle represents doctors, the circle represents players and the rectangle represents artists.
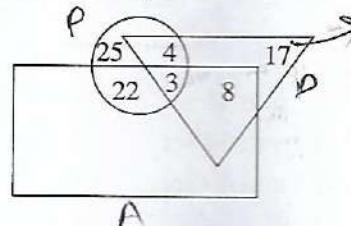
130. How many doctors are neither players nor artists?

(A) 17

(B) 30

(C) 8

(D) 19

131. Successive discounts of 50% and 50% is equivalent to

(A) 100%

(B) 75%

(C) 50%

(D) 25%

132. Bulu and Tathagata can do a work separately in 20 days and 30 days respectively. After working 7 days both of them left away. Then Anita came and completed rest of the work done alone in 10 days. How many days Anita will take to complete the work alone?

(A) 20 days

(B) 25 days

(C) 24 days

(D) None of the above

Direction: In the question three out of four figures are alike in same respect and one is different from others. Find out the odd figure and indicate your answer by filling the circle of the letter denoting your selected answer on the OMR Answer Sheet.

133.

   (A)   (B)   (C)   (D)
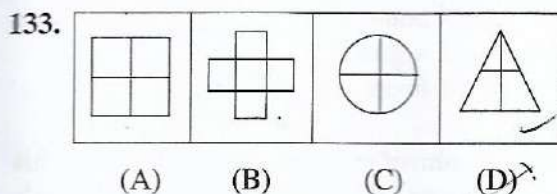
134. If difference between simple interest on a certain sum at 4% for 6 years and at 5% for 4 years is ₹ 28, find the sum.
   (A) ₹ 200
   (B) ₹ 400
   (C) ₹ 500
   (D) ₹ 700

135. Price of an article increases by 20%. As a result turnover increases by 12%. Find the decrease in quantity sold.
   (A) 5%
   (B) 6·67%
   (C) 6·66%
   (D) 5·67%

136. If the simple interest on a sum of money for 2 years at 5% per annum is ₹ 50, what is the compound interest on the same sum at the same rate and for the same time?
   (A) ₹ 51·25
   (B) ₹ 52
   (C) ₹ 54·25
   (D) ₹ 60

137. A man can row 18 kmph in still water. It takes him thrice as long to row up as to row down the river. Find the rate of stream.
   (A) 6 kmph
   (B) 9 kmph
   (C) 10 kmph
   (D) 12 kmph

Direction: Read the following information and answer the question given below:

There are six children playing football namely A, B, C, D, E, F. A and E are brothers; F is the sister of E; C is the only son of A's uncle; B and D are the daughters of the brother of C's father.

138. How D is related to A?
   (A) Cousin
   (B) Sister
   (C) Niece
   (D) Uncle

139. If a person walks at 14 km/hr instead of 10 km/hr, he would have walked 20 km more. The actual distance travelled by him is:
   (A) 50 km
   (B) 56 km
   (C) 70 km
   (D) 80 km

140. If A's income is 40% less than that of B, how much percent is B's income more than that of A?
   (A) 60%
   (B) 40%
   (C) $66\frac{2}{3}$%
   (D) $33\frac{1}{3}$%

141. The simplified value of
$$\left(2-\frac{1}{3}\right)\left(2-\frac{3}{5}\right)\left(2-\frac{5}{7}\right)\cdots\cdots\left(2-\frac{997}{999}\right) \text{ is}$$
   (A) $\frac{5}{999}$
   (B) $\frac{1001}{999}$
   (C) $\frac{1001}{3}$
   (D) $\frac{501}{999}$

Please Turn Over

142. A certain amount of money has to be divided between two persons A and B in the ratio 3 : 5. But it was divided in the ratio 2 : 3 and thereby B loses ₹10. What was the amount?

(A) ₹ 250

(B) ₹ 300

(C) ₹ 350

(D) ₹ 400

143. If $a = 2024$, $b = 2023$, $c = 2022$, then the value of $(a^2 + b^2 + c^2 - ab - bc - ca)$ is

(A) 0

(B) 3

(C) 4024

(D) 2012

144. If the compound rate of interest for the 1st, 2nd and 3rd year be 4%, 5% and 6% respectively, then find the amount a man will receive at the end of 3 years investing ₹ 25,000.

(A) ₹ 28,938

(B) ₹ 27,938

(C) ₹ 28,948

(D) ₹ 28,937

145. Divided ₹ 1,570 between A and B so that ₹ 25 being deducted from A's share and ₹ 45 from B's share, their share becomes 2:3. Find the amount received by A.

(A) ₹ 625

(B) ₹ 628

(C) ₹ 942

(D) ₹ 945

146. The product of $(2-\sqrt{3})(2+\sqrt{5})(4+2\sqrt{3})$ $(\sqrt{5}-2) = ?$

(A) 1

(B) 2

(C) 3

(D) 4

147. Two boats A and B start towards each other from two places, 108 km apart. Speeds of the boats A and B in still water are 12 km/hr and 15 km/hr respectively. If A proceeds down and B up the stream, they will meet after:

(A) 4·5 hours

(B) 4 hours

(C) 5·4 hours

(D) 6 hours

148. The sum of present ages of a father and his son is 36 years. When the son reaches father's present age, the sum of their ages will be 80 years. What is the present age of the son?

(A) 4 years

(B) 7 years

(C) 9 years

(D) 12 years

149. A certain sum of money at a certain rate of simple interest becomes double in 5 years. It will become four times in:

(A) $7\frac{1}{2}$ years

(B) 10 years

(C) 15 years

(D) 20 years

150. The average marks obtained by 9 students was calculated to be 65. Later on it was found that the marks of one student was wrongly read as 76 instead of 67. The correct average is:

(A) 56

(B) 64

(C) 66

(D) 74

151. Two pipes, P and Q can fill a cistern in 12 and 15 minutes respectively. If both are opened together and at the end of 3 minutes, the first is closed, how much longer will the cistern take to fill?

(A) $8\frac{3}{4}$ minutes

(B) 5 minutes

(C) $8\frac{1}{2}$ minutes

(D) $8\frac{1}{4}$ minutes

152. A and B can do a work in 8 days, B and C can do the same work in 12 days. A, B and C together can finish it in 6 days. A and C together will do it in
- (A) 4 days
- (B) 6 days
- (C) 12 days
- (D) 8 days

153. Find the wrong number in the series:
1, 2, 8, 33, 148, 760, 4626
- (A) 8
- (B) 33
- (C) 148
- (D) 760

154. Three numbers are in the ratio $\frac{1}{2} : \frac{2}{3} : \frac{3}{4}$. The difference between the greatest and the smallest number is 36. The numbers are
- (A) 72, 84, 108
- (B) 60, 72, 96
- (C) 72, 84, 96
- (D) 72, 96, 108

155. A dishonest merchant professes to sell his goods at cost price, but used a weight of 900 grams for one kg. What is his profit percent?
- (A) 10%
- (B) $11\frac{1}{9}\%$
- (C) $9\frac{1}{11}\%$
- (D) 11%

156. If the volume of two solid right circular cylinders are same and their height are in the ratio 1:3, then the ratio of lengths of radii is:
- (A) $\sqrt{3}:1$
- (B) $1:\sqrt{3}$
- (C) 1:3
- (D) 3:1

157. If ₹ 126·50 is divided among A, B and C in the ratio of 2 : 5 : 4, the share of B exceeds that of A by
- (A) ₹ 36·50
- (B) ₹ 35·50
- (C) ₹ 34·50
- (D) ₹ 33·50

158. A cloth merchant sold half of his cloth at 20% profit, half of the remaining cloth at 20% loss and the rest was sold at its cost price. In the total transaction, his gain or loss will be
- (A) 5% profit
- (B) Neither loss nor gain
- (C) 5% loss
- (D) 10% profit

159. If A exceeds B by 40%, B is less than C by 20%, then A : C is:
- (A) 28 : 25
- (B) 26 : 25
- (C) 3 : 2
- (D) 3 : 1

160. The roots of the equation $\frac{x^2}{x} = 6$
- (A) 0
- (B) 6
- (C) 0, 6
- (D) −6

161. A and B started a partnership in which A contributed $\frac{1}{4}$ of the capital for 9 months. If A received $\frac{1}{3}$ of the profit, for how long B's capital was invested?
- (A) 6 months
- (B) 8 months
- (C) 10 months
- (D) 12 months

Please Turn Over

162. Insert the missing number:

10, 5, 13, 10, 16, 20, 19, _____

(A) 22

(B) 40

(C) 38

(D) 23

163. In 240 cc of a mixture of glycerine and water, the ratio of the volumes of water and glycerine is $1:3$. How much cc of water should be added with the mixture so that ratio of the volumes of water and glycerine be $2:3$?

(A) 60 cc

(B) 50 cc

(C) 80 cc

(D) 40 cc

164. Present ages of A and B are 50 years and 18 years respectively. In how many years will A be twice as old as B?

(A) 14 years

(B) 15 years

(C) 16 years

(D) 18 years

165. The cost of 3 horses is same as the cost of 5 cows. If total cost of 4 horses and 6 cows is ₹ 1,900, find the cost of one horse.

(A) ₹ 50

(B) ₹ 150

(C) ₹ 200

(D) ₹ 250

166. In an election 75% of the voters cast their votes; out of which 2% are rejected. If the successful candidates secures 9261 votes, which is 75% of the total votes, determine the total number of voters in that centre.

(A) 1680

(B) 168000

(C) 16800

(D) 26800

167. The H.C.F. of two natural numbers a and b is h and their L.C.M. is L, then value of $a^2 + b^2$ is (Given $h + L = a + b$)

(A) $h^3 + L^3$

(B) $h + L$

(C) $h^2 + L^2$

(D) $h^3 - L^3$

Direction: In the following question, a number series is given with one term missing. Choose the correct alternative that will continue the same pattern and answer on the OMR Answer Sheet by filling the circle.

168. 2, 7, 27, 107, 427, ?

(A) 1262

(B) 1707

(C) 4027

(D) 4207

169. The length of each of two parallel chords AB and CD is 12 cm. If the length of the radius of the circle is 10 cm, then the distance between two chords is:

(A) 12 cm

(B) 14 cm

(C) 16 cm

(D) 18 cm

170. What sum of money lent at 4% p.a. for 3 years will earn same interest as ₹ 1,200 earns in 4 years at 5% p.a. of simple interest?

₹ 1,000

₹ 1,500

₹ 2,000

(D) ₹ 2,500

171. A cloth store is offering 'Buy 3, get 1 free'. What is the net percentage discount being offered by the store?

(A) 20%

(B) 25%

(C) 30%

(D) $33\frac{1}{3}\%$

172. If a man allows 20% discount on all his articles, the number of the articles sold is increased by 20%. What will be the effect on total sale?

(A) 40% increase

(B) 4% increase

(C) 4% decrease

(D) No effect

173. A grocer purchased 2kg of rice at the rate of ₹ 15 per kg. and 3kg. of rice at the rate of ₹ 13 per kg. At what price per kg. should he sell the mixture to earn $33\frac{1}{3}$% profit on the cost price?

(A) ₹ 28

(B) ₹ 20

(C) ₹ 18·40

(D) ₹ 17·40

174. The mean proportional of 16 and 25 is

(A) 400

(B) 100

(C) 20

(D) 40

175. A and B started a partnership investing amounts in the ratio 2 : 3. After 6 months, C joined the partnership with an amount equal to that of B. The profit at the end of one year should be distributed among A, B and C in the ratio :

(A) 2 : 3 : 3

(B) 4 : 6 : 3

(C) 2 : 6 : 3

(D) 4 : 3 : 6

176. A, B and C enter into a partnership in the ratio $\frac{7}{2} : \frac{4}{3} : \frac{6}{5}$. After 4 months, A increases his share by 50%. If the total profit at the end of one year be ₹ 21,600, then B's share in the profit is

(A) ₹ 21,000

(B) ₹ 2,400

(C) ₹ 3,600

(D) ₹ 4,000

177. A bag contains ₹ 112 in the form of 1-rupee, 50-paise and 10-paise coins in the ratio 3 : 8 : 10. What is the number of 50-paise coins?

(A) 112

(B) 108

(C) 96

(D) 84

178. If the distance of the point (–12, y) from origin is 20 unit, then value of y is

(A) ± 15

(B) ± 16

(C) ± 14

(D) None of the above

179. If the radius of a circle is diminished by 10%, then its area is diminished by

(A) 10%

(B) 19%

(C) 20%

(D) 36%

180. With an average speed of 40 km/hr, a train reaches the destination on time. If it runs with average speed 35 km/hr, it is late by 15 mins. The length of the total journey is:

(A) 30 km

(B) 180 km

(C) 40 km

(D) 140 km

181. The average weight of 30 students of a class is 45 kg. The average weight of girls is 37kg. and that of boys is 49 kg. Find the number of boys in the class.

(A) 10

(B) 15

(C) 20

(D) 22

Direction: In the question same codes have been used to write words. Try to find out the rule of coding in each case and answer as per direction in the OMR Answer Sheet.

182. In certain code 'PLAY' is written as 'TPEC'. How could 'GAME' be written in that code?

   (A) KEQA

   (B) KIQE

   (C) KAQI

   (D) KEQI

183. A boat running downstream covers 24 km in 4 hours, while for covering the same distance upstream it takes 6 hours. What is the speed of the boat in still water?

   (A) 3·5 km/hr

   (B) 5·5 km/hr

   (C) 6 km/hr

   (D) 5 km/hr

184. A 270 meters long train running at the speed of 120 kmph crosses another train running in opposite direction at the speed of 80 kmph in 9 seconds. What is the length of the other train?

   (A) 230 m

   (B) 240 m

   (C) 260 m

   (D) 320 m

185. $\left(\dfrac{2+\sqrt{3}}{2-\sqrt{3}} + \dfrac{2-\sqrt{3}}{2+\sqrt{3}} + \dfrac{\sqrt{3}-1}{\sqrt{3}+1} \right)$ simplifies to

   (A) $16-\sqrt{3}$

   (B) $4-\sqrt{3}$

   (C) $2-\sqrt{3}$

   (D) $2+\sqrt{3}$

186. A man bought an article for ₹21. What was the marked price of the article if he had bought the article at 30% discount?

   (A) ₹30

   (B) ₹32

   (C) ₹33·50

   (D) ₹35

187. The remainder, when $(x^3 + 3x^2 + 3x + 1)$ is divided by $(x-1)$, is

   (A) 1

   (B) 0

   (C) 2

   (D) 8

188. A shopkeeper marks his goods 20% above cost price, but allows 30% discount for cash. His net loss is

   (A) 8%

   (B) 10%

   (C) 16%

   (D) 20%

189. If x, y, z are real and $(x-1)^2 + x^2 + y^2 + 2z^2 - 2yz - 2xz = 0$; then the value of $(x+y+z)$ is

   (A) 2

   (B) 8

   (C) 6

   (D) 10

190. A man gains 10% by selling an article for a certain price. What is profit/loss if the article is sold for half the price?

   (A) 40% loss

   (B) 5% loss

   (C) 5% profit

   (D) 55% profit

191. Zinc and copper are in the ratio 5 : 3 in 200gm of an alloy. How much grams of copper be added to make the ratio as 3 : 5?

   (A) 72

   (B) $\dfrac{1}{200}$

   (C) $133\dfrac{1}{3}$

   (D) 66

Direction: In question, numbers are placed in figures on the basis of some rules. One place in the figure is indicated by the interrogation sign (?). Find out the correct alternative to replace the question mark and indicate your answer by filling the circle of the corresponding letter of alternatives in the OMR Answer Sheet.

192.
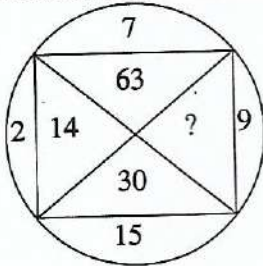
   (A) 18

   (B) 33

   (C) 135

   (D) 145

193. ₹ 4,250 is divided among 4 men, 5 women and 6 boys such that the share of a man, a woman and a boy are in the ratio 9 : 8 : 4. What is the share of a woman?

   (A) ₹ 170

   (B) ₹ 340

   (C) ₹ 425

   (D) ₹ 1,700

194. If $4^{x+2} = 2^{2x+3} + 2$, then value of x is

   (A) −1

   (B) 2

   (C) −2

   (D) 2

195. Keeping the radius of a right circular cone same, if the height of its increased thrice, the volume of it will be increased by:

   (A) 100%

   (B) 200%

   (C) 300%

   (D) 400%

196. If the length of two diagonals of a rhombus are 24 cm and 10 cm, the perimeter of rhombus is

   (A) 13 cm

   (B) 26 cm

   (C) 52 cm

   (D) 25 cm

197. Average weight of 25 persons is increased by 1 kg when one man weighing 60 kg is replaced by a new person. Weight of new person is

   (A) 50 kg

   (B) 61 kg

   (C) 86 kg

   (D) 85 kg

198. The marked price of an article is ₹ 1,050. A customer pays ₹ 798 for it with two successive discounts. If the rate of first discount is 20%, the rate of second discount is:

   (A) 5%

   (B) 6%

   (C) 8%

   (D) 10%

199. A cylindrical cistern of diameter 25 cm is full of water. If 11 litres of water is drawn off, the water level in the cistern will drop by $\left(\text{Use } \pi = \dfrac{22}{7}\right)$:

   (A) $10\dfrac{1}{2}$ cm

   (B) $12\dfrac{6}{7}$ cm

   (C) $22\dfrac{2}{5}$ cm

   (D) $20\dfrac{2}{5}$ cm

200. If a sum becomes $\dfrac{2495}{2000}$ of itself in $4\dfrac{1}{2}$ years, find the rate of interest p.a.?

   (A) 4%

   (B) 5%

   (C) 5·5%

   (D) 6%

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