1. For any natural number 'n' the value of $n^2-(n-1)^2$ is :
   (A) n + n -1 (B) 2n -1
   (C) (n-1)+n (D) All the above
2. The selling price of 16 shirts is equal to the selling price of 6 jackets. If the total selling price of 5shirts and 3 jackets together is ₹ 780, the total selling price of 2 shirts and 1 jackets together is :
   A) ₹260 B) ₹280
   C)₹360 D) ₹160
3. The difference between the length and breadth of a rectangle is 5m and its perimeter is 86m. A triangle whose base and height are respectively equal to the breadth and length of the rectangle. The area of the rectangle is :
   A) $456m^2$ B) $1634m^2$
   C) $228m^2$ D) $684m^2$
4. The diameter of a wheel is 77cm. The number of complete revolutions in covering a distance of 726m is :
   A) 3 B) 30
   C) 300 D) 3000
5. ABCD is a rhombus in which $\angle ABC = 140^0$,then triangle ABC is a/an __
   A)equilateral triangle
   B) isosceles triangle
   C) scalene triangle
   D) right angled triangle
6. The difference betwent the compound interest and simple interest on ₹15000 for 2 years at the rate of 8% per annum is :
   A) ₹ 296 B) ₹ 196
   C) ₹ 96 D) ₹ 9
7. The ratio of the areas of two circular fields are in the ratio 25:64 respectively. If the radius of the later is 16m then the radius of the former is :
   A) 10m B) 5cm
   C) 25m D) 8m
8. The angle formed by the bisectors of the pair of co-interior angles of a pair of parallel lines is :
   A) 180^0 B) 150^0
   C) 120^0 D) 90^0
9. Sanahal is 4 years older than Sanathoi and Sanathoi is 4 years older than Sanatombi. 4 years ago, the average age of Sanahal, Sanathoi and Sanatombi was 24 years. The present age of Sanahal is :
   A) 20 years B) 24 years
   C) 28 years D) 32 years

SPACE FOR ROUGH WORK

46. 1000 boys and 800 girls took an exam. 60% of the boys and 50% of the girls passed the exam. Find the total pass percentage. :
   A) $55\frac{5}{9}\%$ B) $55\frac{2}{9}\%$
   C) 55% D) $54\frac{3}{4}\%$
47. The base and hypotenuse of a right triangle are 5cm and 13cm. The area of the triangle is :
   A) $60cm^2$ B) $45cm^2$
   C) $50cm^2$ D) $30cm^2$
48. Find the missing number if the average of eight numbers is 472.
   623, 164, 529, 425,-----,205, 301,824
   A) 524 B) 696
   C) 442 D) 705
49. A shopkeeper sold 8 chairs at a profit of 20% and 6 chairs at a profit of 10%. Had he sold all the 14 chairs at a profit of 12% his profit would have been reduced by ₹ 442. What is the cost price of each chair?
   A) ₹750 B) ₹275
   C) ₹825 D) ₹850
50. How many factors of $729x^6 - 64y^6$ are there?
   A) 3 B) 4
   C) 6 D) 8

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SPACE FOR ROUGH WORK

27thMVIII
(MATHEMATICS)

Time Allowed 1 hour | Maximum Marks : 100

CODE A

Read the following instructions carefully before you begin to answer the questions.

1. This booklet contains 50 questions in all.
2. All questions are compulsory and each question carries 2 marks.
3. Before you start to answer the questions you must check up this booklet and ensure that it contains all the pages 7 (Seven) and see that no page is missing or repeated. If you find any defect in this Booklet, you must replace it immediately.
4. There will **NOT** be any negative marking for wrong answers.
5. You are required to fill the information on the answer sheet which you will get in the examination hall by **H.B. pencil or BALL point pen(Blue or Black).**
6. **Answer Sheet** and **Question Paper** will be supplied in examination hall. After the test is over, you should hand over the answer sheet to the invigilator before leaving the room.
7. You should write your **Name, Roll No., School name** carefully on the space provided in the answer sheet. Otherwise you will be awarded **ZERO** mark.
8. If you wish to change your answer, **ERASE** completely the darkened circle by using an **ERASER** and then blacken the new circle. If not erased completely, smudges will be left on the erased circle and the question will be read as having two answers and will be ignored for giving any credit. (only for pencil users)
9. Answer the questions as quickly and as carefully as you can. Some questions may be difficult and others easy. Do not spend too much time on any question.
10. You are not allowed to leave the examination hall until you are advised to do so by the invigilator.

19. Tonthoi sells an article to Abenao at a profit of 18%. Abenao sells the same to Bala at a profit of 20%. Bala sells it to Biju for ₹45135 by earning a profit of 25%. At what price Tonthoi bought the article?
A) ₹25500 B) ₹32000
C) ₹18000 D) ₹24000

20. The quotient when $12x^5 - 6x^4 + 3x^2$ is divided by $x + 2$ is :
A) $24x^4 - 30x^3 + 30x - 57 + 114$
B) $12x^4 + 30x^3 - 60x^2 + 117x - 234$
C) $24x^4 + 30x^3 - 30x + 57 - 114$
D) $12x^4 - 30x^3 + 60x^2 - 117x + 234$

21. If P+Q = 1, then the value of $P^3 + Q^3 + 3PQ$ is equal to __
A) 0 B) 1
C) 2 D) 5

22. The cost of 4 rice cookers and 2 teapots is ₹6200. The cost of 10 rice cookers and 5 teapots is :
A) ₹ 16000 B) ₹15500
C) ₹18000 D) ₹24000

23. The average run scrored by Kohli in his 99 innings is 99. How much runs will he have to score in his 100th inning so that his average runs in 100 innings is 100?
A) 100 runs B) 99 runs
C) 199 runs D) 120 runs

24. A boat can travel 10.2 km upstream in 51 minutes. If the speed of the water current is 1/5th of the speed of the boat in still water, how much distance the boat can travel downstream in 48 minutes?
A) 11km B) 10.56km
C) 14.4 km D) 11.52km

25. The smallest number that must be added to 9761 so that the sum is a perfect cube is :
A) 5000 B) 887
C) 1761 D) 1387

26. An electronic store shop charges 11% as sale tax. If a customer paid ₹ 133200 for an LED TV , then what was the original price of the TV?
A) ₹ 120000 B) ₹ 130000
C) ₹ 140000 D) ₹125000

27. ABCD is a quadrilateral in which O is the point of intersection of the two diagonals. The angles between the diagonals are equal and O is equidistant from all the vertices. Then ABCD is :
A) parallelogram B) rhombus
C) rectangle D) square

SPACE FOR ROUGH WORK

28. Bony marks a goods for a certain amount so as to get 25% profit after allowing a discount of 20%, then his increase percent of the mark price from the cost price is :
A) 35% B) 25%
C) 56.25% D) 38%

29. If $\frac{a}{b} + \frac{b}{a} = -1$ then $\frac{a^2}{b} - \frac{b^2}{a} =$ ___
A) -ab B) -2ab
C) 0 D) $a^3 + b^3$

30. $\sqrt{36 \times 18 \times \sqrt{(1024)}} = ? \times 3$, then the value of ? is :
A) 36 B) 48
C) 24 D) 32

31. ABCD is a trapezium in which the AB||CD. P is a point on AD such that AP:PD = 3:2. A line PQ is drawn parallel to AB. If QC = 0.8cm, then the length of BC is :
A) 1.2cm B) 1cm
C) 2cm D) 2.5cm

32. The average age of eight teachers in a school is 40 years. A manipuri teacher of age 55 years resigned from the school. A new Manipuri teacher of age 39 years is appointed. Now the average age of the teachers in the school is :
A) 42 years B) 38 years
C) 41 years D) 36 years

33. The profit earned by selling an article for ₹ 590 is double the loss incurred when the same article is sold for ₹ 245, what would be the selling price of the article if it is sold at 20% profit?
A) ₹ 445 B) ₹ 438
C) ₹ 436 D) ₹ 432

34. The amount of ₹ 18000 after 2 years compounded annually with the rate of interest being 10% per annum during the first year and 12% per annum during the second year would be :
A) ₹ 22167 B) ₹ 22579
C) ₹ 21780 D) ₹ 22176

35. The quotient with rational denominator when $\sqrt{\frac{108}{7}} \div \sqrt{\frac{15}{14}}$ is :
A) $\frac{6\sqrt{10}}{5}$ B) $\frac{6\sqrt{2}}{5}$
C) $\frac{6\sqrt{5}}{2}$ D) $\frac{6\sqrt{10}}{2}$

SPACE FOR ROUGH WORK

36. The area of the circle whose radius is the diagonal of a square of area 4 sq. unit is :
A) 16π sq. unit B) 4π sq. unit
C) 6π sq.unit D) 8π sq.unit

37. A son is 30 years younger than his father. Ten years ago his age was $1/7^{th}$ of his father. The present age of the father is :
A) 37 years B) 45 years
C) 52 years D) 56 years

38. If $x^2 + y^2 + z^2 = 34$ and $xy - yz - zx = 33$ then the value of $x + y - z =$ __
A) 4 B) 8
C) 10 D) 15

39. The least number that must be subtracted from 28216 to get a perfect square is :
A) 120 B) 180
C) 230 D) 327

40. The sum of two numbers is 37 and the difference of their square is 185. Then the difference between the two number is :
A) 0 B) 4
C) 5 D) 3

41. A shopkeeper bought 500 toys for ₹ 20000. He wanted to sell them at a profit so that he get 50 toys free. At what profit percent should he sell them?
A) 8% B) 10%
C) 12% D) 15%

42. The curved surface area of a right circular cone of base radius 3.5cm and height 12cm is :
A) 137.5cm^2 B) 147cm^2
C) 427.5cm^2 D) 327cm^2

43. If $\frac{1}{a+b} = \frac{1}{a} + \frac{1}{b}$, then the value of $a^3 - b^3$ is :
A) 3 B) 2
C) 1 D) 0

44. The average of the first 125 natural number is :
A) 86 B) 62.5
C) 63 D) 86.5

45. 25 coins each of 2.5cm in diameter and thickness 2mm are melted and recast into sphere of diameter 2.5cm. The number of spheres that can be formed is :
A) 6 B) 5
C) 4 D) 3

SPACE FOR ROUGH WORK

10. If $a + \frac{1}{a} = \sqrt{3}$, then $a^3 + \frac{1}{a^3} =$ __
A) 0 B) $\sqrt{3}$
C) 3 D) $3\sqrt{3}$

11. A discount of series of 15%, 20% and 25% is equal to the single discount of
A) 51% B) 49%
C) 60% D) 40%

12. The volume of a right circular cylinder is 3960 cm^3 and radius of the base is 6cm, the curved surface area of the cylinder is :
A) 420 cm^2 B) 1320 cm^2
C) 240 cm^2 D) 1230 cm^2

13. If a point lies on the x-axis , then the ordinate of the point is :
A) 0 B) 1
C) 2 D) 3

14. There are 38 students in a class. The average wight of the students was 44kg, 12 teachers joined the class, the average weight increased by 4.68 kg. The average weight of the 12 teachers was :
A) 48.68 kg B) 4.68 kg
C) 63.5 kg D) 73.75 kg

15. A shopkeeper marks his electronic goods 25% above the CP, then he allows such a discount on the marked price so that he makes a profit of 8%. The rate of discount is :
A) 10% B) 12%
C) 12.6% D) 13.6%

16. ABCD is a kite in which AB = CD. The measure of the exterior $\angle ABC$ is 50^0. The $m\angle ABD =$ __
A) 50^0 B) 155^0
C) 130^0 D) 65^0

17. There are two windows on the opposite walls in an auditorium. A ladder 34m long is placed on a point of the floor to reach the first window 30m high and on turning the other side keeping the foot of the ladder at the same place it reaches the second window 16m high. The width of the auditorium is :
A) 40m B) 44m
C) 46m D) 48m

18. ABCD is a rhombus in which AC = 6cm and BD = 8cm are the two diagonals. Two points E and F lie on the diagonal BD such that BE =DF. E is 1cm from B. Then perimeter of AECF is :
A) 40 cm B) $12\sqrt{2}$ cm
C) $24\sqrt{2}$ cm D) 32 cm

SPACE FOR ROUGH WORK