STD: VIII   MAX. MARKS: 80

PORTION
1. SQUARE AND SQUARE ROOTS   6. ALGEBRAIC IDENTITIES
2. CUBE AND CUBE ROOTS   7. PARALLEL LINES
3. EXPONENTS AND RADICALS   8. INTRODUCTION TO GRAPHS
4. DIRECT AND INVERSE VARIATION   9. MENSURATION
5. PROFIT, LOSS AND DISCOUNT

General Instructions:

1. The question paper consists of five sections:
   - Section 1: Question No. 1 to 20 are of 1 mark each (18 are MCQ Type and 2 are Assertion-Reasoning type questions).
   - Section II: Question No. 21 to 25 are Short Answer Type-1 questions of 2 marks each.
   - Section III: Question No. 26 to 31 are Short Answer Type-2 questions of 3 marks each.
   - Section IV: Question No. 32 to 35 are Long Answer Type questions of 5 marks each.
   - Section V: Question No. 36 to 38 are of Case Based questions. Each case study has 3 case based sub parts, two are of 1 mark each and third sub part is a short answer type (2 marks) having internal choice.

2. Please write the serial number of the question before attempting it.

3. In questions of constructions/graph, the drawing should be neat, clean and exactly as per given measurements. Use ruler and compass only.

4. All questions are compulsory. However, internal choices have been given in some questions.

Section I

Q1. What is the one's digit in the cube root of 2744?

    a) 1   b) 2   c) 3   d) 4

Q2. The square root of given number 'n' is that natural number which when multiplied by itself gives

    a) 'n' as sum   b) 'n' as difference   c) 'n' as product   d) 'n' as quotient

Q3. If $\frac{3969}{\sqrt{A}} = 39.69$, the value of A is

    a) 100   b) 10   c) 1000   d) 10000

Q4. If 'm' is positive integer then $\sqrt[3]{-m^3}$

    a) m   b) $-m^3$ c) $-\sqrt[3]{m^3}$ d) $m^{3 \times \frac{1}{3}}$

Q5. The value of $\sqrt[3]{1728 \times -125}$

    a) 60   b) -45   c) -60   d) 45

Q6. The distance of a point A(9,4) from x-axis is:
    a) 9   b) 4   c) 5   d) 0

Q7. The point (-2, 5) is nearer to:
    a) x-axis   b) y-axis   c) origin   d) None of the above

Q8 Which of the following vary inversely with each other?
    a) Speed and distance covered   b) Speed and time taken
    c) Distance covered and taxi fare   d) Distance travelled and time taken

Q9. In the given figure, l ‖ m and n is the transversal. Which pair of angles is not supplementary?
    a) $\angle 1$, $\angle 6$ b) $\angle 4, \angle 7$
    c) $\angle 3, \angle 6$ d) $\angle 3 , \angle 7$

Q10. The value of $\frac{y^2-x^2}{y^2+2xy+x^2}$ is
    a) $\frac{y+x}{y-x}$ b) $\frac{y-x}{y+x}$ c) $\frac{x+y}{x-y}$ d) $\frac{y-x}{x+y}$

Q11. If $(\sqrt{14})^{y-2} = 1$, the value of y is
    a) 2   b) - 2   c) 0   d) 3

Q12. If the SP of an article is thrice the CP, the profit% is
    a) 50%   b) 200%   c) 150%   d) 100%

Q13. The surface area of a cube whose volume is 729m³ is _____m².
    a)   162   b) 386   c) 324   d) 486

Q14. In a cylinder, if radius is halved and height is doubled, the volume will be
    a)   same   b) doubled   c) halved   d) four times

Q15. In the given figure, if AB ‖ CD, EF ‖ CD, $\angle ABC = 70^0$ and $\angle CEF = 150^0$. Then the value of x and y.

    a) $70^0 , 70^0$ b) $35^0 , 35^0$ c) $40^0 , 30^0$ d) $30^0 , 40^0$

Q16. In the figure, if BE ‖ FI then value of x is
    a) 48°   b) 77°   c) 60°   d) 55°

Q17. The area of a rectangle whose length and breadth are y+3 and y-7 respectively is:
    a) $y^2+10y+21$ b) $y^2-10y-21$ c) $y^2-4y+21$ d) $y^2-4y-21$

Q18. The floor of a room is a square of side 6 m. Its height is 4 m. The volume of the room is:

    a) 140 m³   b) 142 m³   c) 144 m³   d) 145 m³

Direction :- In question numbers 19 and 20, a statement of assertion (A) is followed by a statement of reason (R). Choose the correct option out of the following :

a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A)
b)   Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A)
c) Assertion (A) is true but reason (R) is false
d) Assertion (A) is false but reason (R) is true

Q19. Assertion (A)-The number of zeroes at the end of the cube of the number 100 is 4

 Reasons (R) –A cube number is a number multiplied by itself 3 times

Q20. Assertion (A): 0.000007 is equal to 7×10^{-5}
 Reasons (R) –An exponent refers to the number of times a number is multiplied by itself

Section II

Q21. Find the value of a if $\sqrt[3]{1728} = 4\,a$

Q22. In the figure, line NO ‖ line PQ then find the value of x.

Q23. Factorise: $m^2 - 11m - 60$

Q24. Evaluate $[\,4(\,27^{1/3} + 64^{1/3})^3]$

Q25. The volume of a cylinder is 28π cm^3 and height is 7cm, then find the radius of the base of the cylinder.
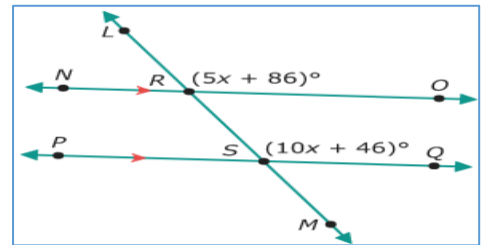
Section III

Q26. A PT teacher wants to arrange maximum possible number of 6000 students in a field such that the number of rows is equal to the number of columns. Find the number of rows if 71 were left out after arrangement.

OR

 Three numbers are in the ratio 1:2:3. The sum of their cubes is 98784. Find the numbers.
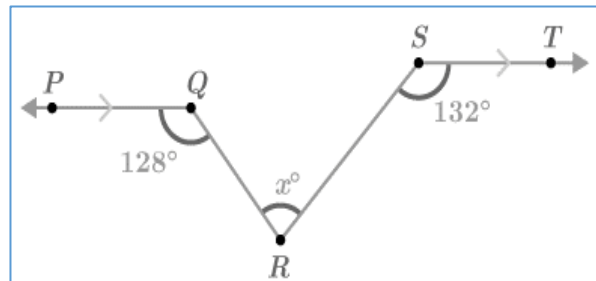
Q27. A train 245m long is running at 144 km/hr. It crosses a tunnel in 11 seconds. Find the length of the tunnel.

OR

 A fort had food provisions for 300 men for 90 days. After 20 days, 50 men left the fort.   How long would the food last now?

Q28. In the figure, QP ‖ ST,

 $\angle PQR = 128°$, $\angle RST = 132°$. Find x.

Q29. If $\left(x + \dfrac{1}{x}\right)^2 = 5$ then find the value $x^2 + \dfrac{1}{x^2}$

Q30. Simplify: $\dfrac{5^{-5} \times 6^{-4} \times (125)^{\frac{2}{3}}}{3^{-4} \times 10^{-4}}$ 　　　　OR　　　　Solve: $\dfrac{2^{y+4} - 2^5 \times 2^y}{2 \times 2^{(y+3)}} - 2^{-3}$

Q31. The area of a trapezium is 540 cm². If one of the parallel sides is greater than the other by 0.8dm and the distance between these parallel sides is 18cm, find the length of the two parallel sides.

OR

A swimming pool is 30m in length, 20m in breadth and 5m in depth. Find the cost of cementing its floor and walls at the rate of ₹15 per m².

Section IV

Q32. i) What least number must be added to 6880 to make it a perfect square?
ii) Find the square root of 15.3215 correct to three decimal places.

Q33. The maximum temperature on different days of the week are given below:

Day of the week	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Maximum temperature	25	28	26	32	29	34	31

a) Plot a graph to illustrate this information.

b) If a line AB is drawn parallel to x-axis at a distance of 4cm from the x-axis and a line segment PQ is drawn parallel to y-axis at a distance of 2cm from y-axis, write the coordinates of their point of intersection.

Q34. How many coins 7cm in diameter and thickness 1 cm must be melted to form a cuboid of dimensions 80cm x 15.4cm x 10cm?

OR

If the length of each edge of a cube is doubled, by how many times does the volume and surface area increase?

Q35. a) If a + b + c = 16 and a² + b² + c² = 94, find the value of (ab + bc + ca)

b) Factorise: $x^2 + \dfrac{y^2}{9} + \dfrac{z^2}{16} - \dfrac{2}{3}xy - \dfrac{yz}{6} + \dfrac{zx}{2}$

OR

a) Find the value of k
if $(2x + y)^2 - (2x - y)^2 = 4xyk$

b) Factorise: 25a² – 4b² + 28bc – 49c²

Section V

CASE STUDY BASED QUESTIONS

Q36. CASE STUDY - 1

Deric got a call from his office to go to the company's headquarters in Pune. He started his journey by car at 9 a.m. and reaches the place at 1 p.m. if he drives at a speed of 30km/hr.

Based on this information answer the following questions:

i) Calculate the total distance covered by him.

ii) Find the time taken by Vyas to reach his destination?

iii) By how much should he increase speed so that he can reach the place by 12 noon.

OR

iii) If x and y vary inversely with each other, $x = 10$ when y $= 6$. Find y when $x = 15$

Q37. The festive season has started. People have started doing the shopping for the festivals. Uma told her mother that their 32 inch LED TV was not working properly and so her mother Kameshwari decided to buy 43 inches LED TV. Next day both of them went to the showroom and enquired about the 43 inches LED TV.
The marked price was ₹32,500. The shopkeeper told them that there is 20% Diwali discount these days. Kameshwari decided to buy the TV. After selling the LED of ₹32,500 to Kameshwari, the shopkeeper still made a profit of 30%.

Based on this information answer the following questions:

i) Find the amount of discount given.

ii) At what price did the shopkeeper sell the LED after offering discount?

iii) Calculate the CP of the TV.

OR

iii) Calculate the discount percent, if SP = ₹ 5600, marked price = ₹ 7000.

Q38. CASE STUDY - 3

Aashish lives in Hyderabad. Those were very hot days of May. He thought that if we human beings need so much water to drink , won't the birds also be thirsty. He decided to prepare a vessel to provide water for birds. He found a flexible black coloured plastic rectangular sheet 44cm x 15cm. He rolled it along its length and joined the two opposite ends using a tape. He wanted to have a circular base for this cylinder and searched for another sheet. He found a square sheet 15cm x 15cm. He got a circular sheet just equal to the base of the cylinder cut from it.
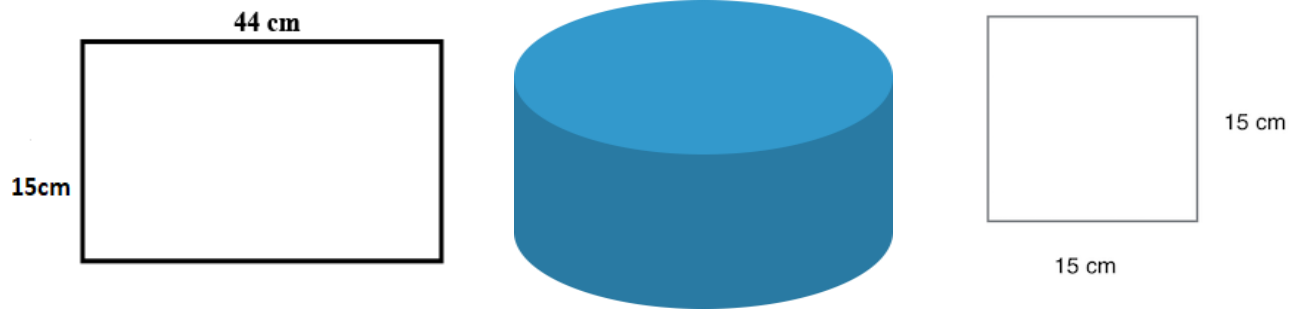
i) Find the radius of the base of the cylinder.
ii) Calculate the area of the circular base required for the cylinder.
iii) How much will be the area of square sheet left unused after removing the circular base of the cylinder from it?

OR

iii) Find the volume of water that can be filled in the cylinder.