

PRE – BOARD - I (2024-25)

Maximum Marks: 80**Time allowed: Three hours***Answers to this Paper must be written on the paper provided separately.**You will not be allowed to write during the first 15 minutes.**This time is to be spent in reading the question paper.**The time given at the head of this Paper is the time allowed for writing the answers.**Attempt all questions from Section A and any four questions from Section B.**All working, including rough work, must be clearly shown and must be done on the same sheet as the rest of the answer.**Omission of essential working will result in loss of marks.**The intended marks for questions or parts of questions are given in brackets [].***SECTION A (40 Marks)****(Attempt all questions from this section)****Q.1) Choose the correct answers to the questions from the given options:-****[15]**

i) A dealer in Bihar sells goods to a customer worth Rs. 2,00,000 in the same rate. If the rate of CGST and SGST is 5 % each, the SGST to be paid is ,

- a) Rs. 5000 b) Rs. 10,000 c) Rs. 20,000 d) Rs. 12,000

ii) The solution set of the inequation $\frac{1}{2}(x - 3) \geq \frac{2}{3}(6 - 2x), x \in R$ is,

- a) $x \leq 3$ b) $x < 3$ c) $x \geq 3$ d) $x > 3$

iii) If one of the root of the quadratic equation $px^2 + 15x - 14 = 0$ is $\frac{2}{3}$ then the value of p is ,

- a) 6.5 b) 12 c) 8 d) 9

iv) What number should be added to each of the numbers 6, 15, 20 and 43 to make them proportional ?

- a) 2 b) 4 c) 3 d) 6

v) If on dividing $4x^2 - 3kx + 5$ by $(x + 2)$, the remainder is (-3) then the value of k is,

- a) 4 b) (-4) c) 3 d) (-3)

vi) If $\begin{bmatrix} x+3 & 4 \\ y-4 & x+y \end{bmatrix} = \begin{bmatrix} 5 & 4 \\ 3 & 9 \end{bmatrix}$, then the value of x and y are ,

- a) $x = 2, y = 7$ b) $x = 7, y = 2$ c) $x = 3, y = 6$ d) $x = -2, y = 7$

vii) The 11th term of the A.P. $-3, \frac{-1}{2}, 2, \dots$ is ,

- a) 28 b) 22 c) -38 d) -48.5

viii) It is given that $\Delta ABC \sim \Delta PQR$ with $\frac{BC}{QR} = \frac{1}{3}$, then $\frac{\text{area of } \Delta PQR}{\text{area of } \Delta ABC}$ is equal to,

- a) 9 b) 3 c) $\frac{1}{3}$ d) $\frac{1}{9}$

ix) The coordinates of the point P(-3, 5) on reflection in the x-axis are,

- a) (3, 5) b) (-3, -5) c) (3, -5) d) (-3, 5)

x) If the end points of the diameter of a circle are A(-2, 3) and B(4, -5), then the coordinates of its centre are

- a) (2, -2) b) (-2, 2) c) (-1, 1) d) (1, -1)

xi) The slope of the line passing through the points (0, -4) and (-6, 2) is,

- a) 0 b) 1 c) -1 d) 6

xii) ABCD is a cyclic quadrilateral. If $\angle BAC = 2x + 5^\circ$ and $\angle BDC = x + 10^\circ$ then $x = ?$

- a) 65° b) 45° c) 55° d) 5°

xiii) If a solid right circular copper cone of height 15 cm and radius 6 cm is melted and recast into smaller copper cones each of height 3 cm and radius 2 cm, the number of smaller cones can be made is,

- a) 45 b) 60 c) 54 d) 50

xiv) The probability of getting a number divisible by 3 in throwing a dice is,

- a) $\frac{1}{6}$ b) $\frac{1}{3}$ c) $\frac{1}{2}$ d) $\frac{2}{3}$

xv) For the given 25 variables: $x_1, x_2, x_3, \dots, x_{25}$

Assertion (A): To find median of the given data, the variate needs to be arranged in ascending or descending order.

Reason (R): The median is the central most term of the arranged data.

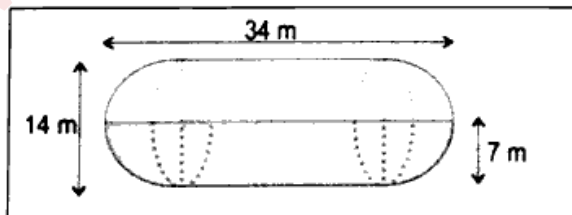
- a) A is true, R is false, b) A is false, R is true,
c) both A and R are true, d) both A and R are false

Q.2) i) Salman deposits Rs.1200 every month in a recurring deposit account for $2\frac{1}{2}$ years. If the rate of interest is 6% per annum, find the amount he will receive on maturity. [4]

ii) 3, 9, m, 81 and n are in continued proportion. Find the values of m and n. [4]

iii) Prove that: $\frac{\cos A}{1+\sin A} + \frac{1+\sin A}{\cos A} = 2 \sec A$. [4]

Q.3) i) Shown below is a horizontal water tank composed of a cylinder and two hemispheres. The tank is filled up to a height of 7 m. Find the surface area of the tank in contact with water. (use $\pi = \frac{22}{7}$)



[4]

Q.6) a) The following bill shows that GST rates and the marked price of articles :

Bill Computers		
Articles	Marked price	Rate of GST
Graphic Card	Rs. 15500.00	18 %
Laptop adapter	Rs. 1900.00	28 %

Find the total amount to be paid for the above bill. [3]

b) Solve the quadratic equation $7x^2 + 2x - 2 = 0$. Give your answer correct to two places of decimal. [3]

c) The mean of the following data is 16. Calculate the value of f. [3]

Marks	5	10	15	20	25
No. of students	3	7	f	9	6

Q.7) a) Solve the following inequation, write down the solution set and represent it on the real number line:

$$-2 + 10x \leq 13x + 10 < 24 + 10x, x \in \mathbb{Z}. \quad [3]$$

b) A company with 500 shares of nominal value Rs. 120 declares an annual dividend of 15%. Calculate
i) the total amount of dividend paid by the company. [3]

ii) annual income of Mr. Sharma who holds 80 shares of the company.

c) Find the value of 'p' if the lines $5x - 3y + 2 = 0$ and $6x - py + 7 = 0$ are perpendicular to each other.

Hence, find the equation of a line passing through $(-2, -1)$ and parallel to $6x - py + 7 = 0$. [4]

Q.8) a) Prove that: $\frac{(1+\sin\theta)^2 + (1-\sin\theta)^2}{2\cos^2\theta} = \sec^2\theta + \tan^2\theta$. [3]

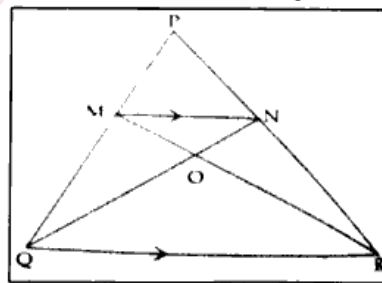
b) Given $A = \begin{bmatrix} 2 & 0 \\ -1 & 7 \end{bmatrix}$ and $I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ and $A^2 = 9A + MI$. Find M. [3]

c) $P(1, -2)$ is a point on the line segment $A(3, -6)$ and $B(x, y)$ such that $AP : PB$ is equal to $2 : 3$. Find the coordinates of B. [4]

Q.9) a) Using properties of proportion, find $x : y$. Given $\frac{x^2 + 2x}{2x + 4} = \frac{y^2 + 3y}{3y + 9}$. [3]

b) If $(x + 2)$ and $(x + 3)$ are factors of $x^3 + ax + b$, find the values of a and b. [3]

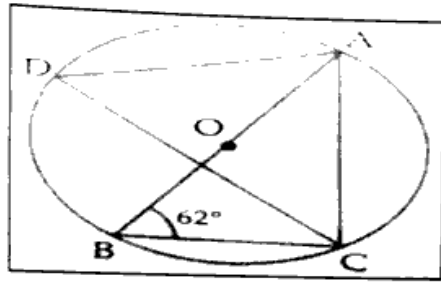
c) In ΔPQR , MN is parallel to QR and $\frac{PM}{MQ} = \frac{2}{3}$.



i) Find $\frac{MN}{QR}$.

ii) Prove that ΔOMN and ΔORQ are similar. [4]

- Q.10) a) In the figure given below, A, B, C and D are points on the circle with centre O. Given that $\angle ABC = 62^\circ$, find i) $\angle ADC$, ii) $\angle CAB$ [3]



- b) Harpreet tossed two different coins simultaneously. Find the probability of getting :-
i) two heads, ii) atmost one head, iii) atleast one head. [3]
- c) What number must be added to $2x^3 - 3x^2 - 8x$ so that the resulting polynomial leaves the remainder 10 when divided by $2x + 1$? [4]
