MID-TERM EXAMINATION (2026 - 27)

SUBJECT - MATHEMATICS

TIME 3 Hours

CLASS - X

W.W. : 80

General Instructions:

1. This question paper contains 38 questions divided into Sections A, B, C, D and E.
2. Section A has 20 MCQs carrying 1 mark each.
3. Section B has 5 Very Short Answer (VSA) type questions carrying 2 marks each.
4. Section C has 6 Short Answer (SA) type questions carrying 3 marks each.
5. Section D has 4 Long Answer (LA) type questions carrying 5 marks each.
6. Section E has 3 Case-Based integrated units of assessment (4 marks each) with sub-parts.
7. All questions are compulsory.
8. Use of calculators is not permitted.
9. Internal choices are provided in some questions.
10. Draw neat diagrams wherever required.

[SECTION - A]

Question Nos. 1–20 are MCQs of 1 mark each :- (20× 1 = 20 Marks)

1. The HCF of 306 and 657 is :

(a) 9 (b) 18

(c) 27 (d) 36

2. If one zero of $x^2 - 8x + 15$ is 3, the other zero is :

(a) 4 (b) 5

(c) 6 (d) 8

3. The pair of linear equations $2x + 3y = 72$, $x + 3y = 27$ has :

(a) Unique solution (b) No solution

(c) Infinitely many solutions (d) Cannot be determined

4. The outer and inner diameter of a circular ring are 24cm and 12cm respectively then the area of the ring is :

(a) 66π (b) 60π

(c) 33π (d) 38π

5. If $\sin\theta = 5/13$ then the value of $\cos\theta$ is :

(a) 12/13 (b) 5/12

(c) 13/12 (d) 8/13

6. If $\Delta ABC \sim \Delta DEF$, then :

(a) AB = DE (b) AB/DE = BC/EF

(c) AB + BC = DE + EF (d) $\angle A \neq \angle D$

7. The probability of getting a prime number on a die is :

(a) 1/6 (b) 1/3

(c) ½ (d) 2/3

8. The LCM of smallest prime number and and the smallest odd number is :

(a) 10 (b) 6

(c) 18 (d) 9

9. The area of a sector of angle 90° in a circle of radius r is :

(a) $\frac{\pi r^2}{2}$ (b) $\frac{\pi r^2}{4}$

(c) πr^2 (d) $2\pi r^2$

10. Degree of the polynomial $5x^4 - 3x^2 + 75x + 7$ is :

(a) 2 (b) 3

(c) 4 (d) 5

11. After an examination a teacher wants to know the mark obtain by the maximum number of the students in her class she requires to calculate .....of marks :

(a) median (b) mode

(c) mean (d) range

12. If value of each observation in a data is increased by 2 then median of the new data :

(a) increases by 2 (b) divided by 2

(c) remain same (d) decreases by 2

13. Two dice are thrown at the same. The probability that the difference of the numbers on the two dice is 2 is :

(a) 2/9 (b)2/3

(c)5/9 (d)1/3

14. If the mea

(a) 6

(c) 15

15. A 10 m
used to

(a) sin

(c) ta

16. A su

(a) N

(c)

17. Th

(a

(

18.

19

2

14. If the mean and mode of a data are 12 and 21 respectively then median is :

(a) 6 (b) 13.5

(c) 15 (d) 14

15. A 10 m ladder is placed against a wall making an angle of 60° with the ground. Which trigonometric ratio is used to find the height of the wall?

(a) $\sin\theta$ (b) $\cos\theta$

(c) $\tan\theta$ (d) $\sec\theta$

16. A survey records the heights of 50 students. Which measure gives the average height?

(a) Mode (b) Mean

(c) Range (d) Probability

17. The point which is 4 units left of the origin and 3 units above the x-axis is :

(a) (4, 3) (b) (–4, 3)

(c) (–4, –3) (d) (4, – 3)

18. A bag contains 5 red, 4 blue and 3 green balls. The probability of selecting a green ball is :

(a) 3/12 (b) 4/12

(c) 5/12 (d) ½

38
20
18

Assertion- Reasoning based questions : (19-20)

Choose the correct option :

(a) Both Assertion and Reason are true and Reason is the correct explanation.

(b) Both are true but Reason is not the correct explanation.

(c) Assertion is true but Reason is false.

(d) Assertion is false but Reason is true.

19. Assertion : Two intersecting lines have exactly one solution.

Reason : They intersect at one point.

20. Assertion : Similar triangles have equal corresponding angles.

Reason : Corresponding sides of similar triangles are proportional.

[SECTION - B]

(Question no 21 to 25 carry 2 marks each :- ***(5 x 2 = 10 marks)***

21. Find the HCF of 96 and 144 . Verify that product of LCM and HCF is equal to the product of two numbers.

22. Find the zeroes of the polynomial $x^2-9x+20$ and verify the relationship between the coefficient and zeroes.

23. Find the value of : $\sin 30^\circ \cos 60^\circ + \cos 30^\circ \sin 60^\circ + \tan 45^\circ$

OR

In right angled triangle ΔABC right angled at B, angles A and C are acute angles such that $\sin A = \cos A$ ther prove that $\angle A = \angle C$.

24. The king, queen and ace of clubs and diamonds are removed from a deck of 52 playing cards and th remaining cards are shuffled. A card is randomly drawn from the remaining cards. Find the probability getting :

(i) a card of clubs

(ii) a red coloured card

25. If $\sin (A - B) = \frac{1}{2}$ and $\cos (A + B) = \frac{1}{2}$, then find the value of $A^2 + B^2$.

OR

If $\sin A + \text{cosec } A = 2$, then find the value of $\sin^2 A + \text{cosec}^2 A$.

[SECTION - C]

(Question Nos.26-31 carry 3 marks each) :- **(6 X 3 =**

26. Prove that $\sqrt{5}$ is an irrational number.

27. State and prove basic proportionality theorem.

28. Solve the following pair of linear equations by the elimination method : $3x + 4y = 10$ and $2x - 2y = 2$.

29. If zeroes of $X^2 - AX + B$ differ by 1, then find the value of A and B.

30. If (5, 3) (6, X) (Y, 4) and (2,1) are vertices of parallelogram.find the value of X and Y.

31. Prove that : $\frac{\cos^2 A}{1-\tan A} + \frac{\sin^3 A}{\sin A - \cos A} = 1 + \sin A \cos A$

OR

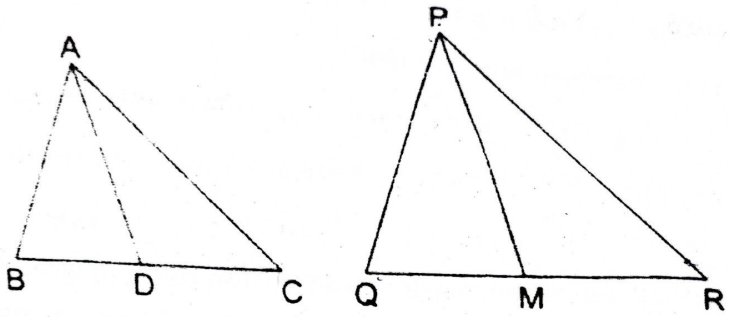
$$\frac{\cos A}{1+\sin A} + \frac{1+\sin A}{\cos A} = 2 \sec A$$

[SECTION - D]

Question Nos. 31–35 carry 5 marks each :- **(5 × 4 = 20 Ma**

32. The ratio of incomes of two persons is 9:7 and the ratio of their expenditure is 4 : 3. If each of them s rupees 200 per month find their monthly income.

33. Sides AB and AC and median AD of a Triangle ABC are respectively proportional to sides PQ and PR and median PM of another Triangle PQR. Show $\Delta ABC \sim \Delta PQR$.



34. (a) The length of minute hand of the clock is 14 cm Find the area swept by the minute hand from 9 am to 9 : 35 am.

(b) The radius of a circle is 10 cm. If the radius is decreased by 50 % then find the percent decrease in area.

35. The Median of the following data is 525, find the value of x and y, if the total frequency is 100.

Class Interval	0-100	100-200	200-300	300-400	400-500	500-600	600-700	700-800	800-900	900-1000	Total
Frequency	2	5	x	12	17	20	y	9	7	4	100

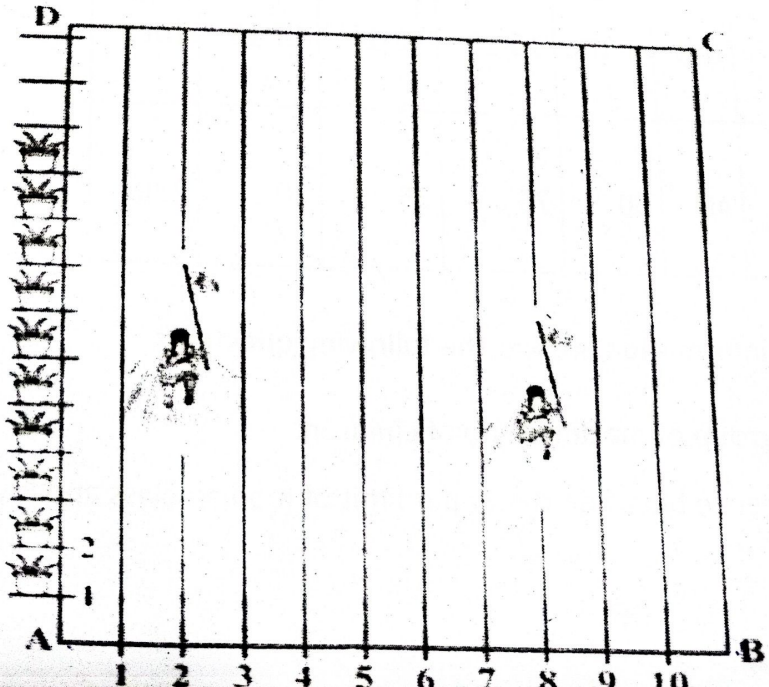
[SECTION - E]

(Case Study Based)

Question Nos. 36–38 carry 4 marks each :-

(3 × 4 = 12 Marks)

36. *In a school ground, lines are drawn at 1m distance. Niharika runs ¼th the distance AD on the 2nd line and posts a green flag. Preet runs $\frac{1}{5}$th the distance AD on the 8th line and posts a red flag (AD=100m).*



Based on the above information answer the following questions :

(i) Find the coordinates of green flag. (1 M)

(ii) Find the coordinates of red flag. (1 M)

(iii) Find the distance between both the flags. (2 M)

OR

If Rashmi has to post a blue flag exactly halfway between them, where should she post it? (2 M)

37. State Government authorized an agency to install customized playground equipment at various colony park . For that the agency decided to study the a group of children saying in the park of the particular colony .

The classification of children according to their ages is shown in the following frequency distribution table

Age Group	6-8	8-10	10-12	12-14	14-16	Total
No of Children	40	60	75	35	20	230

Based on the above information answer the following questions

(i) Find the age group of maximum no of children. (1 mark)

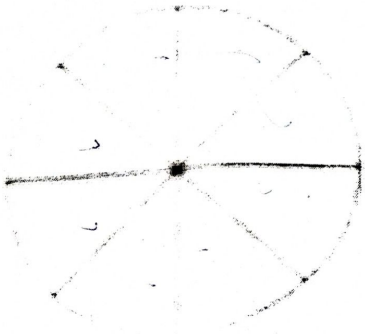
(ii) Find the difference between the upper limit of median class and lower limit of modal class. (1 M)

(iii) Find median. (2 mark)

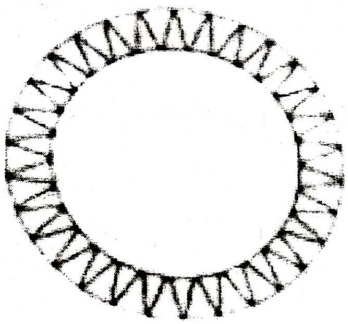
OR

Find mean. (2 marks)

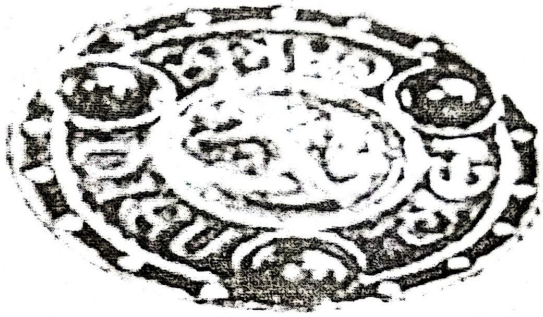
38. A brooch is a small piece of jewellery, which has a pin at the back so that it can be fastened on a dress blouse or coat. Design of some brooch are shown below observe them carefully



A



B



Design A - Brooch a is made with silver wire in the form of a circle with diameter 20 mm the wire used for making 4 diameters which divide the circle into 8 equal parts

Design B - Brooch is made two colors golden and silver. Outer part is made with gold. The circumference of silver part is 44 mm and the gold part is 3 mm wide everywhere observe the above design and answer the following questions :

(i) Find the total length of wire (1)

(ii) Find the area of each sector of the brooch (1)

(iii) Find the circumference of the outer part (2)

OR

Find the difference of areas of golden and silver parts. (2 M)