विद्या सर्वार्थि साधिका

ANANDALAYA

PERIODIC TEST – 2

Class: IX

Subject: Mathematics (041) M.M: 80

Date : 22-09-2025 Time: 3 Hrs.

General Instructions:

1. This Question paper contains - five sections A, B, C, D and E. Each section is compulsory.
2. Section A has 18 MCQ's and 02 Assertion – Reason based questions of 1 mark each.
3. Section B has 5 Very Short Answer (VSA) – type questions of 2 marks each.
4. Section C has 6 Short Answer (SA) – type questions of 3 marks each.
5. Section D has 4 Long Answer (LA) – type questions of 5 marks each.
6. Section E has 3 source based/case based/passage based/integrated units of assessment of 4 marks each with sub-parts.
7. All Questions are compulsory. However, an internal choice in 2 questions of 2 marks, 2 questions of 3 marks and 2 Questions of 5 marks has been provided. An internal choice has been provided in the 2 marks questions of Section E.
8. Draw neat figures wherever required. Take π =22/7 wherever required if not stated.

SECTION A

1. If '2k' is the coefficient of y in the expansion of $\left(5-\frac{y}{2}\right)^2$, then find the value of k. (1)

   (A) 5 (B) – 5 (C) 5/2 (D) – 5/2

2. What is the x-coordinate of the foot of perpendicular from the point C(3, – 4) on Y-axis? (1)

   (A) 0 (B) 3 (C) – 4 (D) 4

3. Euclid's fifth postulate is related to which of the following? (1)

   (A) Parallel lines (B) Perpendicular lines
   (C) Intersecting lines (D) Angle between two rays.

4. What is the value of $(256)^{0.16} \times (256)^{0.09}$? (1)

   (A) 4 (B) 16 (C) 64 (D) 256.25

5. The polynomial $p(x) = x^4 - 2x + 5$ is known as _____. (1)

   (A) Binomial (B) Trinomial (C) Quadratic (D) Constant

6. According to the Euclid's axiom, 'The things which are double of the same thing are _____'? (1)

   (A) Equal (B) Unequal (C) Greater than (D) Smaller than

7. If a line l is perpendicular to m , m is perpendicular to n and n is perpendicular to t. Then what is the correct relation between l *and* t? (1)

   (A) $l \perp t$ (B) l *and* t intersect each other but not perpendicular
   (C) $l \parallel t$ (D) cannot say anything.

8. Which one of the following is not an irrational number between 7/2 and 19/3? (1)

   (A) $3\sqrt{2}$ (B) $3\sqrt{3}$ (C) $4\sqrt{2}$ (D) $3\sqrt{5}$

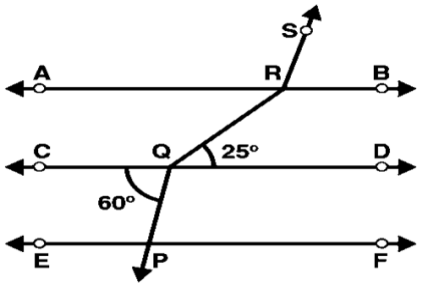
9. In two triangles, ABC and PQR, ∠A = 30°, ∠B = 70° and ∠P = 70°, ∠Q = 80° and AB = RP then which congruency is correct for the given details? (1)

   (A) Δ ABC ≅ Δ PQR (B) Δ ABC ≅ Δ QRP
   (C) Δ ABC ≅ Δ RPQ (D) Δ ABC ≅ ΔRQP

10. Which of following is one of the zero of the polynomials $q(x) = x^3 - 5x + 2$. (1)

(A) 2 (B) -2 (C) 0 (D) $\frac{1}{2}$

11. In the given figure, if AB || CD || EF, PQ || RS, ∠RQD = 25° and ∠CQP = 60°, then ∠QRS is equal to: (1)



(A) 85°
(B) 110°
(C) 135°
(D) 145°

12. When a number is divided by another number; the quotient and remainder obtained are 8 and 3 respectively. Express this information in linear equation. (1)

(A) y = 8x +3 (B) x = 8y – 3 (C) 3x + y = 8 (D) y = 3x + 8

13. If two sides and the included angle of one triangle are equal to two sides and the included angle of another triangle, then the two triangles must be congruent by which of the following rule? (1)

(A) SAS (B) ASA (C) AAS (D) SSS

14. In isosceles triangle PQR, PQ =PR and ∠P is 100° then what is the value of ∠Q? (1)

(A) 44° (B) 40° (C) 80° (D) 50°

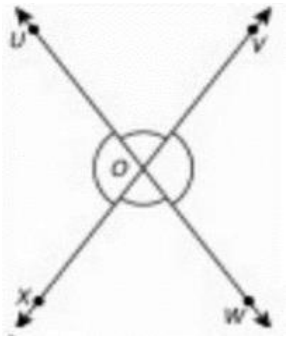
15. If the equation 4x + 9y = 36 written in the form of $\frac{x}{a} + \frac{y}{b} = 1$, then find the value of 'a – b'. (1)

(A) 0 (B) 5 (C) 8 (D) 13

16. Given ΔABC ≅ΔPQR and ΔABC ≇ ΔRPQ, then which relation is true for sides. (1)

(A) BC = PQ (B) AC = RQ (C) QR = BA (D) AB = PQ

17. Two lines XV and UW intersecting at point O as given in the figure. Which of the following statement is FALSE about the given figure? (1)



(A) ∠XOW and ∠UOV is a pair of vertically opposite angles.
(B) ∠VOW and ∠UOV are supplementary angles
(C) ∠UOX and ∠XOW are linear pair of angles
(D) ∠UOX and ∠VOW are adjacent angles

18. Which of the following is the solution of equation 2x – y = 0? (1)

(A) (−6, 8) (B) (3, −6) (C) (3, 2) (D) (3, 6)

In the following questions 19 and 20, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.

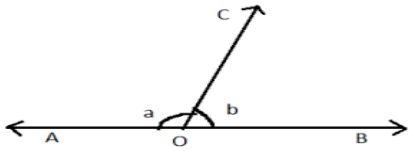
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

19. **(A):** The abscissa of a point (5, 2) is 5. (1)
(R): The perpendicular distance of a point from the y-axis is called its abscissa.

20. **(A):** The values of *a*, *b* and *c* in linear equation 9*y* = 2*x* + 9 are 2, 9 and – 9 respectively. (1)
(R): The general form of linear equation in two variables is *ax* + *by* + *c* = 0

SECTION - B

21. In the given figure, if a is greater than b by one third of a right angle, find the value of a and b. (2)



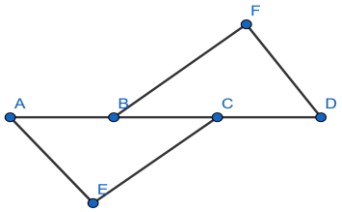
22. The angles of a quadrilateral are 2x, 3x, 5x and 8x. find the value of x and the angles of the quadrilaterals. (2)

OR

Express the equation $y = \frac{3}{5}x + 1$ into the standard form. If (k, k+1) is the solution of it, find the value of k.

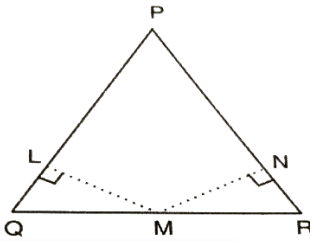
23. By using remainder theorem, find the remainder when $r(x) = 4x^3 - 5x^2 + 7x - 2$ is divided by $s(x) = x - 1$. (2)

24. In the given figure *AB* = *CD*, *CE* = *BF* and ∠*ACE* = ∠*DBF*. (2)
Prove that: (i) Δ*ACE* ≅ Δ*DB*
(ii) AE = DF

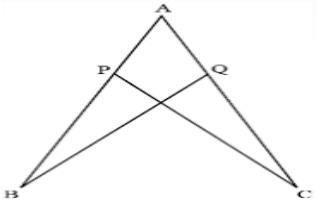


OR

In the given figure LM = MN, QM = MR, ML⊥PQ and MN⊥PR. Prove that PQ = PR.



25. In the given figure, if AB = AC and AP = AQ, then prove that BP = CQ. Mention which axiom used in proof. (2)



SECTION -C

26. Evaluate each of the following using suitable identities: (i) $(104)^3$ (ii) $(999)^2$ (3)

27. If $p = \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$ and $q = \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$, then find the value of $p^2 + q^2$. (3)

OR

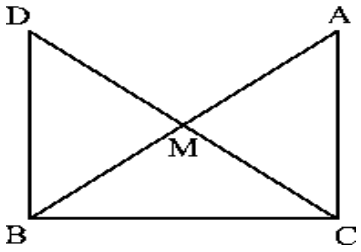
Find the value of $\frac{2^{10}+2^9+2^8}{2^9+2^8+2^7}$.

28. In which quadrant, will the points P,Q,R and S lies, if (3)
(i) For point P: the ordinate is 2 and the abscissa is – 3.
(ii) For point Q: the absicssa is – 4 and the ordinate is –2.
(iii) For point R: the ordinate is –3 and the abscissa is 4.
(iv) For point S: the ordinate is 3 and the abscissa is –2.
(v) Which two points from P, Q, R and S lies in the same quadrant?
(vi) Which point is nearer to Y-axis?

OR

If the coordinates of two points are A (– 5,7) and B (1, – 4), then find the following values.
(i) (abscissa of A) – (abscissa of B)
(ii) (ordinate of B) + (ordinate of A)
(iii) Product of (abscissa of A) with (ordinate of B).

29. In right triangle ABC, right angled at C, M is the mid-point of hypotenuse AB. C is joined to M and produced to a point D such that DM = CM. Point D is joined to point B (see Fig). Show that: (3)
(i) Δ AMC ≅ Δ BMD
(ii) ∠ DBC is a right angle.
(iii) Δ DBC ≅ Δ ACB



30. Using the factor thoerm factorise the polnomial $p(x) = x^3 + 13x^2 + 32x + 20$. If the factors of p(x) are $(x + a)(x + b)(x + c)$, then prove that 6a + 2b = c. (3)

31. The coordinate of points given in the following table represent same of the solutions of the equation $y - 2x = 5$. (3)

x	--	3	--	– 2
y	4	--	– 1	--

Find the missing values. Also find the coordinate of the points where the line cut x-axis and y-axis.

SECTION –D

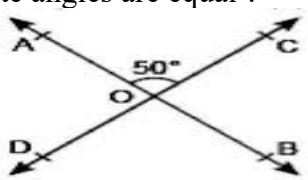
32. If the point P(3, 1) lies on the linear equation $3x - ay = 6$, find the value of 'a'. Write the equation in standard form. Also check whether the points A(2,1), B(2, -1) and C(5, 3) lies on the same line? (5)

OR

Find the value of p and q,if the lines 2px + 7qy = 14 and 3px – 7qy = 6 pass through (2,1). Write one solution of equation px+qy = 20/7.

33. Express $1.3\overline{2} + 0.\overline{35}$ as a fraction in simplest form. (5)

34. Prove that, 'If two lines intersect each other, then the vertically opposite angles are equal'. (5)
Using the theorm find the value of sum of the angle ∠AOD and ∠COB for the given figure in which ∠AOC = 50°.



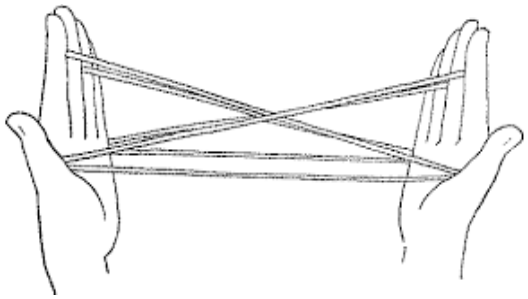
OR

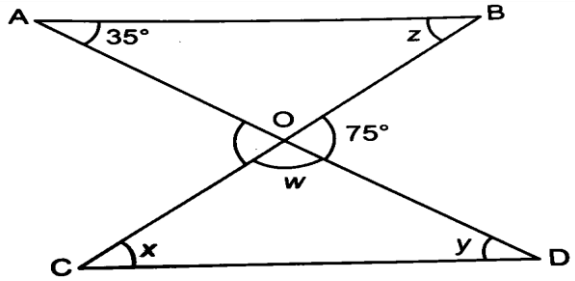
If a transversal intersects two lines such that the bisectors of a pair of corresponding angles are parallel, then prove that the two lines are parallel.

35. If $a + b + c = 5\ and\ ab + bc + ca = 10$ then prove that $a^3 + b^3 + c^3 - 3abc = -25$. (5)

SECTION – E

36. Cat's cradle is a game involving creation of various string figures between the fingers either individually or by passing a loop of string back and forth between two or more players. The type of string, the specific figures, their order and the names of the figures vary. On a paper string figure can be drawn where AB || CD.



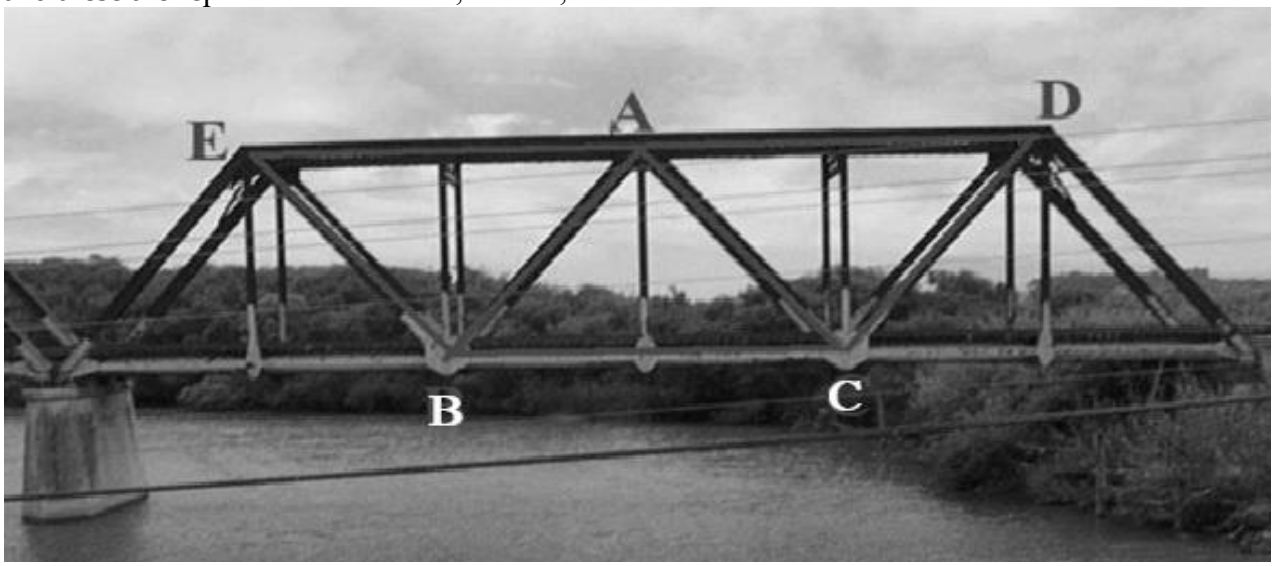


(i) Find the measure of ∠AOC. (1)
(ii) Find the measure of ∠z. (1)
(iii) Find the measure of ∠w + ∠y. (2)

OR

(iii) find the measure of ∠AOC + ∠x.

37. Truss bridges are formed with a structure of connected elements that form triangular structures to make up the bridge. Trusses are the triangles that connect to the top and bottom cord and two end posts. You can see that there are some triangular shapes are shown in the picture given alongside and these are represented as ΔABC, ΔCAD, and ΔBEA.



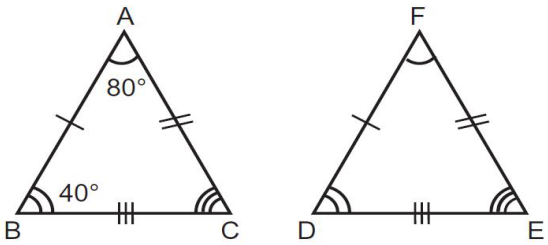
(i) If AB = CD and AD = CB, then prove ΔABC ≅ ΔCDA (1)

(ii) If AB = 7.5 m, AC = 4.5 m and BC = 5 m. Find the perimeter of ΔACD, if ΔABC ≅ ΔCDA, by SSS congruence rule. (1)

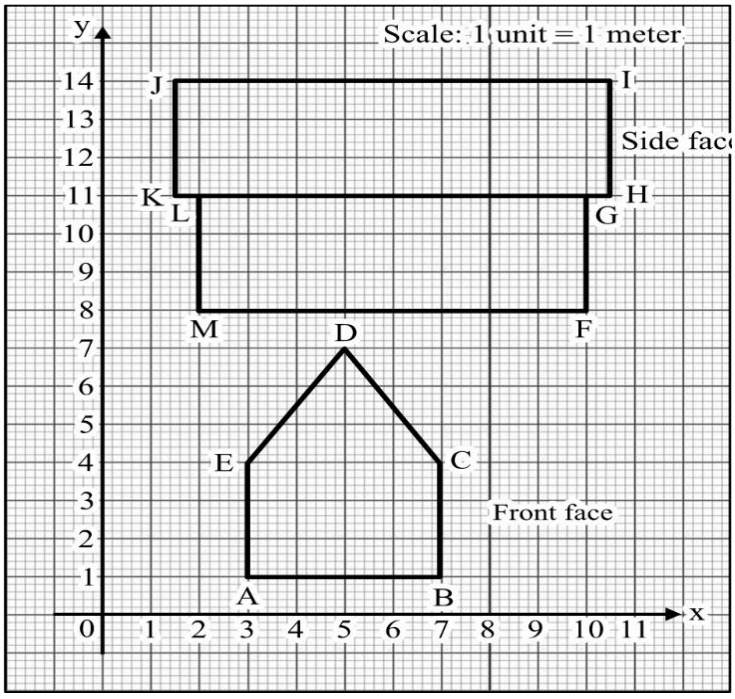
(iii) In the above figure if we consider ΔEBA, ΔABC and ΔDCA are equilateral triangle with CD = 5m. then find the perimeter of Quadrilateral EBCD. (2)

OR

(iii) For the given adjoining figure, In ΔABC and ΔDEF, If ΔABC ≅ ΔFDE, AB = 5 cm, ∠B = 40° and ∠A = 80°. Then find the length of DF.



38. Side and Front face of the house are plotted on the graph sheet.



Based on the graph answer the following questions:

(i) Find the coordinates of the points of A, B, C, D. (1)

(ii) Find the coordinates of the points of M, F, H and J. (1)

(iii) What is the length of side AB? (In metre) (2)

OR

(iii) Write the abscissa of points E, L and G, also find the height of the house.