Padmavati International School

Hosur-Rabkavi

CLASS 09 - MATHEMATICS

PERIODIC TEST - I

Time Allowed: 3 hours **Maximum Marks: 80**

General Instructions:

This question paper contains 40 questions divided into four sections A,B,C and D.Section A contains twenty MCQ of 1 marks each , Section B contains six questions of 2 marks each,Section C contains eight questions of 3 marks each and Section D contains six questions of 4 marks each.

All questions are compulsory.However internal choice is given.

Use of calculator is not allowed.

All questions are compulsory.

Section A

1. If a, m, n are positive integers, then $\{\sqrt[m]{\sqrt[n]{a}}\}^{mn}$ is equal to **[1]**

   a) a^{mn} b) $a^{\frac{m}{n}}$

   c) a d) 1

2. The value of $\left(\frac{12^{\frac{1}{5}}}{27^{\frac{1}{5}}}\right)^{\frac{5}{2}}$ **[1]**

   a) none of these b) $\frac{2}{3}$

   c) $\frac{12}{27}$ d) $\frac{4}{9}$

3. A number which can neither be expressed as a terminating decimal nor as a repeating decimal is called **[1]**

   a) a rational number b) an irrational number

   c) a whole number d) an integer

4. The simplest form of $0.12\overline{3}$ is **[1]**

   a) none of these b) $\frac{37}{330}$

   c) $\frac{41}{330}$ d) $\frac{41}{333}$

5. A polynomial of degree ____ is called a cubic polynomial. **[1]**

   a) 3 b) 2

   c) 1 d) 0

6. If $f(x) = x^2 - 5x + 1$, then the value of f(2) + f(-1) is **[1]**

   a) 2 b) 1

c) -2 d) -1

7. A polynomial of degree ____ is called a quadratic polynomial. **[1]**

a) 3 b) 1

c) 2 d) 0

8. If $x^3 - \frac{1}{x^3} = 14$, then $x - \frac{1}{x}$ = **[1]**

a) 2 b) 3

c) 4 d) 5

9. Abscissa of a point is positive in: **[1]**

a) quadrant I and IV b) quadrant II and III

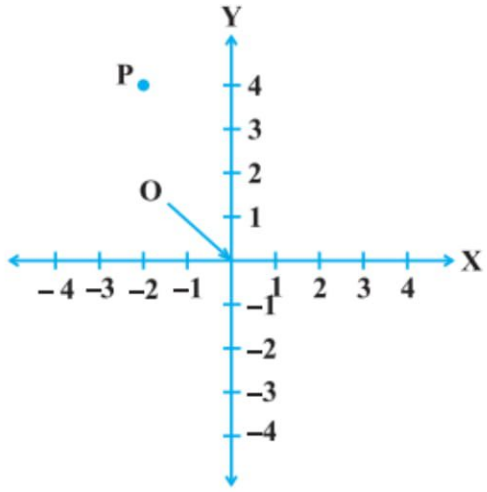
c) quadrant I only d) quadrant IV only

10. The point which lies on y-axis at a distance of 6 units in the positive direction of y-axis is **[1]**

a) (-6, 0) b) (0, -6)

c) (6, 0) d) (0, 6)

11. In Figure, coordinates of P are **[1]**



a) (–2, 4) b) (– 4, 2)

c) (4, – 2) d) (2, – 4)

12. The point at which the two co-ordinate axes meet is called the **[1]**

a) origin b) abscissa

c) ordinate d) quadrant

13. If two interior angles on the same side of a transversal intersecting two parallel lines are in the ratio 2 : 3, then the greatest of two angles is **[1]**

a) 72^o b) 54^o

c) 36^o d) 108^o

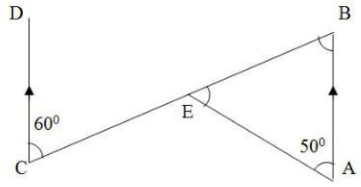
14. Two straight lines AB and CD intersect one another at the point O. If ∠AOC+ ∠COB+ ∠BOD = 274°, then ∠AOD = **[1]**

a) 86° b) 137°

c) 94°

d) 90°

15. In the given figure, AB || CD. If ∠EAB = 50° and ∠ECD = 60°, then ∠AEB =? **[1]**



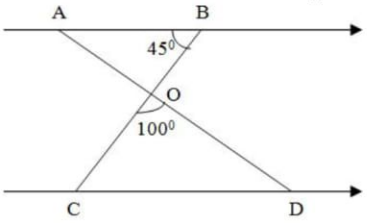
a) 50^0

b) 60°

c) 55°

d) 70°

16. In the given figure, AB || CD, If ∠ABO = 45° and ∠COD = 100° then ∠CDO = ? **[1]**



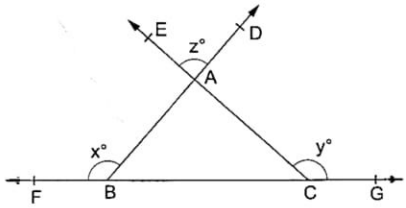
a) 30°

b) 25°

c) 45°

d) 35°

17. In the given figure, two rays BD and CE intersect at a point A. The side BC of △ABC have been produced on both sides to points F and G respectively. If $\angle \mathrm{ABF} = x^\circ$, $\angle ACG = y^\circ$ and $\angle DAE = z^\circ$ then z = ? **[1]**



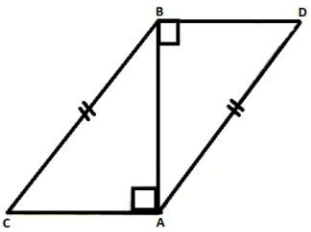
a) x + y - 180

b) x + y + 180

c) 180 - (x + y)

d) x + y + 360⁰

18. In the adjoining figure, BC = AD, CA⊥AB and BD⊥AB. The rule by which $\triangle ABC \cong \triangle BAD$ is **[1]**



a) ASA

b) RHS

c) SSS

d) SAS

19. PQR is a right-angled triangle in which ∠P = 90⁰ and PQ = PR. What is the value of ∠Q and ∠R **[1]**

a) 45⁰, 45⁰

b) 30⁰, 60⁰

c) 40⁰, 50⁰

d) 20⁰, 60⁰

20. In △ABC, if ∠A = 100°, AD bisects ∠A and AD ⊥ BC. Then, ∠B = **[1]**

a) 50°

b) 40°

c) 100° d) 90°

Section B

21. Find the value of a and b: $\frac{3-\sqrt{5}}{3+2\sqrt{5}} = a\sqrt{5} - \frac{19}{11}$ **[2]**

22. Evaluate: $\left[(16)^{\frac{1}{2}}\right]^{\frac{1}{2}}$. **[2]**

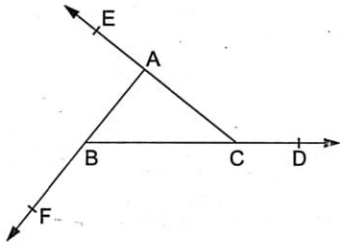
23. Evaluate by using identities: 103×107 **[2]**

24. Which of the following points lie on the x-axis? **[2]**

    i. A (0,8)
    ii. 6(4,0)
    iii. C(0,-3)
    iv. D (-6,0)
    v. E (2,1)
    vi. F(-2, -1)
    vii. G (-1, 0)
    viii. H(0, -2)

25. Two supplementary angles are in the ratio of 3 : 7. Find the angles. **[2]**

26. If the sides of a triangle are produced in order, prove that the sum of the exterior angles so formed is equal to four right angles. **[2]**



27. Express $0.4\overline{7}$ in the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$ **[3]**

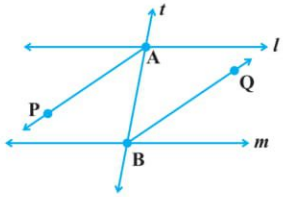
28. If $\sqrt{2}$=1.4142, find the value of $\sqrt{\frac{\sqrt{2}-1}{\sqrt{2}+1}}$. **[3]**

29. Factorise :$x^3 - 3x^2 - 9x - 5$ **[3]**

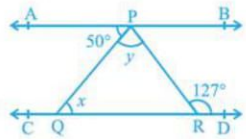
30. Find the remainder when $x^3 + 3x^2 + 3x + 1$is divided by x **[3]**

31. The three vertices of a square ABCD are A(3, 2), B (-2, 2) and D (-3, 3). Plot these points on a graph paper and hence, find the coordinates of C. Also, find the area of square ABCD. **[3]**

32. If in figure, bisectors AP and BQ of the alternate interior angles are parallel, then show that l || m. **[3]**



33. In the given figure, if AB || CD, ∠ APQ = 50° and ∠PRD = 127°, find x and y. **[3]**



34. ABC is an isosceles triangle in which AC = BC. AD and BE are respectively two altitudes to sides BC and AC. Prove that AE = BD. **[3]**

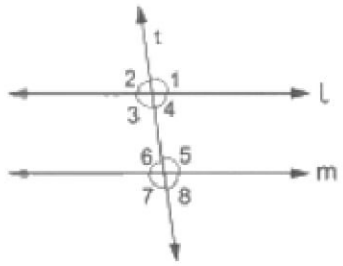
35. Visualize the representation of $2.3\overline{2}$ on the number line up to 4 decimal places. **[4]**

36. If $a = 3 - 2\sqrt{2}$, find the value of $a^2 - \frac{1}{a^2}$. **[4]**

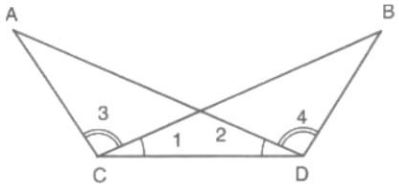
37. If ($x^3 + ax^2 + bx + 6$) has (x - 2) as a factor and leaves a remainder 3 when divided by (x - 3), find the values of a and b. **[4]**

38. Plot the points P (1, 0), Q (4, 0) and S (1, 3). Find the coordinates of the point R such that PQRS is a square. **[4]**

39. In the given figure, l || m and a transversal t cuts them. If $\angle 1 : \angle 2 = 5 : 4$, find the measure of each of the marked angles. **[4]**



40. In figure, ∠BCD = ∠ADC and ∠ACB = ∠BDA. Prove that AD = BC and ∠A = ∠B. **[4]**



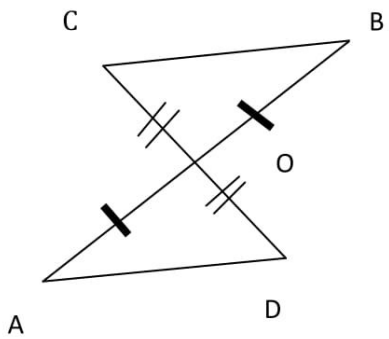
SECTION -B

OR (23) Expand $(\frac{1}{3}x - \frac{2}{3}y)^3$

OR (26) In figure OA = OB and OC = OD , Show that

(i) Δ AOB ≅ ΔBOC and

(ii) AD ‖ BC.



SECTION -C

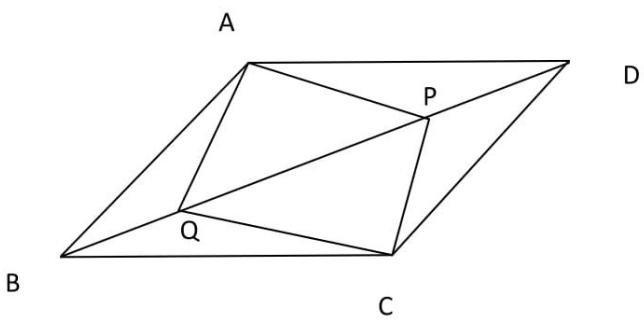
OR (31) Plot the points A(-2,3) B(-2 , 0) C (2 , 0) and (2 , 6) on the graph paper . Join them consecutively and find the length of BC and AB .Also find the area of ΔABC.

OR (34) In the given parallelogram ABCD two points P and Q are taken on the diagonal BD such that DP = BQ. Show that

(i) $\Delta APD \cong \Delta CQB$

(ii) $\Delta AQB \cong \Delta CPD$

(iii) $\square APCQ$ *is a parallelogram.*



SECTION-D

OR (35) Express 1. 3 2 + 0. 35 in the form $\frac{p}{q}$ where p and q are integers and q≠ o.

OR (39) In figure $PQ \perp PR$, $QP \parallel RL$, $\angle RQT = 38°$, $\angle QTL = 75°$, $Find\ x\ and\ y$.