COMMON HALF YEARLY EXAMINATION - 2025

Standard IX

Reg.No. | | | | | | |

MATHEMATICS

Time : 3.00 hrs *Marks : 100*

Part – I

I. Choose the correct answer: **14 x 1 = 14**

1. If A = {x,y,z} then the number of non-empty subsets of A is
   a) 8 b) 5 c) 6 d) 7
2. If $A \cup B = A \cap B$, then
   a) $A \neq B$ b) $A = B$ c) $A \subset B$ d) $B \subset A$
3. For any three sets A, B and C $(A - B) \cap (B - C)$ is equal to
   a) A only b) B only c) C only d) ϕ
4. Which one of the following is an irrational number?
   a) $\sqrt{25}$ b) $\sqrt{\frac{9}{4}}$ c) $\frac{7}{11}$ d) π
5. If $\sqrt{80} = k\sqrt{5}$, then k =
   a) 2 b) 4 c) 8 d) 16
6. $4\sqrt{7} \times 2\sqrt{3}$ =
   a) $6\sqrt{10}$ b) $8\sqrt{21}$ c) $8\sqrt{10}$ d) $6\sqrt{21}$
7. Degree of the Polynomial $(y^3 - 2)(y^3 + 1)$ is
   a) 9 b) 2 c) 3 d) 6
8. Cubic polynomial may have maximum of _____ linear factors.
   a) 1 b) 2 c) 3 d) 4
9. GCD of any two prime numbers is _____.
   a) –1 b) 0 c) 1 d) 2
10. In a cyclic quadrilateral ABCD, $\angle A = 4x$, $\angle C = 2x$ the value of x is
    a) 30° b) 20° c) 15° d) 25°
11. The distance between the two points (2,3) and (1,4) is _____.
    a) 2 b) $\sqrt{56}$ c) $\sqrt{10}$ d) $\sqrt{2}$
12. If (x + 2, 4) = (5, y – 2) then the coordinates (x, y) are _____.
    a) (7,12) b) (6,3) c) (3,6) d) (2,1)
13. If tan 0 = cot 37° then the value of 0 is
    a) 37° b) 53° c) 90° d) 1°

14. The value of $\frac{1-\tan^2 45^\circ}{1+\tan^2 45^\circ}$ is

a) 2 b) 1 c) 0 d) $\frac{1}{2}$

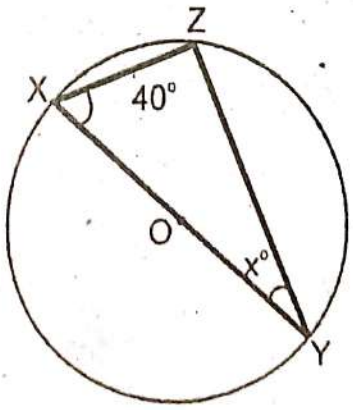
Part - II

II. **Answer any 10 questions. (Q.No.28 is compulsory)** **10 x 2 = 20**

15. List the set of letters of the following words in Roster form.
    i) PARALLELOGRAM ii) CZECHOSLOVAKIA
16. Write down the power set of the following set. B = {1, 2, 3}
17. Find any three rational numbers between $\frac{-7}{11}$ and $\frac{2}{11}$
18. Write the Scientific Notation of 569430000000
19. Write the polynomial $\sqrt{2}x^2 - \frac{7}{2}x^4 + x - 5x^3$ in standard form.
20. Factorise: $p^2 - 6P - 16$
21. Find the GCD: $35x^5y^3z^4$, $49x^2yz^3$, $14xy^2z^2$
22. The angles of a triangle are in the ratio 1:2:3 find the measure of each angle of the triangle.
23. In which quadrant does the following points lie?
    a) (3, –8) b) (–1, –3) c) (2, 5) d) (–7,3)
24. Find the mid point of the line segment joining the points (–2, 3) and (–6, –5)
25. If the Centroid of a triangle is at (4, –2) and two of its vertices are (3, –2) and (5,2) then find the third vertex of the triangle.
26. Evaluate : $\sin^2 45^\circ + \cos^2 45^\circ$
27. Evaluate : $\frac{\sec 63^\circ}{\text{cosec}\, 27^\circ}$
28. a) If A = {a,b,c, e;u} and B = { a, e, i, o, u}, find A Δ B

(OR)

b) Find the value of x in the following figure.



Part - III

III. Answer any 10 questions. (Q.No.42 is compulsory) 10 x 5 = 50

29. Verify $(A \cup B)' = A' \cap B'$ using Venn diagrams.

30. In a class, all students take part in either music or drama or both. 25 students take part in music, 30 students take part in drama and 8 students take part in both music and drama. Find

    i) The number of students who take part in only music

    ii) The number of students who take part in only drama

    iii) The total number of students in the class.

31. Let U = {0,1,2,3,4,5,6,7} A = {1,3,5,7} and B = {0,2,3,5,7}. Find the following sets

    (i) A' (ii) B' (iii) $(A \cup B)'$ (iv) $(A \cap B)'$ (v) $(A')'$

32. Arrange surds in descending order: $\sqrt[3]{5}, \sqrt[9]{4}, \sqrt[6]{3}$

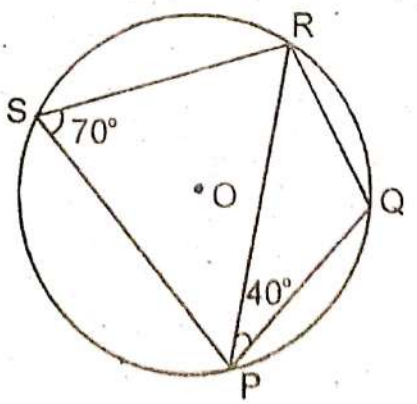
33. If the quotient obtained on dividing $(8x^4 - 2x^2 + 6x - 7)$ by $(2x + 1)$ is $(4x^3 + px^2 - qx + 3)$ then find p, q and also the remainder.

34. Factorise $x^3 + 13x^2 + 32x + 20$ into linear factors.

35. Given 4a + 3b = 65 and a + 2b = 35, Solve by elimination method

36. In a quadrilateral ABCD, $\angle A = 72°$ and $\angle C$ is the supplementary of $\angle A$. The other two angles are $(2x - 10)°$ and $(x + 4)°$. Find the value of x and the measure of all the angles.

37. If PQRS is a cyclic quadrilateral in which $\angle PSR = 70°$ and $\angle QPR = 40°$ then find $\angle PRQ$.



38. Determine whether the given points (7, –2) (5,1) (3, 4) are collinear or not.

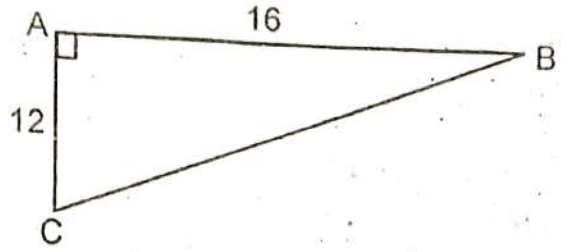
39. In What ratio does the point P(–2,4) divide the line segment joining the points A(– 3,6) and B(1, –2) internally?

40. Find the length of median through A of a triangle whose vertices are A(– 1,3), B(1, – 1) and C(5,1)

41. Verify Cos 3A = 4 Cos^3A – 3 Cos A, when A = 30°

42. a) Represent 7.843 on the number line. *(OR)*

    b) From the given figure find all the trigonometric ratios of angle B.



Part - IV

IV. Answer all the questions. **2 x 8 = 16**

43. a) Construct the centroid of ΔPQR whose sides are PQ = 8cm, QR = 6cm, RP = 7cm.

(OR)

    b) Draw a triangle ABC, where AB = 8cm, BC = 6cm and ∠B = 70° and locate its circumcentre and draw the circumcircle.

44. a) Draw the graph for the following.

    Y = 3x – 1

(OR)

    b) Solve graphically

    x + y = 7 ; x – y = 3

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