

COMMON HALF YEARLY EXAMINATION - 2025

Standard IX

Reg.No.

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MATHEMATICS

Time : 3.00 hrs

Part - I

Marks : 100

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 $\tan \theta = \cot 37^\circ$ then the value of θ 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.

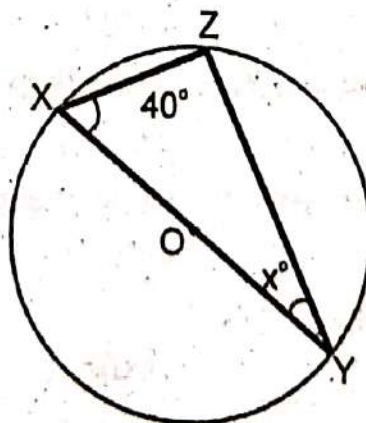
26. Evaluate : $\sin^2 45^\circ + \cos^2 45^\circ$

27. Evaluate : $\frac{\sec 63^\circ}{\operatorname{cosec} 27^\circ}$

28. a) If $A = \{a, b, c, e, u\}$ and $B = \{a, e, i, o, u\}$, find $A \Delta B$

(OR)

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

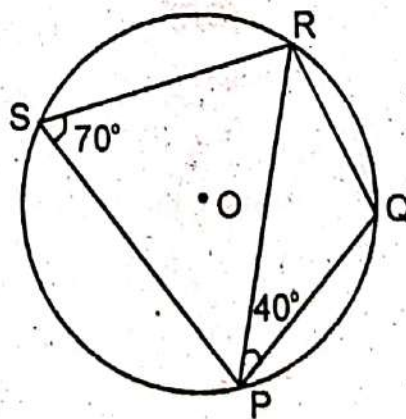


Part - III

III. Answer any 10 questions. (Q.No.42 is compulsory)

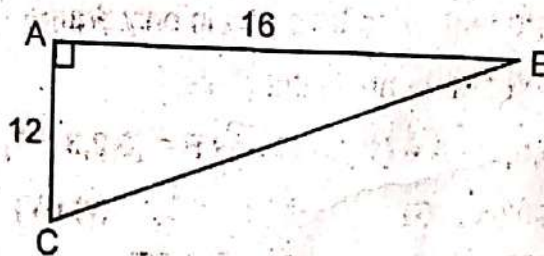
10 x 5 = 50

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
- The number of students who take part in only music
 - The number of students who take part in only drama
 - 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
- A'
 - B'
 - $(A \cup B)'$
 - $(A \cap B)'$
 - $(A')'$
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, $\angle A = 72^\circ$ and $\angle C$ is the supplementary of $\angle A$. The other two angles are $(2x - 10)^\circ$ and $(x + 4)^\circ$. Find the value of x and the measure of all the angles.
37. If PQRS is a cyclic quadrilateral in which $\angle PSR = 70^\circ$ and $\angle QPR = 40^\circ$ 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 $\cos 3A = 4 \cos^3 A - 3 \cos A$, when $A = 30^\circ$
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.

 $2 \times 8 = 16$

43. a) Construct the centroid of $\triangle PQR$ whose sides are $PQ = 8\text{cm}$; $QR = 6\text{cm}$, $RP = 7\text{cm}$.

(OR)

- b) Draw a triangle ABC , where $AB = 8\text{cm}$, $BC = 6\text{cm}$ and $\angle B = 70^\circ$ and locate its circumcentre and draw the circumcircle.

44. a) Draw the graph for the following.

$$Y = 3x - 1$$

(OR)

- b) Solve graphically

$$x + y = 7; x - y = 3$$

