

**CLASS : 9 COMMON HALF YEARLY EXAMINATION-2024-25**

Register Number					
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Time Allowed : 3.00 Hours]

## MATHEMATICS

YouTube/ Akwa Academy  
PART - A

[Max. Marks : 100

**I. Choose the correct Answer.**

14x1=14

1. If  $A \cup B = A \cap B$ , then  
(a)  $A \neq B$  (b)  $A=B$  (c)  $A \subset B$  (d)  $B \subset A$
2. For any three set A, B and C,  $(A-B) \cap (B-C)$  is equal to  
(a) A Only (b) B Only (c) C Only (d)  $\phi$
3. Which one of the following has a terminating decimal Expansion  
(a)  $\frac{5}{64}$  (b)  $\frac{8}{9}$  (c)  $\frac{14}{15}$  (d)  $\frac{1}{12}$
4. If  $\sqrt{80} = k\sqrt{5}$ , then k =  
(a) 2 (b) 4 (c) 8 (d) 16
5. If  $\sqrt{9^x} = 3\sqrt{9^2}$ , then x = -----  
(a)  $\frac{2}{3}$  (b)  $\frac{4}{3}$  (c)  $\frac{1}{3}$  (d)  $\frac{5}{3}$
6. If  $x^3 + 6x^2 + kx + 6$  is exactly divisible by  $(x+2)$ , then k = ?  
(a) -6 (b) -7 (c) -8 (d) 11
7. The zero of the Polynomial  $2x + 5$  is  
(a)  $\frac{5}{2}$  (b)  $-\frac{5}{2}$  (c)  $\frac{2}{5}$  (d)  $-\frac{2}{5}$
8. The G.C.D of  $x^4 - y^4$  and  $x^2 - y^2$  is  
(a)  $x^4 - y^4$  (b)  $x^2 - y^2$  (c)  $(x+y)^2$  (d)  $(x+y)^4$
9. The angles of the triangle are  $3x-40^\circ$ ,  $x+20^\circ$  and  $2x-10^\circ$ , then the value of x is  
(a)  $40^\circ$  (b)  $35^\circ$  (c)  $50^\circ$  (d)  $45^\circ$
10. AD is a diameter of a circle and AB is a Chord. If AD = 30cm and AB = 24cm then the distance of AB from the centre of the circle is  
(a) 10 cm (b) 9 cm (c) 8 cm (d) 6 cm
11. If the Y-coordinate of a point is zero then the point always lies -----  
(a) in the I quadrant (b) in the II Quadrant (c) on X-axis (d) on y-axis
12. The point whose ordinate is 4 and which lies on the y-axis is -----  
(a) (4, 0) (b) (0, 4) (c) (1, 4) (d) (4, 2)
13. If  $\sin 30^\circ = x$  and  $\cos 30^\circ = y$ , then  $x^2 + y^2$  is  
(a)  $\frac{1}{2}$  (b) 0 (c)  $\sin 90^\circ$  (d)  $\cos 90^\circ$
14. The value of  $\tan 72^\circ \tan 18^\circ$  is  
(a) 0 (b) 1 (c)  $18^\circ$  (d)  $72^\circ$

**PART - II****II Answer any 10 questions. Question No. 28 is compulsory.**

10x2=20

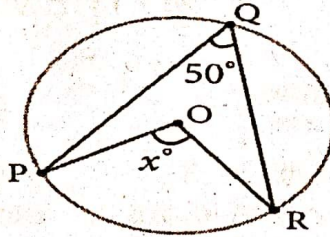
15. If  $A = \{6, 7, 8, 9\}$  and  $B = \{8, 10, 12\}$  find  $A \Delta B$
16. Represent the following sets in Roster form.  
i) A = the set of all even natural numbers less than 20.  
ii)  $B = \{x: x \text{ is perfect cube, } 27 < x < 216\}$
17. Add the following Polynomial.  
 $P(x) = 6x^2 - 7x + 2$ ;  $q(x) = 6x^3 - 7x + 15$
18. What is the remainder when,  $x^{2018} + 2018$  is divisible by  $x - 1$
19. Verify that  $1 = 0.\overline{9}$
20. Simplify:  
i)  $(2.75 \times 10^7) + (1.23 \times 10^8)$  ii)  $(1.598 \times 10^{17}) - (4.58 \times 10^{16})$
21. Express  $\sqrt[3]{108}$  in its simplest form and find its order radicand.

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22. The angles of a Quadrilateral are in the ratio. 2:4:5:7 find all the angles.

23. Find the Value of  $X^\circ$  in the following figures.

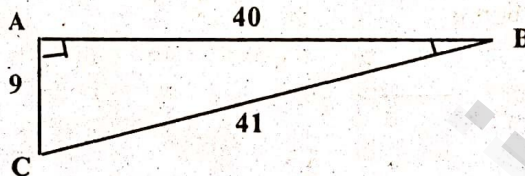


24. Find the Quadrant where the given points lie P(-7, 6), Q (7, -2), R(-6, -7), S(3, 5) and T(3, 9)

25. Find the distance between the points (-4, 3) and (2, -3).

26. From the given figure,

find all the Trigonometric ratios of angle B



27. Prove that  $1 + \tan^2 30^\circ = \sec^2 30^\circ$

28. Find the Quotient and remainder when  $(4x^3 + 6x^2 - 23x + 18)$  is divided by  $(x+3)$

### PART - III

III. Answer the following any 10 questions. Q.No.42 is compulsory.

10x5=50

29. If  $U = \{4, 7, 8, 10, 11, 12, 15, 16\}$ ,  $A = \{7, 8, 11, 12\}$  and  $B = \{4, 8, 12, 15\}$ , then Verify De Morgan's Law,  $(A \cup B)' = A' \cap B'$

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30. In a group of 100 students, 85 students speak Tamil. 40 students speak English, 20 students speak French, 32 speak Tamil and English, 13 speak English and French and 10 speak Tamil and French. If each student knows atleast any one of these languages then find the number of students who speak all these three languages.?

31. Arrange in descending order:  $^3\sqrt{5}$ ,  $^2\sqrt{4}$ ,  $^6\sqrt{3}$

32. Find the value of a and b if  $\frac{\sqrt{7}-2}{\sqrt{7}+2} = a\sqrt{7} + b$

33. Determine the value of m, if  $(x+3)$  is a factor of  $x^3 - 3x^2 - mx + 24$

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

35. Solve:  $2x - y = 3$  and  $3x + y = 7$

36. In a circle, AB and CD are two parallel chords with centre O and radius 10 cm such that AB = 16 cm and CD = 12 cm determine the distance between the two chords.

37. If PQRS is a cyclic Quadrilateral in which  $\angle PSR = 70^\circ$  and  $\angle QPR = 40^\circ$ , then find  $\angle PRQ$

38. Show that the points A (1, 1), B(2, 1), C(2, 2) and D (1, 2) are the vertices of a rhombus.

39. Find the Coordinates of the Points of trisection of the line segment joining the points A (-5, 6) and B(4, -3)

40. Find the value of  $(\cos 0^\circ + \sin 45^\circ + \sin 30^\circ) (\sin 90^\circ - \cos 45^\circ + \cos 60^\circ)$

41. If  $3 \cot A = 2$ , then find the value of  $\frac{4 \sin A - 3 \cos A}{2 \sin A + 3 \cos A}$

42. In what ratio does the Point P (2, -5) divide the line segment joining A (-3, 5) and B (4, -9)

### PART - IV

IV. Answer all the questions.

2x8=16

43. a) Construct the  $\triangle LMN$  such that LM = 7.5 cm, MN = 5cm and LN = 8 cm. Locate its centroid.

(OR)

b) Construct the Circum centre of the triangle ABC with AB = 5cm,  $\angle A = 60^\circ$  and  $\angle B = 80^\circ$ . also draw the circumcircle and find the circum radius of the  $\triangle ABC$

44. a) Draw the Graph of  $y = 4x - 1$  (OR)

b) Draw the Graph of  $3x + 2y = 14$

TPR/9/Mat/2