

CLASS : 9Register
Number

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COMMON ANNUAL EXAMINATION-2023-24

Time Allowed : 3.00 Hours]

MATHEMATICS

[Max. Marks : 100

PART - A

I Choose the correct Answer.

14x1=14

1. If $B \subseteq A$ then $n(A \cap B)$ is
a) $n(A-B)$ b) $n(B)$ c) $n(B-A)$ d) $n(A)$
2. 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
3. $\sqrt[n]{a} \times \sqrt[n]{b} = \dots\dots\dots$
a) $\sqrt[n]{ab}$ b) $\sqrt[n]{a/b}$ c) $\sqrt[n]{a^b}$ d) $(ab)^n$
4. Which one of the following is an irrational number
a) $\sqrt{25}$ b) $\sqrt[9]{4}$ c) $7/11$ d) π
5. If $x^{51} + 51$ is divided by $x+1$, then the remainder is
a) 0 b) 1 c) 49 d) 50
6. $(a+b-c)^2$ is equal to
a) $(a-b+c)^2$ b) $(-a-b+c)^2$ c) $(a+b+c)^2$ d) $(a-b-c)^2$
7. The interior angle made by the side in a parallelogram is 90° then the parallelogram is a
a) Rhombus b) Rectangle c) Trapezium d) Kite
8. PQ and RS are two equal chords of a circle with centre O such that $\angle POQ = 70^\circ$ then $\angle ORS =$
a) 60° b) 70° c) 55° d) 80°
9. 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)
10. If the x-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
11. The value of $3 \sin 70^\circ \sec 20^\circ + 2 \sin 49^\circ \sec 51^\circ$ is
a) 2 b) 3 c) 5 d) 6
12. The lateral surface area of a cube of side 12 cm is
a) 144 cm^2 b) 196 cm^2 c) 576 cm^2 d) 664 cm^2
13. The mean of the square of first 11 natural numbers is
a) 26 b) 46 c) 48 d) 52
14. Which of the following cannot be taken as probability of an event?
a) 0 b) 0.5 c) 1 d) -1

PART - B

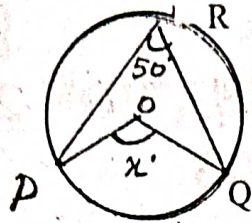
Answer any 10 questions. Question No. 28 is compulsory.

10x2=20

15. If $P = \{2,3,5,7,11\}$ and $Q = \{1,3,5,11\}$ Find $A \Delta B$.
16. Write the set of letters of the following words in Roster Form. i) ASSESSMENT ii) PRINCIPAL
17. Write the following numbers in decimal form i) 6.34×10^4 ii) 2.00367×10^{-5}
18. Verify that $1 = 0.\overline{9}$
19. Show that $(x+2)$ is a factor of $x^3 - 4x^2 - 2x + 20$.
20. Find the GCD of $a^{m+1}, a^{m+2}, a^{m+3}$.

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21. Find the value of x° .



22. If the centroid of a triangle is at $(-2,1)$ and two of its vertices are $(1,-6)$ and $(-5,2)$, then find the third vertex of the triangle.
23. Verify that $\sin^2 60^\circ + \cos^2 60^\circ = 1$.
24. Find the TSA and LSA of the cube whose side is 5 cm.
25. Find the volume of a cuboid whose length, breadth and height are 12 cm, 8 cm, 6 cm respectively.
26. Find the median of the given values. 47, 53, 62, 71, 83, 21, 43, 47, 41.
27. Evaluate $\frac{\sin 49^\circ}{\sin 41^\circ}$
28. In a two children Family, Find the probability that there is atleast one girl in a family.

PART - C

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

10x5=50

29. $A - (B \cup C) = (A - B) \cap (A - C)$ using Venn diagrams.
30. A survey of 1000 farmers found that 600 grew paddy, 350 grew ragi, 280 grew corn, 120 grew paddy and ragi, 100 grew ragi and corn. 80 grew paddy and corn. If each farmer grew atleast any one of the above, three, then find the number of farmers who grew all the three.
31. Arrange in ascending order: $3\sqrt{2}$, $2\sqrt{4}$, $4\sqrt{3}$
32. Find the value of a and b if $\frac{\sqrt{7}-2}{\sqrt{7}+2} = a\sqrt{7} + b$
33. Factorise $x^3 - 5x^2 - 2x + 24$.
34. Solve $2x - y = 3$; $3x + y = 7$.
35. In a quadrilateral ABCD, $\angle A = 72^\circ$ 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.
36. Show that $(4,3)$ is the centre of the circle passing through the points $(9,3)$, $(7,-1)$, $(-1,3)$. Also find its radius.
37. Find the value of $\tan 15^\circ \tan 30^\circ \tan 45^\circ \tan 60^\circ \tan 75^\circ$.
38. If $\tan A = \frac{2}{3}$, then find all the other trigonometric ratios.
39. Find the area of an equilateral triangle whose perimeter is 180 cm.
40. The monthly salary of 10 employees in a factory are given below. ₹ 5000, ₹ 7000, ₹ 5000, ₹ 7000, ₹ 8000, ₹ 7000, ₹ 7000, ₹ 8000, ₹ 7000, ₹ 5000. Find the mean, median and mode.
41. Two dice are rolled, find the probability the sum is i) equal to 1 ii) equal to 4 iii) less than 13
42. If $(\frac{3}{2}, 5)$, $(7, -\frac{9}{2})$ and $(\frac{13}{2}, -\frac{13}{2})$ are mid points of the sides of a triangle, then find the centroid of the triangle.

PART - D

Answer all the questions.

2x8=16

43. a) Construct the centroid of ΔPQR whose sides are $PQ = 8$ cm, $QR = 6$ cm, $RP = 7$ cm.
(OR)
b) Draw a triangle ABC, where $AB = 8$ cm, $BC = 6$ cm and $\angle B = 70^\circ$ and locate its circumcentre and draw the circumcircle.
44. a) Draw the graph for $y = 3x - 1$.
(OR)
b) Solve graphically: $x + y = 7$; $x - y = 3$.

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