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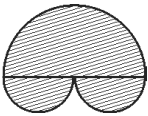
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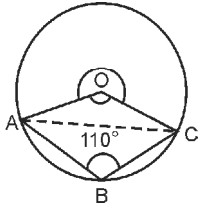
Mathematics Olympiad Foundation (NGO)**CLASS : 10 (SYLLABUS & SAMPLE QUESTIONS)**

Number System, Polynomials, Linear Equation, Quadratic Equation, Coordinate Geometry, Binomial Theorem, Statistics, Trigonometry, Circles, Triangles, Probability, Sequence and Series, Mensuration, Mathematical Reasoning and Logical Ability, Applied Mathematics

The Actual Question Paper Contains 40 Questions. The Duration of the Test Paper is 60 Minutes.

1. If $2x - 3y = 7$ and $(a + b)x - (a + b - 3)y = 4a + b$ represents coincident lines, then the value of a & b are
- (A) $a = 5, b = 1$ (B) $a = -5, b = -1$
 (C) $a = -5, b = 1$ (D) $a = 5, b = -1$
 (E) None of these
2. A can finish the work in 6 days less than the time taken by B to finish the work. If both of them together can finish it in 4 days, then find the time taken by B alone to finish the work.
- (A) 8 days (B) 10 days
 (C) 12 days (D) 14 days
3. The value of $\sqrt{8 + \sqrt{8 + \sqrt{8 + \dots}}}$
- (A) $\frac{1 \pm \sqrt{33}}{2}$ (B) $\frac{8 \pm \sqrt{60}}{2}$
 (C) $\frac{8 \pm \sqrt{72}}{2}$ (D) $\frac{8 \pm \sqrt{42}}{2}$
 (E) None of these
4. If $x_1, x_2 \dots x_n$ are the consecutive natural numbers then the sum of $\frac{1}{x_1 x_2} + \frac{1}{x_2 x_3} + \dots + \frac{1}{x_{n-1} x_n}$ is:
- (A) $\frac{n+1}{x_1}$ (B) $\frac{n-1}{x_n}$
- (C) $\frac{n-1}{x_1 x_n}$ (D) $\frac{n+1}{x_1 x_n}$
 (E) None of these
5. The centre of circle whose equation is $x^2 + y^2 + 8x + 10y - 8 = 0$ is
- (A) (4, 5) (B) (-4, 5)
 (C) (4, -5) (D) (-4, -5)
 (E) None of these
6. If $\sin\theta + \sin^2\theta = 1$ then the value of $\cos^2\theta + \cos^4\theta$ is:
- (A) 0 (B) 1
 (C) 2 (D) 4
 (E) None of these
7. Find the area of shaded region if radius of bigger semicircle is 14 cm and smaller semicircle is 7 cm.
- 
- (A) 462 cm^2 (B) 350 cm^2
 (C) 528 cm^2 (D) 616 cm^2
 (E) None of these
8. If $x = a \cos\theta$ and $y = b \sin\theta$ then $b^2 x^2 + a^2 y^2 = ?$
- (A) ab (B) $a^2 + b^2$
 (C) $a^2 b$ (D) $a^2 b^2$
 (E) None of these

9. The measure of $\angle B$ is:



- (A) 65° (B) 115°
 (C) 120° (D) 125°
 (E) None of these

10. If ABC is a right triangle right angled at C. P and Q are mid points of AC and BC respectively, such that AC = 4cm and BC = 3cm then AQ is:

- (A) 5 cm (B) $\frac{73}{\sqrt{2}}$
 (C) $\frac{\sqrt{73}}{2}$ (D) $\frac{73}{2}$
 (E) None of these

11. If TAIL is coded as VCKN, how is PEACE coded?

- (A) RGCEG (B) QFBDF
 (C) RDZBD (D) QECEG
 (E) None of these

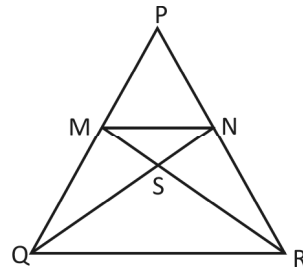
12. If a = 23 (549) (1024), b = 21 (441) (144), then C = 19 (361) (?)

- (A) 1441 (B) 3529
 (C) 9361 (D) 8281
 (E) None of these

13. Find the missing term: 2, 12, 30, 56, _____, 132, 182.

- (A) 116 (B) 76
 (C) 90 (D) 88
 (E) None of these

14. In ΔPQR , MN is parallel to QR and PM : MQ = 5 : 4 then area(ΔMNS) : area (ΔRSQ) is _____.



- (A) 25 : 16 (B) 25 : 9
 (C) 25 : 81 (D) 25 : 64
 (E) None of these

15. If in an equilateral ΔABC of side 6 cm, D is a point on BC such that $BD = \frac{1}{3} BC$ then the length of AD is _____.

- (A) $\sqrt{7}$ cm (B) $2\sqrt{7}$ cm
 (C) $\sqrt{14}$ cm (D) 2 cm
 (E) None of these

ANSWERS

1. (B) 2. (C) 3. (A) 4. (C) 5. (D) 6. (B) 7. (C) 8. (D)
 9. (D) 10. (C) 11. (A) 12. (D) 13. (C) 14. (C) 15. (B)