7th *iOM* ▼ 14
International Olympiad of
Mathematics

CLASS : 10 (SYLLABUS & SAMPLE QUESTIONS)

Number System, Polynomials, Linear Equation, Quadratic Equation, Arithmetic progression, Coordinate Geometry, 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 the coefficient of z in the quadratic equation $z^2 + az + b = 0$ is taken as 18 in place of 12 and its roots were found to be - 16 and -2. The roots of the original equation are
   (A) -12 and -6
   (B) -14 and -4
   (C) -8 and -4
   (D) -16 and -2
   (E) None of these

2. The value of $\sqrt{8 + \sqrt{8 + \sqrt{8 + \ldots\ldots}}}$ is:

   (A) $\dfrac{1 \pm \sqrt{33}}{2}$

   (B) $\dfrac{8 \pm \sqrt{60}}{2}$

   (C) $\dfrac{8 \pm \sqrt{72}}{2}$

   (D) $\dfrac{8 \pm \sqrt{42}}{2}$

   (E) None of these

3. Find the length of the median AD of the $\triangle$ ABC whose vertices are A(7,-3), B(5,3) and C(3, -1), where D is the mid-point of the side BC.
   (A) 6
   (B) 9
   (C) 10
   (D) 5
   (E) None of these

4. 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

5. A bag contains 3 white marbles, 4 red marbles and 5 black marbles. One marble is drawn at random from the bag, what is the probability that the marble drawn is neither black nor white?

   (A) $\dfrac{1}{4}$

   (B) $\dfrac{1}{2}$

   (C) $\dfrac{1}{3}$

   (D) $\dfrac{3}{4}$

   (E) None of these

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6. The measure of $\angle$ B in the following figure is:
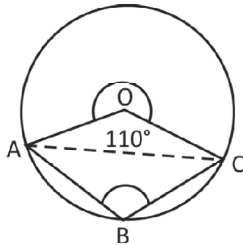
(A) 65°   (B) 115°
(C) 120°   (D) 125°
(E) None of these

7. If TAIL is coded as VCKN, how is PEACE coded?
(A) RGCEG   (B) QFBDF
(C) RDZBD   (D) QECEG
(E) None of these

8. A bag contains 12 balls out of which x are red. If three more red balls are put in the bag, the probability of drawing the red balls becomes twice the original probability, then the value of x is:
(A) 4   (B) 2
(C) 6   (D) 5
(E) None of these

9. A tree breaks due to storm and the broken part of the tree touches the ground making an angle of 30° with the ground. If the distance between the foot of the tree to the point where the top touches the ground is 8 m, then the height of the tree is :

(A) $4\sqrt{3}$ m

(B) $8\sqrt{3}$ m

(C) $16\sqrt{3}$ m

(D) $32\sqrt{3}$ m

(E) None of these

10. Peter walks to his office and returns by riding bike which take him 90 minutes. On the other hand, when he goes and returns by his bike, it take him 30 minutes. If he goes and returns by walking with a uniform speed, then find the time taken by him.
(A) 3 hours   (B) 1.5 hours
(C) 2 hours   (D) 2.5 hours
(E) None of these

ANSWERS									
1. (C)	2. (A)	3. (D)	4. (B)	5. (C)	6. (D)	7. (A)	8. (B)	9. (B)	10. (D)