



An ISO 9001:2015 Certified Organization

GLOBAL COMPETITION SOCIETY

11
CLASS

Duration : 60 Min.

Total Ques. : 50

Paper Type : M 1

SAMPLE Q.P: GLOBAL MATHS OLYMPIAD (GMO)

1. The Actual Question Paper Contains 50 Questions.
2. Each question carry an equal marks of 2 against 50 question
3. The Duration of the Test Paper is 60 Minutes

1. **Two pipes can fill a cistern in 14 hours and 16 hours respectively. The pipes are opened simultaneously and it is found that due to leakage in the bottom it took 32 minutes more to fill the cistern. When the cistern is full, in what time will the leak empty it?**
(A) 108 hours (B) 112 hours
(C) 120 hours (D) 126 hours
(E) None of these
2. **The equation of a circle with origin as centre and passing through the vertices of an equilateral triangle whose median is of length $3a$ is**
(A) $x^2 + y^2 = 9a^2$ (B) $x^2 + y^2 = 16a^2$
(C) $x^2 + y^2 = 4a^2$ (D) $x^2 + y^2 = a^2$
(E) None of these
3. **If $x^2 + x + 1$ is a factor of $ax^3 + bx^2 + cx + d$, then the real root of $ax^3 + bx^2 + cx + d = 0$**
(A) $-\frac{d}{a}$ (B) $\frac{d}{a}$
(C) $\frac{a}{d}$ (D) $\frac{c}{d}$
(E) None of these
4. **The owner of a local jewellery store hired 3 watchmen to guard his diamonds, but a thief still got in and stole some diamonds. On the way out, the thief met each watchmen, one at a time. To each he gave $\frac{1}{2}$ of diamonds he had then, and 2 more besides. He escaped with one diamond. How many did he steal originally?**
(A) 40 (B) 36
(C) 25 (D) 46
(E) None of these
5. **Three maths classes : X, Y and Z, take an algebra test. The average score of class X is 83. The average score of class Y is 76. The average score of class Z is 85. The average score of class X and Y is 79 and average score of class Y and Z is 81. What is average score of classes X, Y and Z?**
(A) 81.5 (B) 80.5
(C) 83 (D) 78
(E) None of these
6. **If $f(2) = 4$ and $f'(2) = 1$, then $\lim_{x \rightarrow 2} \frac{xf(2) - 2f(x)}{x - 2} =$**
(A) -2
(B) 1
(C) 2
(D) 3
(E) None of these
7. **$\lim_{x \rightarrow 0} \frac{e^x + e^{-x} + 2 \cos x - 4}{x^4}$ is equal to:**
(A) 0 (B) 1
(C) $\frac{1}{6}$ (D) $-\frac{1}{6}$
(E) None of these

8. If $\cos(A - B) = 3/5$ and $\tan A \tan B = 2$, then which of the following is true ?

(A) $\sin(A+B) = \frac{1}{5}$ (B) $\sin(A + B) = -\frac{1}{5}$

(C) $\cos(A - B) = \frac{1}{5}$ (D) $\cos(A + B) = -\frac{1}{5}$

(E) None of these

9. In an exam, the ratio of passes to failure was 4 : 1. Had 30 less appeared and 20 less passed, the ratio of passes to failure would have been 5 : 1. The number of students who appeared for the exam is.....

(A) 120

(B) 135

(C) 145

(D) 150

(E) None of these

10. The point diametrically opposite to the point P(1, 0) on the circle $x^2 + y^2 + 2x + 4y - 3 = 0$ is

(A) (-3, 4)

(B) (-3, -4)

(C) (3, 4)

(D) (3, -4)

(E) None of these

11. A car is being driven, in a straight line and at a uniform speed, towards the base of a vertical tower. The top of the tower is observed from the car and, in the process, it takes 10 minutes for the angle of elevation to change from 45° to 60° . After how much time will this car reach the base of the tower ?

(A) $5(\sqrt{3} + 1)$ mins

(B) $6(\sqrt{3} + \sqrt{2})$ mins

(C) $7(\sqrt{3} - 1)$ mins

(D) $8(\sqrt{3} - 2)$ mins

(E) None of these

12. In a toys making factory, machines A, B and C manufacture respectively 25%, 35% and 40% of the total toys of their output 5%, 4% and 2% respectively are defective toys. A toy is drawn at random from the product. If the toy drawn is found to be defective, what is the probability that it is manufactured by the machine B?

(A) $\frac{17}{69}$ (B) $\frac{28}{69}$

(C) $\frac{35}{69}$ (D) $\frac{73}{648}$

(E) None of these

13. 9 balls are to be placed in 9 to be placed in 9 boxes and 5 of the balls cannot fit into 3 small boxes. The number of ways of arranging one ball in each of the boxes is

(A) 18720

(B) 18270

(C) 17280

(D) 12780

(E) None of these

14. If the last term in the binomial expansion of

$$\left(2^{1/3} - \frac{1}{\sqrt{2}}\right)^n \text{ is } \left(\frac{1}{3^{5/3}}\right)^{\log^3 8} \text{ then the 5th term}$$

from the beginning is

(A) 210

(B) 420

(C) 105

(D) 220

(E) None of these

15. A book contains 1000 pages numbered consecutively. A page is selected at random, find the probability that the sum of the digits of the number of a page is 9, is

(A) 0 (B) $\frac{55}{1000}$

(C) $\frac{33}{1000}$ (D) $\frac{44}{1000}$

(E) None of these