



GG RS LEARNING HUB PVT. LTD.

### IMO Class 08

Total Questions: 35

Time: 60 min

- If  $x + 1/x = 5$ , what is the value of  $x^3 + 1/x^3$ ?  
A) 125 B) 110 C) 140 D) 100
- A shopkeeper offers a 20% discount on an item. After the discount, he still makes a profit of 12%. What is the percentage of the marked price over the cost price?  
A) 32% B) 40% C) 8% D) 25%
- The diagonals of a rhombus are in the ratio 3:4. If its perimeter is 40 cm, what is the area of the rhombus?  
A) 60 sq. cm B) 120 sq. cm  
C) 96 sq. cm D) 100 sq. cm
- What is the value of  $\sqrt{42 + \sqrt{42 + \sqrt{42 + \dots}}}$ ?  
A) 6 B) 7 C) 42 D) Infinity
- A train running at  $7/11$  of its own speed reaches a place in 22 hours. How much time could be saved if the train ran at its own speed?  
A) 14 hours B) 7 hours  
C) 8 hours D) 16 hours
- If  $2^x = 3^y = 6^{-z}$ , then what is the value of  $1/x + 1/y + 1/z$ ?  
A) 0 B) 1 C) -1  
D) Cannot be determined
- A cylindrical roller of diameter 70 cm and length 2 m is used to level a playground. It takes 500 complete revolutions to level the playground. What is the area of the playground in square meters?  
A) 2200 sq. m B) 4400 sq. m  
C) 1100 sq. m D) 220 sq. m
- What is the smallest perfect square that is divisible by each of 6, 9, and 15?  
A) 90 B) 900 C) 225 D) 3600
- In a parallelogram ABCD, AE is perpendicular to DC and CF is perpendicular to AD. If AB = 16 cm, AE = 8 cm and CF = 10 cm, what is the length of AD?  
A) 10 cm B) 12.8 cm  
C) 15 cm D) 12 cm
- A sum of money invested at compound interest amounts to ₹800 in 2 years and ₹840 in 3 years. What is the rate of interest per annum?  
A) 2.5% B) 4%  
C) 5% D) 6%
- What is the unit digit of the expression  $3^{100} \times 4^{101} \times 5^{102}$ ?  
A) 0 B) 1 C) 2 D) 5
- A polyhedron has 10 vertices and 7 faces. How many edges does it have?  
A) 15 B) 17 C) 12 D) 5
- If a, b, and c are integers such that  $a^2 + b^2 = 45$  and  $b^2 + c^2 = 40$ , what is a possible value for  $a^2 + c^2$ ?  
A) 5 B) 25 C) 85 D) 13
- A, B, and C can complete a work in 12, 15, and 20 days respectively. They start the work together, but A leaves after 2 days.

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- In how many more days will B and C complete the remaining work?
- A) 5 days      B) 4 days  
C)  $5\frac{1}{7}$  days    D) 6 days
15. If the side of a cube is increased by 50%, what is the percentage increase in its surface area?
- A) 50%      B) 100%  
C) 125%      D) 150%
16. The angles of a quadrilateral are  $x^\circ$ ,  $(x-10)^\circ$ ,  $(x+30)^\circ$  and  $2x^\circ$ . What is the difference between the largest and smallest angle?
- A)  $100^\circ$  B)  $70^\circ$  C)  $90^\circ$  D)  $80^\circ$
17. What is the probability of getting a sum of 8 when two dice are thrown?
- A)  $\frac{1}{6}$       B)  $\frac{5}{36}$   
C)  $\frac{1}{9}$       D)  $\frac{7}{36}$
18. Simplify:  $(x^3 - 8) / (x^2 + 2x + 4)$
- A)  $x + 2$       B)  $x - 2$   
C)  $x^2 - 4$       D)  $x - 4$
19. The marked price of a jacket is ₹3000. A shopkeeper gives two successive discounts of 20% and 10%. What is the final selling price?
- A) ₹2100      B) ₹2160  
C) ₹2400      D) ₹2700
20. If  $(25)^{n-1} + 100 = 5^{2n-1}$ , what is the value of n?
- A) 1    B) 2    C) 3    D) 4
21. A pipe can fill a cistern in 6 hours. Due to a leak at the bottom, it takes 9 hours to fill it. If the cistern is full, how long will the leak take to empty it?
- A) 12 hours    B) 15 hours  
C) 18 hours    D) 21 hours
22. The cube root of 0.000216 is:
- A) 0.6      B) 0.06  
C) 0.006    D) 0.0006
23. Two candidates, one got 55% of the total valid votes. 20% of the votes were invalid. If the total number of votes was 7500, what is the number of valid votes that the other candidate got?
- A) 2700      B) 2900  
C) 3000      D) 3100
24. If  $a + b + c = 0$ , what is the value of  $(a^3/bc) + (b^3/ca) + (c^3/ab)$ ?
- A) 0    B) 1    C) 3    D) abc
25. The area of a trapezium is  $384\text{ cm}^2$ . If its parallel sides are in the ratio 3:5 and the perpendicular distance between them is 12 cm, what is the length of the smaller parallel side?
- A) 20 cm      B) 24 cm  
C) 30 cm      D) 36 cm
26. What must be subtracted from  $x^4 + 2x^2 - 3x + 7$  to get  $x^3 + x^2 + x - 1$ ?
- A)  $x^4 - x^3 + x^2 - 4x + 8$   
B)  $x^3 + x^2 - 4x + 8$   
C)  $x^4 - x^3 + x^2 + 4x - 8$

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- D)  $x^3 - x^2 + 4x - 8$
27. A boat goes 24 km upstream in 6 hours and 28 km downstream in 4 hours. What is the speed of the boat in still water?
- A) 4 km/h      B) 5.5 km/h  
C) 7 km/h      D) 11 km/h
28. Find the smallest number by which 3645 must be divided to obtain a perfect cube.
- A) 5    B) 9    C) 15    D) 45
29. The pie chart shows the expenses of a family. If the total monthly income is ₹36000, what is the amount spent on food? (Angle for Food =  $120^\circ$ , Rent =  $90^\circ$ , Education =  $60^\circ$ , Others =  $90^\circ$ )
- A) ₹10000      B) ₹12000  
C) ₹9000      D) ₹6000
30. Factorize completely:  $x^4 - 81$
- A)  $(x^2 - 9)(x^2 + 9)$   
B)  $(x - 3)^2(x + 3)^2$   
C)  $(x - 3)(x + 3)(x^2 + 9)$   
D)  $(x - 3)(x + 3)(x - 3i)(x + 3i)$
31. The present age of a father is three years more than three times the son's age. Three years hence, the father's age will be ten years more than twice the son's age. What is the father's present age?
- A) 30 years      B) 33 years  
C) 36 years      D) 40 years
32. In a parallelogram, two adjacent angles are  $(2x + 25)^\circ$  and  $(3x - 5)^\circ$ . What is the value of  $x$ ?
- A) 28    B) 32    C) 36    D) 42
33. A single discount equivalent to two successive discounts of 10% and 30% is:
- A) 40%    B) 35%    C) 37%    D) 20%
34. If 5 men or 7 women can earn ₹5250 per day, how much would 7 men and 13 women earn per day?
- A) ₹11600      B) ₹11700  
C) ₹16100      D) ₹17100
35. Find the value of  $x$  if  $(\frac{8}{3})^{(2x+1)} * (\frac{8}{3})^5 = (\frac{8}{3})^{(x+2)}$
- A) -4    B) -2    C) 2    D) 4