

**COMPETITIVE
MATHS
MODEL QUESTION
PAPER – I**

TOTAL QUESTIONS- 30

FULL MARKS- 30

1. $\frac{\log\sqrt{8}}{\log 8}$ is equal to:

A) $\frac{1}{\sqrt{8}}$

B) $\frac{1}{4}$

C) $\frac{1}{2}$

D) $\frac{1}{8}$

2. If $\log \frac{a}{b} + \log \frac{b}{a} = \log(a + b)$, then:

A) $a + b = 1$

B) $a - b = 1$

C) $a = b$

D) $a^2 - b^2 = 1$

3. The value of $\log_2(\log_5 625)$ is

A) 2

B) 5

C) 10

D) 15

4. Two cards are drawn at random from a pack of 52 cards. what is the probability that either both are black or both are queen?

A) $\frac{52}{221}$

B) $\frac{55}{190}$

C) $\frac{55}{221}$

D) $\frac{19}{221}$

5. If the arithmetic mean of seventy-five numbers is calculated, it is 35. if each number is increased by 5, then mean of new numbers is :

A) 30

B) 40

C) 50

D) 60

6. Two horses start trotting towards each other, one from A to B and another from B to A. They cross each other after one hour and the first horse reaches B, $\frac{5}{6}$ hour before the second horse reaches A. If the distance between A and B is 50 km. what is the speed of the slower horse?

- A) 30 km/h B) 15 km/h
 C) 25 km/h D) 20 km/h

7. The salaries of A, B, and C are in the ratio of 1 : 2 : 3. The salary of B and C together is Rs. 6000. By what percent is the salary of C more than that of A?

- A) 100 % B) 200%
 C) 300% D) 600%

8. Two dice are thrown simultaneously. What is the probability of getting two numbers whose product is even?

- A) $\frac{3}{4}$ B) $\frac{3}{8}$
 C) $\frac{5}{16}$ D) $\frac{2}{7}$

9. Find value of $\frac{\log\sqrt{27} + \log 8 + \log\sqrt{1000}}{\log 120}$

- A) $\frac{1}{2}$ B) $\frac{3}{2}$
 C) 2 D) $\frac{2}{3}$

10. If 20% of a = b, then b% of 20 is the same as :

- A) 4% of a B) 6% of a
 C) 8% of a D) 10% of a

11. A vendor bought toffees at 6 for a rupee. How many for a rupee must he sell to gain 20%?

- A) 3 B) 4
 D) 5 D) 6

12. A father said to his son, "I was as old as you are at the present at the time of your birth". If the father's age is 38 years now, the son's age five years back was:

- A) 14 years B) 19 years
 C) 33 years D) 38 years

13. If $\left(\frac{a}{b}\right)^{x-1} = \left(\frac{b}{a}\right)^{x-3}$, then the value of x is

- A) 1/2 B) 1
 C) 2 D) 7/2

14. 39 persons can repair a road in 12 days, working 5 hours a day. In how many days will 30 persons, working 6 hours a day, complete the work?

- A) 10 B) 13
 C) 14 D) 15

15. How much time will it take for an amount of Rs. 450 to yield Rs. 81 as interest at 4.5% per annum of simple interest?

- A) 3.5 years B) 4 years
 C) 4.5 years D) 5 years

16. The difference between a two-digit number and the number obtained by interchanging the positions of its digits is 36. What is the difference between the two digits of that number?

- A) 3 B) 4
 C) 9 D) Cannot be determined

17. A father said to his son, "I was as old as you are at the present at the time of your birth". If the father's age is 38 years now, the son's age five years back was:

- A) 14 years B) 19 years
 C) 33 years D) 38 years

18. What is the sum of two consecutive even numbers, the difference of whose squares is 84?

- A) 34 B) 38
 C) 42 D) 46

19. If $a = 0.1039$, then the value of $4a^2 - 4a + 1 + 3a$ is:

- A) 0.1039 B) 0.2078
 C) 1.1039 D) 2.1039

20. Suppose 7 students are staying in a hall in a hostel and they are allotted 7 beds. Among them, Parvin does not want a bed next to Anju because Anju snores. Then, in how many ways can you allot the beds?

- A) 2400 B) 6400
 C) 3600 D) 7200

21. If $a - b = 3$, $a^2 + b^2 = 29$, find the value of ab .

- A) 10 B) 12
 C) 15 D) 18

22. The price of commodity X increases by 40 paise every year, while the price of commodity Y increases by 15 paise every year. If in 2001, the price of commodity X was Rs. 4.20 and that of Y was Rs. 6.30, in which year commodity X will cost 40 paise more than the commodity?

- A) 2010 B) 2011
 C) 2012 D) 2013

23. Aman started a business investing Rs. 70,000. Rakhi joined him after six months with an amount of Rs. 1,05,000 and Sagar joined them with Rs. 1.4 lakhs after another six months. The amount of profit earned should be distributed in what ratio among Aman, Rakhi and Sagar respectively, 3 years after Aman started the business ?

- A) 11 : 13 : 15 B) 11 : 13 : 17
 C) 12 : 17 : 18 D) 12 : 15 : 16

24. The value of $\sqrt{10 + \sqrt{25 + \sqrt{108 + \sqrt{154 + \sqrt{225}}}}}$ is:

- A) 4 B) 6
 C) 8 D) 10

25. The total of 324 of 20 paise and 25 paise make a sum of Rs. 71. The no of 20 paise coins is :

- A) 50 B) 100
 C) 150 D) 200

26. Product of two co-prime numbers is 117. Their L.C.M should be

- A) 1 B) 117
 C) Equal to their H.C.F D) cannot be calculated

27. Consider the word ROTOR. Whichever way you read it, from left to right or from right to left, you get the same word. Such a word is known as palindrome. Find the maximum possible number of 5-letter palindromes.

- A) 17756 B) 17576
 C) 12657 D) 12666

28. Simplify the following equation.

$$\frac{19}{43} + \frac{1}{2 + \frac{1}{3 + \frac{1}{1 + \frac{1}{4}}}}$$

- A) 43/19 B) 1
 C) 38/19 D) None of these

29. $48\sqrt{?} + 32\sqrt{?} = 320$

- A) 4 B) 8
 C) 16 D) 32

30. Two pipes A and B can fill a tank in 15 minutes and 20 minutes respectively. Both the pipes are opened together but after 4 minutes, pipe A is turned off. What is the total time required to fill the tank?

- A) 10 min. 20 sec. B) 11 min. 45 sec.
 C) 12 min. 30 sec. D) 14 min. 40 sec.