N M A T

(Original questions from previous years' papers)

QUANTITATIVE

1. Three leaden spheres of diameters respectively 3 cm, 4 cm, 5 cm, are melted together and recast into a fourth sphere. Find the diameter of the fourth sphere.

   (A) 6 cm (B) $\sqrt{60}$ cm (C) 7 cm (D) 6 π cm

2. In the month of January, the police caught 4000 ticketless travellers In February, the number rose by 5 per cent. However, due to a constant vigil by the police and the Railway staff, the number was reduced by 5 per cent in March, and in April it was further reduced by 10 per cent. What was the total number of ticketless travellers caught in the month of April?

   (A) 4389 (B) 4820 (C) 4000 (D) 3591

3. A worker is paid X rupees for the first 8 hours of work each day. He is paid Y rupees per hour for each hour he works in excess of 8 hours on Monday, 11 hours on Tuesday, 9 hours on Wednesday, 10 hours on Thursday, and 9 hours on Friday. What is his average daily wage in rupees for a five–day week?

   (A) X + (7/5) Y (B) X + 2Y (C) 2X + Y (D) 5X + 7Y

4. If $\log_{10} 2 = x$, $\log_{10} 3 = y$, then $\log_{10} 45$ in terms of x and y is:

   (A) 2y (B) x (C) x + 2y (D) 2y + 1 – x

5. Solve: ax + y = 2, x + ay = 2a, where 'a' is a constant, not = $\pm$ 1.

   (A) (1, 1/a) (B) (a, 1)
   (C) (0, 2) (D) No real solution possible

6. In a trade, Sanjay invested Rs. 9,000. Five months later, Sudhakar joined him by Rs. 8,000. If they make a profit of Rs. 6,970 at the end of year, Sudhakar's share of profit is:

   (A) Rs. 1,997 (B) Rs. 2,190 (C) Rs. 2,470 (D) Rs. 2,380

7. A person reached his place 15 minutes late when he travels with 4/5th of his usual speed. What is the time taken when he travels with his usual speed?

   (A) 2 hr (B) 1 hr (C) 1 ½ hr (D) 2 ½ hr

8. If 15 men or 24 women or 36 boys can do a piece of work in 12 days working 8 hours a day, how many men must be associated with 12 women and 6 boys to do another piece of work 2 ¼ times as great in 30 days working 6 hours a day?

   (A) 15 (B) 18 (C) 12 (D) 8

9. A slab of ice 8 inches in length, 11 inches in breadth, and 2 inches thick was melted and solidified into the form of a rod of 8 inches diameter. The length of such a rod in inches, is nearest to

(A) 3.0 (B) 3.5 (C) 4.0 (D) 4.5

10. The rate of increase of the price of sugar is observed to be 2 per cent more than the inflation rate expressed in percentage. The price of sugar, on Jan, 1, 1994, is Rs. 20 per kg. The inflation rates for the years 1994 and 1995 are expected to be 8 per cent each. The expected price of sugar on Jan. 1, 1996 would be (in rupees)

(A) 23.60 (B) 24.00 (C) 24.20 (D) 24.60

11. A woman sells to the first customer half her stock and half an apple, to the second customer she sells half her remaining stock and half an apple, and so on to the third, and to a fourth customer. She finds that she has now 15 apples left. How many apples did she have before she started selling?

(A) 63 (B) 127 (C) 240 (D) None of these

12. The difference between the squares of two consecutive odd integers is always divisible by

(A) 8 (B) 7 (C) 6 (D) 3

13. Which of the following is the ratio between a number and the number obtained by adding one-fifth of that number to it?

(A) 6 : 5 (B) 5 : 6 (C) 5 : 4 (D) 4 : 5

14. Two cubes have their volumes in the ratio 1 : 27. Find the ratio of their surface areas.

(A) 1 : 27 (B) 1 : 3 (C) 1 : 9 (D) 9 : 1

15. 2.53×0.154 is the same as

(A) 253×0.00154 (B) 25.3×1.54 (C) 253×0.154 (D) 2.53×0.154

16. If the square root of 15 = 3.88, then the value of the square root of (5/3) is:

(A) 0.43 (B) 1.89 (C) 1.29 (D) None of these

17. Sushil planned to drive a distance of x km. After driving 120 km, Sushil stopped for petrol. What fractional part of the trip had Sushil covered when he stopped?

(A) $\frac{x}{120}$ (B) $\frac{x}{x+120}$ (C) $\frac{1}{x+120}$ (D) None of these

18. A mill worker's basic pay for a 40 hour week is Rs. 20. Overtime is paid for at 25% above the basic rate. In a certain week he worked overtime and his total wage was Rs. 25. He therefore worked for a total of:

(A) 40 hours (B) 42 hours (C) 48 hours (D) 50 hours

19. There are 361 doctors and nurses in a hospital. If the ratio of doctors to nurses is 8 to 11, how many nurses are there in the hospital?
(A) 152 (B) 209 (C) 57 (D) 171

20. Which of the following ratios is the largest?
(A) 7 : 15 (B) 15 : 23 (C) 17 : 25 (D) 21 : 29

21. On an 800 mile trip car W travelled half the distance at 80 miles per hour and the other half at 100 miles per hour. What was the average speed of car W?
(A) 18.00 (B) 180.00 (C) 90.00 (D) 88 8/9

22. Rs. 180 contained in a box consists of one rupee, 50 paise and 25 paise coins in the proportion of 2 : 3 : 4. How many 50 paise coins are there in the box?
(A) 120 (B) 60 (C) 40 (D) 240

23. 243 has been divided into three parts such that half of the first part, one–third of the second part and one–fourth of the third part are equal. The largest part is:
(A) 72 (B) 81 (C) 54 (D) 108

24. When a certain number is multiplied by 13, the product consists entirely of fives. The smallest such number is:
(A) 41625 (B) 42515 (C) 42735 (D) 42135

25. How many three digit numbers are divisible by 6?
(A) 102 (B) 150 (C) 151 (D) 966

ANSWERS

1. (A)	2. (D)	3. (A)	4. (D)	5. (C)	6. (D)	7. (B)	8. (D)
9. (B)	10. (C)	11. (D)	12. (A)	13. (B)	14. (C)	15. (A)	16. (C)
17. (D)	18. (C)	19. (B)	20. (D)	21. (D)	22. (A)	23. (D)	24. (C)
25. (B)							