

## FIRST SEMESTER UG DEGREE EXAMINATION, NOVEMBER 2025

MAT1FM105(2)

## Mathematics for Competitive Examinations - Part I

[ 2025 Admissions onwards ]

Time: 1.5 Hours

Maximum Marks: 50

## Section A

[Answer All. Each question carries 1 marks]

1. What is the **place value** of 8 in 7,834?
  - a) 8
  - b) 80
  - c) 800
  - d) 8000
  
2. A number is divisible by **11** if
  - a) The sum of digits is divisible by 11
  - b) The difference between the sum of digits in odd and even places is divisible by 11
  - c) It is an even number
  - d) The number ends with 11
  
3. Find the next number: 1, 1, 2, 3, 5, 8, 13, ?
  - a) 18
  - b) 20
  - c) 21
  - d) 24
  
4. What number will come next: 3, 6, 18, 72, 360, ?
  - a) 720
  - b) 1080
  - c) 2160
  - d) 1440
  
5. Find the wrong number in the series 8, 12, 24, 46, 72, 108, 52
  - a) 12
  - b) 24
  - c) 46
  - d) 72
  
6. What comes next: 2, 5, 11, 23, 47, ?
  - a) 83
  - b) 89
  - c) 95
  - d) 101
  
7. What comes next: 1, 2, 4, 7, 11, 16, ?
  - a) 21
  - b) 22
  - c) 23
  - d) 24

**699707** Which fraction is between  $\frac{1}{3}$  and  $\frac{3}{4}$ ?

9. Which of these fractions is closest to  $\frac{1}{2}$ ?

a)  $\frac{1}{8}$       b)  $\frac{2}{3}$       c)  $\frac{1}{2}$       d)  $\frac{4}{5}$

10.  $\frac{1}{8}$  part of a pencil is black and  $\frac{1}{2}$  part of the remaining is white. If the remaining part is blue and length of this blue part is  $3\frac{1}{2}$  cm, then find the length of the pencil.

a) 6 cm      b) 7 cm      c) 8 cm      d) 9 cm

11. Simplify:  $\frac{12}{18} + \frac{2}{9}$

a)  $\frac{14}{27}$       b)  $\frac{8}{9}$       c)  $\frac{5}{6}$       d)  $\frac{7}{9}$

12. A recipe requires  $\frac{3}{4}$  cup of flour. If you want to make  $\frac{2}{3}$  of the recipe, how much flour do you need?

a)  $\frac{1}{2}$  cup      b)  $\frac{2}{3}$  cup      c)  $\frac{5}{12}$  cup      d)  $\frac{7}{12}$  cup

13. Three bells ring at intervals of 6, 8, and 12 minutes respectively. If they rang together at 8:00 AM, when will they ring together next?

a) 8:24 AM      b) 8:36 AM      c) 8:48 AM      d) 9:00 AM

14. What is the greatest number that divides 152, 200, and 248 leaving the same remainder 8 in each case?

a) 16      b) 18      c) 24      d) 28

15. The product of two numbers is 2160 and their HCF is 12. What is their LCM?

a) 160      b) 170      c) 180      d) 190

16. The ratio of two numbers is 4:5 and their HCF is 13. What is their LCM?

a) 260      b) 273      c) 286      d) 299

17. Find the smallest number which when decreased by 9 is exactly divisible by 21, 28, and 35.

a) 419      b) 429      c) 439      d) 449

18. What is the value of  $\sqrt{324} + \sqrt{256}$ ?

a) 32      b) 34      c) 36      d) 38

19. Simplify:  $\sqrt{50} + \sqrt{18}$

a)  $5\sqrt{2}$       b)  $6\sqrt{2}$       c)  $7\sqrt{2}$       d)  $8\sqrt{2}$

20. What is the value of  $\sqrt[3]{729} - \sqrt[3]{512}$ ?

a) 1      b) 2      c) 3      d) 4

21. Simplify:  $\sqrt[3]{54} + \sqrt[3]{128}$

a)  $5\sqrt[3]{2}$       b)  $6\sqrt[3]{2}$       c)  $7\sqrt[3]{2}$       d)  $8\sqrt[3]{2}$

22. What is  $\sqrt[3]{0.216} \div \sqrt[3]{0.008}$ ?

a) 3      b) 6      c) 9      d) 12

23. Simplify:  $2^3 \times 3^2 - 4^2 \div 2$

a) 64      b) 68      c) 72      d) 76

24. Mr. Sahni employed a worker for a certain work to be done in some days. He pays Rs. 20 to the worker for each working day and the payment is reduced by Rs.3 for each non-working day of the worker. For how many days the worker does remain absent from work if at the end of 120 days, he gets Rs.560 as total remuneration?

a) 80      b) 60      c) 70      d) 40

25. Simplify:  $\frac{3}{5}$  of 45 +  $\frac{2}{3}$  of 27

a) 39      b) 41      c) 43      d) 45

26. The average of 11 results is 50. If the average of first 6 results is 49 and that of last 6 is 52, what is the 6th result?

a) 50      b) 52      c) 54      d) 56

27. The average age of a family of 6 members is 22 years. If the age of the youngest member is 7 years, what was the average age of the family just before the youngest member was born?

a) 15 years      b) 16 years      c) 17 years      d) 18 years

28. The average of 25 observations is 36. It was later found that observation 48 was wrongly taken as 84. What is the correct average?

a) 34.56      b) 35.00      c) 35.56      d) 36.56

29. The ratio of ages of a father and son is 7:2. After 5 years, the ratio will be 8:3. What is the current age of the father?

a) 35 years      b) 40 years      c) 45 years      d) 50 years

30. Two numbers are in ratio 4:7. If their sum is 99, find the smaller number.

a) 36      b) 42      c) 54      d) 63

31. If 20 marbles are divided between two children in the ratio 3:2, how many marbles does the first child get?

a) 8      b) 10      c) 12      d) 15

32. If 12 workers can build a wall in 9 days, how many days will 18 workers take?

a) 4 days      b) 5 days      c) 6 days      d) 7 days

33. If 12 pumps can empty a reservoir in 20 hours working 6 hours daily, how many hours daily must 15 pumps work to empty the same reservoir in 10 days?

a) 8.4 hours      b) 9.6 hours      c) 10.2 hours      d) 12 hours

34. If 20% of A = 30% of B = 40% of C, then A:B:C is:

a) 2:3:4      b) 3:4:5      c) 6:4:3      d) 4:3:2

35. A man is 24 years older than his son. In 2 years, his age will be twice the age of his son. What is the present age of son?

a) 20 years      b) 21 years      c) 22 years      d) 23 years

36. The average age of a family of 5 members is 20 years. If the age of the youngest member is 8 years, what was the average age of the family just before the birth of the youngest member?

**699707** a) 15 years      b) 16 years      c) 17 years      d) 18 years

37. A student scored 40% marks and failed by 20 marks. If he had scored 55% marks, he would have got 10 marks more than the passing marks. What are the maximum marks?

a) 200      b) 300      c) 400      d) 500

38. If 40% of a number is 80, what is the number?

a) 120      b) 160      c) 200      d) 240

39. A product is sold for Rs.84 at a loss of 16%. What was the Cost Price?

a) Rs.95      b) Rs.98      c) Rs.100      d) Rs.105

40. A man sells two watches for Rs.99 each. On one he gains 10% and on the other he loses 10%. What is his overall profit or loss?

a) 1% loss      b) 1% profit      c) No profit no loss      d) 2% loss

41. By selling an article for Rs.720, a man loses 10%. At what price should he sell it to gain 20%?

a) Rs.860      b) Rs.900      c) Rs.960      d) Rs.1000

42. A trader marks his goods 30% above cost price but allows a discount of 20%. If he further allows a cash discount of 5% on the discounted price, what is his overall profit percentage?

a) 1.2%      b) 1.5%      c) 1.8%      d) 2.0%

item A dress marked Rs.75 is sold for Rs.60. What is the discount percentage?

a) 18%      b) 20%      c) 22%      d) 25%

43. If 12% discount is given on Rs.250, what is the selling price?

a) Rs.215      b) Rs.218      c) Rs.220      d) Rs.225

44. A shopkeeper allows two successive discounts of 15% and 10%. If he wants to give a single discount that is 2% more than the equivalent single discount, what should be the discount percentage?

a) 25%      b) 26%      c) 27%      d) 28%

45. At what rate percent will Rs.300 yield Rs.45 as simple interest in 3 years?

a) 4%

b) 5%

c) 6%

d) 7%

46. Find the simple interest on Rs.500 at 10% per annum for 146 days.

a) Rs.20

b) Rs.22

c) Rs.24

d) Rs.18

47. A sum was put at simple interest at a certain rate for 2 years. Had it been put at 3% higher rate, it would have fetched Rs.72 more. Find the sum.

a) Rs.1000

b) Rs.1200

c) Rs.1400

d) Rs.1600

48. Find the amount on Rs.1200 at 5% per annum compounded annually for 2 years.

a) Rs.1320

b) Rs.1323

c) Rs.1325

d) Rs.1328

49. The compound interest on Rs.1500 at 4% per annum for 2 years is:

a) Rs.120

b) Rs.122.40

c) Rs.124.80

d) Rs.126.20

50. What is the compound interest on Rs.600 at 10% for 1 year?

a) Rs.50

b) Rs.55

c) Rs.60

d) Rs.65