

**1/MDC-118 Syllabus-2023**

**2 0 2 5**

( Nov-Dec )

**FYUP : 1st Semester Examination**

**MULTIDISCIPLINARY COURSE**

**( Mathematics in Daily Life )**

**MDC-118**

*Marks : 56*

*Time : 2½ hours*

*The figures in the margin indicate full marks  
for the questions*

**SECTION—A**

**( Short answer-type questions )**

Answer any *four* of the following questions :  $4 \times 4 = 16$

1. If two numbers are in the ratio of 13 : 7, and their HCF is 11, then find the numbers.
2. Evaluate  $16\frac{2}{3}\%$  of 600  $- 33\frac{1}{3}\%$  of 180.

3. Find the effective rate of interest equivalent to the nominal rate of 12% compounded quarterly.
4. A sum at simple interest of  $12\frac{1}{2}\%$  per annum amounts to ₹ 7,602.50 after 6 years. Find the sum.
5. What was the day of the week on 15th August, 1947?
6. What is the probability of getting a total of more than 8 in a single throw of 2 dice?

## SECTION—B

( Long answer-type questions )

Answer any four of the following questions :

$$10 \times 4 = 40$$

7. (a) In what ratio must water be mixed with milk to gain 20% by selling the mixture at cost price? 6
- (b) If  $\sqrt{54 \cdot 76} + \sqrt{7 + x^2} = 11.4$ , then find the value of  $x$ . 4

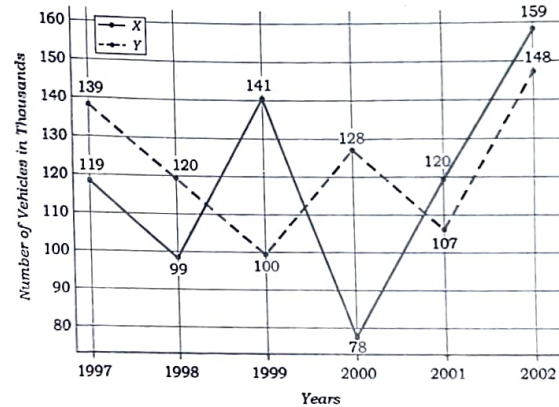
8. (a) The length of a rectangular plot is 60% more than its breadth. If the difference between the length and breadth of that plot is 24 m, then what is the area of the plot? 5
- (b) One year ago, the ratio of X's age to Y's age was 6 : 5. Four years hence, the ratio would become 11 : 10. What is the present age of Y? 5
9. (a) Find the future value of payments ₹ 15,000 made at the end of each quarter for 2 years at 12% per annum compounded quarterly. 5
- (b) The life of a machine is estimated to be 10 years, and it costs ₹ 1,00,000. If the depreciation is calculated on the reducing balance system at 10% per annum, then find the scrap value of the machine at the end of its life. 5
10. (a) If the simple interest on a sum of money at 5% per annum for 3 years is ₹ 1,500, then find the compound interest on the same sum for the same period at the same rate. 5
- (b) A person takes a loan of ₹ 2,00,000 from a bank, to be repaid in 3 years through equated monthly installments (EMIs). If the annual rate of interest is 10%, then find the EMI. 5

11. (a) The following table gives the percentage of marks obtained by 4 students in 4 different subjects in an examination. Study the table and answer the following questions based on it. The numbers in the brackets give the maximum marks in each subject :

Subject → Student ↓	English (120)	Mathematics (150)	Physics (140)	Chemistry (120)
A	90	50	75	80
B	85	70	60	80
C	60	40	50	65
D	80	90	95	90

- (i) Find the aggregate of marks obtained by student A. 1
- (ii) Find the overall percentage of student D. 2
- (iii) Find the average marks obtained by all the four students in Mathematics. 2
- (b) A bag contains 6 red and 4 blue balls. Two balls are drawn at random. Find the probability that they are of the same colour. 5

12. (a) Study the following line-graph which depicts the number of vehicles manufactured by two companies X and Y from 1997 to 2002, and answer the following questions based on it :



- (i) Find the average number of vehicles manufactured by company X over the given period (rounded to the nearest integer). 1
- (ii) Find the difference between the total productions of the two companies in the given years. 2
- (iii) In which year the difference between the productions of the two companies is maximum? 2