

1/MDC-118 Syllabus-2023

2024

(December)

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 $*$ is an operation such that $x * y = 3x + 2y$,
find the value of $2 * 3 + 3 * 4$.
2. The difference of two numbers is 11 and
one-fifth of their sum is 9. Find the numbers.

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(Turn Over)

(2)

3. Find the simple interest on ₹3,000 at 8% p.a. for the period from 15th August, 2024 to 10th October, 2024.
4. Find the compound interest and amount on ₹40,000 at 5% p.a. for 3 years.
5. A card is drawn from a pack of 52 cards. Prove that the probability of getting a Queen of club or a King of heart is $\frac{1}{26}$.
6. What are classification and tabulation of data? Explain briefly with examples.

SECTION—B

(Descriptive Answer-type Questions)

Answer any *four* of the following questions :

$$10 \times 4 = 40$$

7. (a) A man's present age in two-fifths of the age of his mother. After 8 years, he will be half of the age of his mother. How old is the mother at present?

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(Continued)

- (b) What must be added to each term of the ratio $7 : 11$ so as to make it equal to $3 : 4$? 2
- (c) How many minutes does Aditya take to cover a distance of 400 m, if he runs at a speed of 20 km/hr? 4
8. (a) In what ratio must rice at ₹9.30 per kg be mixed with rice at ₹10.80 per kg so that the mixture be worth ₹10 per kg? 4
- (b) What value will replace the question mark in the following equation? 2
- $140\% \text{ of } 56 + 56\% \text{ of } 140 = ?$
- (c) If the side of a square is increased by 8 cm, its area increases by 120 sq. cm. Find the side of the square. 4
9. (a) A certain sum compounded annually amounts to ₹2,420 in 2 years and ₹2,662 in 3 years. Find the principal and rate of interest. 5

- (b) Find the present value of an annuity of ₹ 1,000 payable for 15 years, the rate of compound interest being 5%.

[Given $(1.05)^{-15} = 0.4808$]

5

10. (a) What annual instalment to a sinking fund must be invested at $4\frac{1}{2}\%$ p.a. compound interest so that it may redeem a loan of ₹ 20,000 at the end of 15 years?

[Given $(1.045)^{15} = 1.934$]

6

- (b) At what rate percent p.a. will a sum of money double itself in 30 years?

4

11. (a) Find the angle between the hour hand and the minute hand of a clock when the time is 3.25.

5

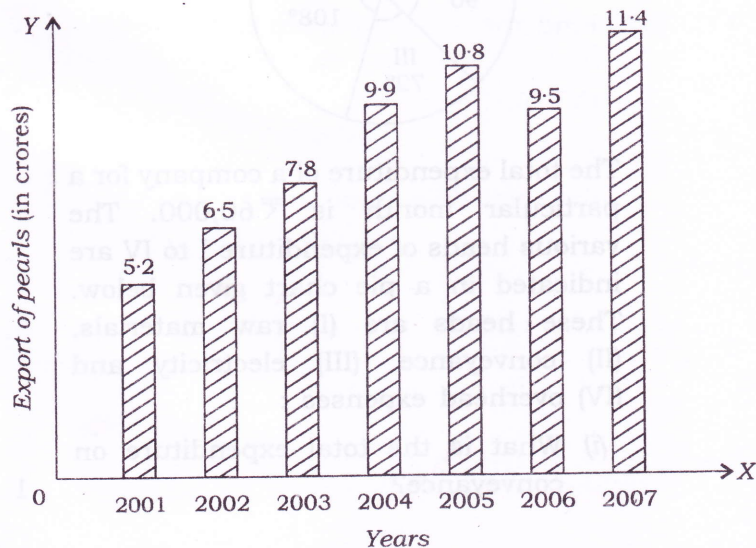
- (b) Study the table carefully and answer the questions that follow :

The given data is regarding the number of desktops and laptops, and sold by four different shops A, B, C and D :

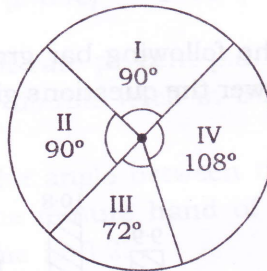
<i>Shops</i>	<i>No. of laptops sold</i>	<i>No. of desktops sold</i>
A	350	200
B	390	520
C	440	550
D	550	660

- (i) What is the average number of desktops sold by shops A, B, C and D? 1
- (ii) What is the total number of laptops sold by shops A, B, C and D together? 2
- (iii) What is the respective ratio between total number of laptops sold by shops C and D together and the number of desktops sold by shop D? 2

12. (a) Study the following bar graph carefully and answer the questions given below :



- (i) What is the average export of pearls for the given period? 1
- (ii) In which year was there maximum percentage increase in export of pearls to that in the previous year? 2
- (iii) What was the percentage increase in export from 2006 to 2007? 2
- (b) Study the pie chart and answer the following questions :



The total expenditure of a company for a particular month is ₹ 60,000. The various heads of expenditure I to IV are indicated in a pie chart given below. These heads are (I) raw materials, (II) conveyance, (III) electricity and (IV) overhead expenses :

- (i) What is the total expenditure on conveyance? 1

(7)

(ii) What percentage of total expenditure is on electricity? 2

(iii) What percentage of total expenditure is on raw materials? 2
