2024

(April)

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)

Answer any *four* questions : 4×4=16

1. The perimeter of the base of a tent in the shape of a cone is 44 cm. If the height of the tent is 24 cm, then find the curved surface area of the tent.

2. Find the greatest possible length which can be used to measure exactly the lengths 4 m 95 cm, 9 m and 16 m 65 cm.

3. A sum at simple interest of $13\frac{1}{2}\%$ per annum amounts to ₹ 2,502·50 after 4 years. Find the sum.

4. At what rate percent per annum of compound interest will ₹ 1,600 amount to ₹ 1,852·20 in 3 years?

5. A coin is rolled twice. Find the sample space and the probability of getting two heads.

6. Construct a discrete frequency distribution table of the following daily highest temperature readings (in degree Celsius) in a month :

15, 11, 15, 9, 19, 15, 15, 16, 16, 11, 17, 25, 24, 15, 5, 15, 17, 15, 15, 12, 19, 13, 10, 12, 12, 25, 17, 15, 18, 17, 18

(Continued)

SECTION—B

(Descriptive Answer-type)

Answer any *four* questions : 10×4=40

7. *(a)* At present, Suresh's age is twice the age of his daughter. After 6 years from now, the ratio of the ages of Suresh and his daughter will be 23 : 13. What is the present age of Suresh? 4

(b) Which of the following are prime numbers? 2+2=4

(i) 241

(ii) 337

(c) What value will replace the question mark in the following equation? 2

$$4\frac{1}{2}+3\frac{1}{6}+?+2\frac{1}{3}=13\frac{2}{3}$$

(Turn Over)

8. *(a)* If $z = \frac{x^2}{y}$ and x, y are both increased in value by 10%, then find the percentage change in the value of z. 3

(b) Two bikers A and B start and ride at 75 km/hr and 60 km/hr respectively towards each other. They meet after 20 minutes. How far (in km) were they from each other when they started? 3

(c) Four horses are tied on the four corners of a square field of length 14 m so that each horse can just touch the other two horses. They were able to graze in the area accessible to them for 11 days. For how many days is the ungrazed area sufficient for them? 4

9. *(a)* Define the following : 2×3=6

(i) Ordinary annuity

(ii) Annuity due

(iii) Perpetual annuity

(b) A person borrows ₹ 1,00,000 from a bank and agrees to repay it with compound interest at 10% in 5 equal annual payments, the first payment to be made at the end of the year. What would each installment be? 4

10. *(a)* The difference between simple and compound interests on a sum for 3 years at 5% per annum is ₹ 76·25. Find the sum. 4

(b) Find the present value of a sequence of quarterly payments of ₹ 3,000 made at the beginning of each quarter for 2 years, the rate of interest being 8% per annum. 6

11. *(a)* A frequency table of marks obtained by students in English is given below :

Marks	*Number of students*
0–10	3
10–20	6
20–30	12
30–40	7
40–50	2

Find *(i)* relative frequency of the group 10–20 and *(ii)* cumulative frequency of the group 30–40. 3+3=6

(b) What was the day of the week on 16th July, 1776? 4

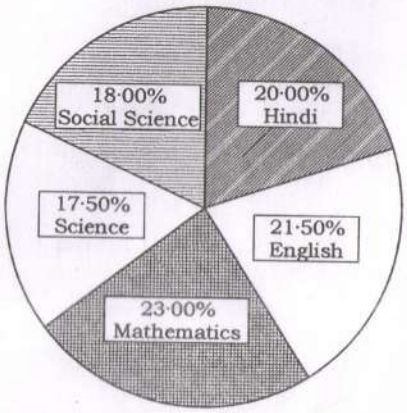
12. *(a)* Draw a simple bar diagram of the procurement of rice (in tons) in an Indian State from the following data : 2

Year	2011	2012	2013
Rice (in tons)	5500	6700	7100

Year	2014	2015	2016
Rice (in tons)	7500	6000	8500

(Continued)

(b) Given below is a pie chart of marks scored by student in an examination :



If the total marks scored are 400, then answer the following : 2+3+3=8

(i) What marks are scored in Mathematics?

(ii) What is the difference of marks scored in Science and English?

(iii) Calculate the central angle for Hindi.

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