2024/FYUG/EVEN/SEM/
MATSEC-151T/129

FYUG Even Semester Exam., 2024

MATHEMATICS

(2nd Semester)

Course No. : MATSEC-151T

(Mathematical Programming in C)

Full Marks : 50
Pass Marks : 20

Time : 2 hours

The figures in the margin indicate full marks for the questions

SECTION—A

Answer any *fifteen* of the following questions : 1×15=15

1. What is the C character set?

2. What are keywords in C?

3. Name three classes of data types in C.

4. Write the general format of scanf function.

5. What are logical operators in C?

6. What is the value (true or false) of the following expression?

$$5+5 == 10 \;\&\&\; 2+3 > 5$$

7. Write the C expression for $\sqrt{b^2 - 4ac} > 0$.

8. How can you change the order of evaluation of an arithmetic expression in C?

9. What is meant by decision-making in C?

10. Write the general syntax of simple IF statement.

11. What is an exit-controlled loop?

12. What is the use of break statement?

13. What are library functions?

14. What is function definition?

15. What are void functions?

16. What are global variables?

17. What is an array?

18. Write the general syntax of declaring a one-dimensional array.

19. What is the first subscript of an array in C?

20. Write True or False :

An array can have elements of different data types.

SECTION—B

Answer any *five* of the following questions : 2×5=10

21. Write the rules for naming identifiers in C.

22. Write the C expression for

$$x^2 + 3x - \sin(x^3 + 2)$$

23. Explain the difference between ++i and i++.

24. Describe the rules of precedence of arithmetic operators.

25. Write a C program to check whether a number is odd or even.

26. Explain the GOTO statement.

27. What is function prototype declaration?

28. Explain the process of a function call.

29. Describe the ways of initializing a two-dimensional array.

30. Describe the run-time initialization of an array with an illustration.

SECTION—C

Answer any *five* of the following questions : 5×5=25

31. What are constants in C? Define and describe each type of constants in C. Give examples of each type. Which constants are used for the following output?

    New line, Horizontal tab, Vertical tab

32. Describe in detail the primary data types in C.

33. *(a)* Write a C program to compute the area of a rectangle from user-defined inputs of length and breadth. 2

    (b) Write a C program to convert temperature in Centigrade to Fahrenheit and Kelvin scales. 3

34. *(a)* Write a C program that takes number of days as input and displays it in years, months and days format. For example, 320 days is 0 years 10 months and 20 days. 3

    (b) Describe all the relational operators in C. 2

35. *(a)* Write a C program to find the sum of the first n natural numbers using a while loop. 3

    (b) Explain the difference between an exit controlled loop and an entry controlled loop. 2

36. *(a)* Explain the switch statement. Illustrate with an example. 3

    (b) Explain the difference between break and continue statements. 2

37. Write a C program to calculate the factorial of a number using a recursive function.

38. Explain two ways of passing arguments to functions. Illustrate the difference between them.

39. Write a program to enter an array and display it and also to find the sum of its elements.

40. Write a program to enter a 2×3 matrix and display its transpose.

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