

U.G. 3rd Semester Examination - 2024**COMPUTER SCIENCE****[HONOURS]****Generic Elective Course (GE)****Course Code : COM.SC-H-GE-L-101****(Computer Fundamentals & Programming using C)****[CBCS]****Full Marks : 40****Time : 2½ Hours***The figures in the right-hand margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.***GROUP-A**

1. Answer any five questions from the following:

 $2 \times 5 = 10$

- a) What is array of structure? Give an example.
- b) What is the difference between functions `abs()` and `fabs()`?
- c) What are logical errors and how do they differ from syntax errors?
- d) State the purpose of the '`getchar()`' function.
- e) How do you pass an array to a function?

[Turn over]

- f) What is the difference between call by value and call by reference?
- g) What is a nested loop?
- h) What is syntax error?

GROUP-B

2. Answer any two questions: $5 \times 2 = 10$
- a) Explain various types of loops in C with example of each type. 5
 - b) Discuss the concept of relational and logical operators available in C. How are they used for decision-making? $3 + 2 = 5$
 - c) Explain the difference between call by value and call by reference in C functions. Provide examples. 5
 - d) Write a program to print out all Armstrong numbers between 1 and 500. [Hints: If sum of cubes of each digit of the number is equal to the number itself, then the number is called an Armstrong number. For example, $153 = (1 \times 1 \times 1) + (5 \times 5 \times 5) + (3 \times 3 \times 3)$].

GROUP-C

- Answer any two questions: $10 \times 2 = 20$
- 3. a) Write a program to pick up the largest number from a given 5×5 matrix.
 - b) Discuss the concept of dynamic memory allocation in C using functions like malloc() and free(). Provide examples. 5+5
 - 4. a) Define structures in C and illustrate their usage with examples.
 - b) Discuss the concept of unions and how they differ from structures in C. 5+5
 - 5. a) What is a recursive function?
 - b) What is command line argument?
 - c) A positive integer is entered through the keyboard. Write a C program to find the binary equivalent of this number using recursion or iteration. $2 + 2 + 6 = 10$
 - 6. Write short note on any two of the following: $5 \times 2 = 10$
 - a) Storage types
 - b) Library Function
 - c) Dynamic Memory Allocation in C.