

SUBJECT: PROGRAMMING IN C AND DATA

STRUCTURE

Part-I

Q1 Answer the following questions: (2 x 10)

- a) What is a global variable and a local variable? Give an example.
- b) Define a symbolic constant. Give an example. Why is it used?
- c) What are getchar () and putchar () functions and why they are used?
- d) List the different types of errors that occur during the execution of a C program.
- e) Differentiate between postfix and prefix operators with an example.
- f) Distinguish between compiler and interpreter.
- g) Differentiate between while and do-while loops.
- h) Distinguish between homogeneous and heterogeneous data structures.
- i) Explain pointer to function with an example.
- j) Difference between a binary tree and a binary search tree with an example.

Part-II

Q2 Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve) (6 x 8)

- a) Difference between Linear Search and Binary Search. Write the pseudocode to implement binary search. Search the value "14" from the following sequence of numbers: 2, 5, 10, 14, 15, 30, 38
- b) What is dynamic memory allocation? Write and explain the different dynamic memory allocation functions in C.
- c) Write a program to find the area of a rectangle using call-by-reference.
- d) Write a program to find whether a number is PALINDROME or not.
- e) Write a C function "isprime(num)" that accepts an integer argument and returns 1 if the argument is prime; a 0, otherwise. Write a C program that invokes this function to generate the prime numbers between a given ranges
- f) Explain what is an algorithm and what is a flow-chart? How are they used as a problemsolving tool?

Give an example to justify your answer.

g) Write a C program to copy the contents from one string to another without using the string functions.

h) Write a program to read 20 unsorted numbers to an array and pass the address of this array to a function to sort the numbers in ascending order using bubble sort technique.

i) Explain array of pointers and pointer to array with an example from each.

j) Can a function return multiple values? Justify with an example.

k) Differentiate between “break” and “continue” statements with an example.

l) Construct the binary tree from the given sequence: Pre-order: A B D E C F In-Order: D B E A F C

Part-III

Only Long Answer Type Questions (Answer Any Two out of Four)

Q3 a) Explain about array of structures and structure within a structure with an example. (8+8)

b) Write a C program to maintain a record of 10 players of Indian Cricket team. Print the scores of each player in 5 matches given the name of each player.

Q4 a) Explain the two-way selection (if, if-else, nested if-else) in C language. (8+8)

b) Write a C program to read a year as input and find whether it is a leap year or not

Q5 a) Explain what is a recursive function along with its properties. (10+6)

b) Write a C program to print the Fibonacci sequence of 10 numbers using recursion.

Q6 a) Differentiate between an array and a linked-list. (10+6)

b) Write an algorithm to create a single linked-list of 5 nodes. Insert the elements and display them.