POKHARA UNIVERSITY

Level: Bachelor | Semester: Fall | Year : 2022
Programme: BE | Full Marks: 100
Course: Programming in C (1st New) | Pass Marks: 45
Time : 3hrs.

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Attempt all the questions.

1. a) What is software? Explain various types of software in brief. 7
   b) Write an algorithm and draw a flowchart to check whether a number given by the user is divisible by 2 and 3. 8

2. a) Why the C language is called a middle–level language? What are the benefits of C being a middle-level language? Explain in Detail. 7
   b) What are the different branching statements in C? Create a menu-driven program having the following options: 8
      i. Sum of three numbers.
      ii. Sum of squares of those three numbers.
      iii. Mean of those three numbers.

3. a) How does a for-loop work? Explain in brief. Also write a program to print the following series up to four terms: 1, 4, 9, 16, … 7
   b) Why do you need arrays? Write a program to read a matrix of order m*n and print its transpose matrix. 8

4. a) What are the advantages of using a function? Write a program to find the area of a circle using a function that takes radius of a circle as an argument and returns the area to the calling function. 8
   b) What are pointer variables? Write a program to find the sum of elements of an integer array using pointer (not the index of the array). 7

OR

Explain about the different types of dynamic memory allocation techniques used in C.

5. a) Define a recursive function. Write a program to find the sum of numbers from 1 to 50 using recursive function. 8

OR

Write a program to check whether the number is prime or not using user defined function.

b) What are character arrays in C? Write a program to print the following pattern. 7

ENGINEER
ENGINEE
ENGINE
ENGIN
ENGI
ENG
EN
E

6. a) Create a nested structure for the following data. 8

Emp_id	Emp_name	Department	Address	Date of birth
				mm | dd | yyyy

Write a program to initialize details for 10 employees and display the details of employees from "POKHARA".

b) What are the different file opening modes? Write a program to read name and marks of n number of students and store them in a file. 7

7. Write short notes on: **(Any two)** 2×5

a) Formatted input/ output functions
b) Storage classes
c) Union

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1. a) What is a programming language? Explain all the generations of programming language. 7

   b) Explain importance of algorithm and flowchart. Draw a flowchart to check if given year is leap year or not. 8

2. a) What are keywords? Explain types of operators based on number of operands with example program. 7

   b) Electricity board charges according to following rules. 8

   For first 100 units----------> Rs 100 (minimum charge)
   For next 50 units ----------> Rs 8.5 per unit
   For next 100 units --------- > Rs 9.5 per unit
   For beyond 250 units ------> Rs 10.5 per unit

   Additional charge:13% tax and Rs 100 for maintenance.
   Write a program to input total units consumed and display total charge.

3. a) What is control statement? Explain break, continue and goto control statements with example program. 7

   OR

   Explain for loop. WAP to convert decimal numbers to binary bits.

   b) What is string? Explain any 7 predefined string handing functions with example. 8

4. a) Write a program to input n elements in a 1D array and check is a given number is present in the array or not. If present, display the position of the number in array. 7

   b) Define function with syntax and mention its advantages in POP. Explain different storage classes in C programming. 8

5. a) What is recursive function? Write a program to find power of given number using recursion. 7

b) What is dynamic memory allocation? Explain functions used in dynamic memory allocation with example. 8

6. a) Create structure named Student. Student has attributes name, address, date of birth and marks in percentage. Input the records for 'n' students and display information of the students who have scored above 75 percentage. 7

b) Why is file handling necessary in C programming? Write a program to input name, address, faculty, program, and GPA (in maximum 4.0) of 500 students and store them in 'RESULT.DAT' data file and display the records of those students whose faculty is 'Engineering and GPA >3.5'. 8

OR

Write a program to create a structure Teacher with attributes name, address, faculty and salary. Input records of 50 Teachers and store them in "Teacher.txt" file and display the records of teachers whose address is "Gorkha"

7. Write short notes on: **(Any two)** 2×5

a) Data types

b) Call by reference using pointer

c) self-referential structure

POKHARA UNIVERSITY

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Programme: BE | Full Marks: 100
Course: Programming in C (New) | Pass Marks: 45
Time : 3 hrs.

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The figures in the margin indicate full marks.

Attempt all the questions.

1.	a)	Why is C called structured programming language? Which programming language do you prefer to develop a system software and application software? Explain with reasons.	7
	b)	Define an algorithm. Draw a flowchart to find the factorial of a given number.	8
2.	a)	What are formatted input/output functions? Explain with examples.	7
	b)	Define datatypes. Explain basic data types with examples.	8
3.	a)	Explain any two conditional statements in detail with syntax and flowchart.	8
		OR	
		Write a program to find the n^{th} term of a Fibonacci series 0, 1, 1, 2, 3, 5, … .	
	b)	Write a program that prompts the user to enter n numbers from the keyboard, find the sum of even numbers and display the sum.	7
4.	a)	What are the advantages of using array in programming? Explain different ways to initialize one dimensional array with examples.	8
		OR	
		Write a program to find the product of two m×n and n×m matrices and display the resulted matrix.	
	b)	Explain Formal arguments and Actual arguments with an example program.	7
5.	a)	Using user defined function write a program to input n numbers in an one dimensional array and find the average of the numbers.	7
	b)	What do you understand by pointer? Explain pointer arithmetic in brief.	8

6. a) Create a structure with the following data fields: 7

Emp_id	Name	Address	Salary	DOB		
				mm	dd	yy

Input records of 100 employee and display the record of those employee whose address is "Kathmandu".

b) Why do we need file pointer? Explain different file opening modes. 8

7. Write short notes on: **(Any two)** 2×5

a) Storage Class

b) Recursive function

c) malloc( ), calloc( ) and free()