

Roll No. : .....

Total Pages : 3

**300207**

**May, 2019**

**B.Tech. II SEMESTER**

**Programming for Problem Solving (ESC-103)**

Time : 3 Hours]

[Max. Marks : 75

*Instructions :*

1. *It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.*
2. *Answer any four questions from Part-B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

**PART-A**

1. (a) Distinguish between Program and Algorithm. (1.5)
- (b) List the logical operators used in C. (1.5)
- (c) How iteration is different from recursion? (1.5)
- (d) What are primitive and non-primitive data types? (1.5)
- (e) Write a program to check if number is even or odd. (1.5)

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- (f) How a switch statement is used, illustrate with example ? (1.5)
- (g) What is the use of getchar and putchar? (1.5)
- (h) Illustrate with example, how pointers variables are declared and initialized? (1.5)
- (i) What is the complexity of Insertion and Selection sort? (1.5)
- (j) List out any four file handling functions. (1.5)

### **PART-B**

- 2.
  - (a) Design an algorithm as well as flowchart for finding out largest number out of three given numbers. (5)
  - (b) What is a data type? Explain different data types in detail with examples. (5)
  - (c) Write a program in C to print the numbers from 4 to 9 and their squares. (5)
- 3.
  - (a) What is an array? Write a program to compute Mean and Median using arrays. (7)
  - (b) Explain the different types of loops in C with syntax and example. (8)
- 4. What is a structure? Explain the syntax of structure declaration with example. Write a C program to maintain a record of "n" student details using an array of structures with four fields (Roll number, Name, Marks, and Grade). Each field is of an appropriate data type. Print the marks of the student given student name as input. (15)

5. (a) Explain any five string manipulation library functions with examples. (8)
- (b) Write a C program to read n unsorted numbers to an array of size n to sort the numbers in ascending order using bubble sort technique. (7)
6. (a) What is dynamic memory allocation? Write and explain the different dynamic memory allocation functions in C. (7)
- (b) Write a C program to search an element from an array and display its position. (8)
7. Write short notes on following :
- (i) Compiler and Interpreter.
- (ii) Operating System.
- (iii) Storage Classes in C. (15)
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0763509

Sr. No...007103

December 2023

B.Tech. (EL/CSE(AI ML)/CIVIL/ENV/FAE) - I ~~SEMESTER~~ SEMESTER

Programming for Problem solving (ESC-103)

Max. Marks:75

Time: 3 Hours

- Instructions:
1. It is compulsory to answer all the questions (1.5 marks each) of Part -A in short.
  2. Answer any four questions from Part -B in detail.
  3. Different sub-parts of a question are to be attempted adjacent to each other.

PART -A

- Q1 (a) What is a compiler? (1.5)
- (b) What are the features of a good algorithm? (1.5)
- (c) Explain the difference between break and continue statement. (1.5)
- (d) Differentiate between RAM and ROM. (1.5)
- (e) Explain the idea of structures in brief. (1.5)
- (f) What is a header file? (1.5)
- (g) What do you mean by time complexity? (1.5)
- (h) What are strings? How are they different from arrays? (1.5)
- (i) Differentiate between local and global variables. (1.5)
- (j) What are unary operators? (1.5)

PART -B

- Q2 (a) Draw a flowchart to find the largest of three numbers. Also write the algorithm (10)  
for the same.
- (b) What is operating system? Write some important functions of an operating (5)  
system.
- Q3 (a) Write a program to find the grades of a student using switch-case. (5)
- (b) What is recursion? Write a program to print the Fibonacci series up to nth (10)  
term using recursion.
- Q4 Differentiate between arrays and structures. Write a program to store the (15)  
information of students using structures.
- Q5 (a) Explain the steps for sorting the given array using bubble sort: (5)
- 5, 7, 10, 2, 13, 9, 18, 15
- (b) Explain the concept of call by reference and call by value using an example of (10)  
swapping two variables.
- Q6 (a) What are 2-D arrays? Write a program to calculate the sum of two matrices. (10)



(b) What are strings? Explain various built-in functions used with strings. (5)

Q7 Write short notes on: (15)

- (a) while vs do-while
- (b) file handling
- (c) pointers and double pointers

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Sr. No 018203

September 2022

B.Tech(CSE(AIIML)/CE/CE(DS)/Civil/CSE/IT/ME/RAI/Civil/(CE(Hindi Medium)/ME(Hindi Medium))- II SEMESTER  
Programming for Problem solving (ESC-103/ESCH-103)

Time: 3 Hours

Max. Marks: 75

समय: 3 घंटे

अधिकतम अंक: 75

Instructions:

निर्देश:

1. It is compulsory to answer all the questions (1.5 marks each) of Part -A in short.  
भाग -ए के सभी प्रश्नों (प्रत्येक 1.5 अंक) का संक्षेप में उत्तर देना अनिवार्य है।
2. Answer any four questions from Part -B in detail.  
भाग -बी से किन्हीं चार प्रश्नों के विस्तार से उत्तर दीजिए।
3. Different sub-parts of a question are to be attempted adjacent to each other.  
एक प्रश्न के विभिन्न उप-भागों को एक दूसरे के साथ लिखने का प्रयास करें।
4. Students are required to attempt the question paper as per their medium of study.  
सभी छात्र अपने अध्ययन के माध्यम के अनुसार ही प्रश्नों के उत्तर लिखें

**PART -A**

Q1 (a) List the rules for constructing variables in C language. (1.5)

C भाषा में वेरिएबल के निर्माण के नियमों को सूचीबद्ध करें।

(b) Draw a flowchart to find largest of three numbers. (1.5)

तीन संख्याओं में से सबसे बड़ी संख्या खोजने के लिए एक फ्लोचार्ट बनाएं।

(c) Show how continue statement is used in a C program, with example (1.5)

उदाहरण के साथ दिखाएँ कि C प्रोग्राम में Continue का उपयोग कैसे किया जाता है।

(d) Define dangling else problem? (1.5)

Dangling else समस्या को परिभाषित करें।

(e) Define string. How string is declared and initialized? (1.5)

स्ट्रिंग को परिभाषित करें। स्ट्रिंग को कैसे घोषित और प्रारंभ किया जाता है?

(f) Differentiate between user defined and built in library functions. (1.5)

यूजर डिफाइंड और बिल्ट इन लाइब्रेरी फंक्शन में अंतर बताइये।

(g) Define Ternary operator with the help of a suitable example. (1.5)

एक उपयुक्त उदाहरण की मदद से टर्नरी ऑपरेटर को परिभाषित करें।

(h) Discuss Static Storage class with a suitable example. (1.5)

एक उपयुक्त उदाहरण के साथ Static Storage Class पर चर्चा करें।

(i) Differentiate between a compiler and an Interpreter. (1.5)

एक कंपाइलर और एक इन्टरप्रेटर के बीच अंतर करें।



- (j) Define Operating System. List out its goals and functions (1.5)  
ऑपरेटिंग सिस्टम को परिभाषित करें। इसके लक्ष्यों और कार्यों को सूचीबद्ध करें

PART -B

- Q2 (a) Define Algorithm. Write an algorithm and draw flowchart to find factorial of a number. (10)  
एल्गोरिथ्म को परिभाषित करें। एक संख्या के फैक्टोरियल को खोजने के लिए फ्लोचार्ट बनायें और एल्गोरिथ्म लिखें। (5)  
(b) Discuss Syntax and Logical errors in C language with examples.  
उदाहरणों के साथ C भाषा में Syntax और Logical त्रुटियों पर चर्चा करें।
- Q3 (a) Write a C program that takes from user an arithmetic operator ("+", "-", "\*", or "/") and two operands. Perform corresponding arithmetic operation on the operands using switch statement. (10)  
एक सी प्रोग्राम लिखें जो उपयोगकर्ता से एक अंकगणितीय ऑपरेटर ("+", "-", "\*", या "/") और दो ऑपरेंड लेता है। स्विच स्टेटमेंट का उपयोग करके ऑपरेंड पर संबंधित अंकगणितीय ऑपरेशन करें। (5)  
(b) Implement a C program to find the reverse of an integer number and check whether it is palindrome or not.  
पूर्णांक संख्या के रिवर्स को खोजने के लिए एक C प्रोग्राम लिखें और जांचें कि यह पैलिंड्रोम है या नहीं।
- Q4 (a) Write an algorithm and develop a C program that reads N integer numbers and arrange them in ascending order using Selection Sort. (10)  
एक एल्गोरिथ्म और सी प्रोग्राम लिखें जो N पूर्णांक संख्याओं को पढ़ें और selection सॉर्ट का उपयोग करके उन्हें आरोही क्रम में व्यवस्थित करें।  
(b) Explain different string manipulation library functions with example. (5)  
उदाहरण के साथ विभिन्न स्ट्रिंग मैनीपुलेशन लाइब्रेरी फंक्शंस समझाएं।
- Q5 (a) Illustrate the difference between Call by Value and Call by Reference method. (10)  
Write a program in C using functions to swap two numbers using call by reference concept.  
कॉल बाय वैल्यू और कॉल बाय रेफरेंस मेथड के बीच अंतर को स्पष्ट कीजिए।  
कॉल बाय रेफरेंस मेथड द्वारा कॉल का उपयोग करके दो नंबरों को स्वैप करने के लिए फंक्शंस का उपयोग करके सी में एक प्रोग्राम लिखें।
- (b) Define Recursion. Write a c-program using functions to generate the Fibonacci series. (5)  
Recursion को परिभाषित करें। Fibonacci श्रृंखला उत्पन्न करने के लिए फंक्शंस का उपयोग करके एक सी-प्रोग्राम लिखें।

Q6 (a) Write a program to maintain a record of "n" employee detail using an array of (10) structures with three fields (id, name, salary) and print the details of employees whose salary is above 5000.

तीन क्षेत्रों (आईडी, नाम, वेतन) के साथ संरचनाओं की एक array का उपयोग करके "N" कर्मचारी विवरण का रिकॉर्ड बनाने के लिए एक कार्यक्रम लिखें और उन कर्मचारियों के विवरण मुद्रित करें जिनका वेतन 5000 से ऊपर है।

(b) Give the scope and life time of the following (i) Static variable (ii) Register variable. (5)

निम्नलिखित का दायरा और जीवन काल बताइए (i) स्टैटिक वेरिएबल (ii) रजिस्टर वेरिएबल

Q7 (a) Define pointer? Write a C program to find the sum and mean of all numbers in (10) an array using pointer.

Pointer को परिभाषित करें? Pointer का उपयोग करके array में सभी नम्बरों के योग और माध्य को खोजने के लिए एक सी प्रोग्राम लिखें।

(b) Differentiate between text files and binary files. Write a C program to explain (5) the process of writing the data to a text file.

टेक्स्ट फ़ाइलों और बाइनरी फ़ाइलों के बीच अंतर करें। एक टेक्स्ट फ़ाइल में डेटा लिखने की प्रक्रिया को समझाने के लिए एक सी प्रोग्राम लिखें।

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Roll No. ....

March 2023

B.Tech. 1st Semester

Time : 3 Hours]

Programming for Problem Solving (ESC 103)

Total Pages : 3

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[Max. Marks : 75

Instructions :

1. It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.
2. Answer any four questions from Part-B in detail.
3. Different sub-parts of a question are to be attempted adjacent to each other.

### PART-A

1. (a) Define Registers.  
(b) Differentiate between algorithm and flowchart.  
(c) What are Keywords? Explain with example.  
(d) What is the usage of goto and continue instruction in C?  
(e) Name and define any two categories of errors in a program.

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382

(d) Write the output of following program

```
main()
{
    int x=5,*a;
    a=&x;
    printf("%d",x++);
    getch();
}
```

- (g) Define Strings with example.
- (h) Write the complexity of Selection Sort.
- (i) Differentiate between Linker and Loader.
- (j) Draw the flowchart for finding greatest between three numbers.

### PART-B

- 2. (a) Explain with proper diagram the memory hierarchy of a computer system. (5)
  - (b) What are Switch\_Case instruction in C. Write a program to generate simple calculator (addition, subtraction, multiplication etc.) using Switch case. (10)
3. (a) What is an Operating System? Write all its functions and explain Memory management in detail. (10)

(b) WAP to check whether a year entered by user is Leap or not. (5)

- 4. WAP for creating array of structure of students of your having following data elements : student name, student roll no, semester, branch. Create an array of 50 students. The program should take input and also print the output for the same. (15)
- 5. (a) Differentiate between call by value and call by reference of passing parameters in functions. WAP to Swap two numbers using call by reference. (10)
- (b) Write a program to calculate factorial of a number using loops. (5)
- 6. (a) Write a program to calculate length of a string without using string inbuilt functions. (10)
- (b) Write a program to implement Insertion sort. (5)
- 7. Differentiate between : (15)
  - (i) High Level language and Low Level Language.
  - (ii) Compiler and Interpreter
  - (iii) while and do\_while loop