MEERUT INSTITUTE OF ENGINEERING AND TECHNOLOGY

NH-58, Delhi-Roorkee Highway, Baghpat Road, Meerut – 250 005 U.P.

090

9/12/22

First Sessional Examination: Odd Semester 2022-23

Course/Branch : B Tech/All/(SET-B OP4,OP6,OP8,OP10,OP12) Semester: I

Subject Name : PPS Max. Marks : 60

Subject Code : BCS 101 Time : 120 min

CO-1 : On completion of this course, the student will be able to Understand the basic of computer and c programming and apply algorithms.

CO-2 : On completion of this course, the student will be able to apply the control statement in C.

Section – A (CO - 1) # Attempt both the questions # 30 Marks

Q.1 : Attempt any **SIX** questions (Short Answer Type). Each question is of two marks. (2 x 6 = 12 Marks)

a) Differentiate between RAM and ROM.

b) Why operating system is required?

c) Difference between Linker and Loader.

d) What do you mean by formatted input/output and unformatted input/output in C language?

e) What is the difference between algorithm and flowchart?

f) Write an algorithm to find sum and average of three numbers.

g) Difference between int main( ) and void main( ).

Q.2 : Attempt any **THREE** questions (Medium Answer Type). Each question is of 6 marks. (3 x 6 = 18 Marks)

a) Discuss the major components of a digital computer with suitable block diagram. Also discuss the function of each components in brief.

b) Discuss various symbols used in flowchart and Draw the flowchart to find reverse of digits.

c) Explain Operating System and its component.

d) Explain types of errors in C.

e) What is algorithm ? Write the characteristics of an algorithm and write algorithm to find area of circle.

Section – B (CO - 2) # Attempt both the questions # 30 Marks

Q.3 : Attempt any **SIX** questions (Short Answer Type). Each question is of two marks. (2 x 6 = 12 Marks)

a) Differentiate between precedence and associativity.

b) Explain syntax of nested if else statements with flowchart.

c) Explain unary and binary operators.

d) Differentiate == and = with example.

e) Write C program to check number is positive or negative.

f) Difference between type conversion and type casting.

g) Explain logical operator.

Q.4 : Attempt any **THREE** questions (Medium Answer Type). Each question is of 6 marks. (3 x 6 = 18 Marks)

a) Discuss any three operators with example.

b) Discuss conditional operator and WAP to check year is leap year or not using conditional operator.

c) Draw the program to find the quadrant for the given coordinates using if else ladder.

d) Write a Program in C to find the roots of quadratic equation.

e) Write a C program to find the value of 'y' for a particular value of n. The a,x,b,n is input by user.

If n=1 y=ax%b

If n=2 y= ax^2+b^2

If n=3 y=a-bx

If n=4 y=a+x/b

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NH-58, Delhi-Roorkee Highway, Baghpat Road, Meerut – 250005 U.P.

Sessional Examination II : Even Semester 2022-23

(610)

15/6/23

Course/Branch : B Tech /ALL EP-1 –EP-14	Semester : II
Subject Name : PPS	Max. Marks : 60
Subject Code : BCS201	Time : 120 min

CO-3: on completion of this course, the student will be able to understand the use of looping control instructions, arrays and structures to develop programs.

CO-4: on completion of this course, the student will be able to decompose a problem into functions and synthesize a complete program.

Section – A (CO - 3) # Attempt both the questions # 30 Marks

Q.1: Attempt any SIX questions (Short Answer Type). Each question is of 2 marks. (2 x 6 = 12 Marks)

a) What is the difference between break and continue in 'C'? (BKL: K1-K2 Level).

b) What is string? Explain the significance of null character. (BKL: K1-K2 Level).

c) Write the difference between structure & union. (BKL: K1-K2 Level).

d) Distinguish while-do and do-while loop in C. (BKL: K1-K2 Level).

e) Define array of structure with suitable example. (BKL: K1-K2 Level).

f) Explain enumerated data types with example. (BKL: K1-K2 Level).

g) Write the loop to print the following output: 1 2 4 8 16 32. (BKL: K1-K2 Level).

Q.2: Attempt any THREE questions (Medium Answer Type). Each question is of 6 marks. (3 x 6 = 18 Marks)

a) Write a program to find the reverse of digit for the number entered by user. (BKL >= K3 Level).

b) Write a program to find the sum of following series $1/1! + 2/2! + 3/3!$ ----. (BKL >= K3 Level).

c) Explain string handling function. WAP to check string is palindrome or not. (BKL >= K3 Level).

d) Write a program to add two matrices and store the result into another matrix. (BKL >= K3 Level).

e) WAP to create the database for 100 employees & print details of employee whose Y.O.J. is 2019. (high Order Thinking / Creativity)

Section – B (CO - 4) # Attempt both the questions # 30 Marks

Q.3: Attempt any SIX questions (Short Answer Type). Each question is of 2 marks. (2 x 6 = 12 Marks)

a) Differentiate between actual and formal arguments. (BKL: K1-K2 Level).

b) Distinguish between – int main() and void main(). (BKL: K1-K2 Level).

c) What is the meaning of prototype of a function? (BKL: K1-K2 Level).

d) Differentiate between linear search and binary search. (BKL: K1-K2 Level).

e) What is recursion? What is the principle of recursion? (BKL: K1-K2 Level).

f) Write recursive function to calculate sum of digit of number. (BKL : K1-K2 Level).

g) What do you mean by searching & sorting? (BKL : K1-K2 Level).

Q.4: Attempt any THREE questions (Medium Answer Type). Each question is of 6 marks. (3 x 6 = 18 Marks)

a) Discuss various types of parameter passing mechanism in C with example. (BKL >= K3 Level).

b) What is storage class? Explain all types of storage classes with example. (BKL >= K3 Level).

c) Write a C program to search an element in an array of 10 integers using linear search. (BKL >= K3 Level).

d) Write a C program to sort the elements of an array using Selection sort. (BKL >= K3 Level).

e) Write a C program to find the factorial of number using recursion. (High Order Thinking / Creativity)

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Pre University Test (PUT) :Odd Semester 2022-23

Course/Branch : B Tech (All)

Subject Name : Programming for Problem Solving	Semester : 1
Subject Code : BCS101	Max. Marks : 100
	Time : 180 min

- **CO-1** : Translate the algorithms to programs & execution (in C language)
- **CO-2** : Implement conditional branching, iteration and recursion
- **CO-3** : Decompose a problem into functions and synthesize a complete program using divide and conquer approach
- **CO-4** : Use arrays, pointers and structures to develop algorithms and programs
- **CO-5** : Utilize file handling, dynamic memory allocation and command line argument to develop programs

Section – A # 20 Marks (Short Answer Type Questions)

Attempt ALL the questions. Each Question is of 2 marks (10 x 2 = 20 marks)

Q.No.		COx	Question Description # Attempt ALL the questions. Each Question is of 2 marks	
1	A	CO1	Draw the memory hierarchical structure of computer system. (BKL : K1-K2 Level).	1
	B	CO1	What is algorithm? Write the characteristics of an algorithm? (BKL : K1-K2 Level).	1
	C	CO2	Explain various 'C' components used in c language. (BKL : K1-K2 Level).	1
	D	CO2	Write the difference between precedence & associativity. (BKL : K1-K2 Level).	1
	E	CO3	How while-do & do-while statement differ from each other. (BKL : K1-K2 Level).	2
	F	CO3	Write the difference between break & continue. (BKL : K1-K2 Level).	3
	G	CO4	Differentiate between linear search and binary search. (BKL : K1-K2 Level).	4
	H	CO4	Write short note on enumerated data type with syntax. (BKL : K1-K2 Level).	4
	I	CO5	What is special about void pointer? (BKL : K1-K2 Level).	5
	J	CO5	What is double pointer and how is it initialized? (BKL : K1-K2 Level).	5

Section – B # 30 Marks (Long / Medium Answer Type Questions)

Attempt ALL the questions . Each Question is of 6 marks (5 x 6 = 30 marks)

Q.2 (CO-1): Discuss the major components of a digital computer with suitable block diagram. Also discuss the function of each component in brief. 1

OR

Write the algorithm to find the sum of digit of number & draw the flowchart to find reverse of digit of number entered by user.

Q.3 (CO-2): What are the rules for using switch statement? Write a program to draw the calculator using switch statement 2

OR

Write a program to find the value of y for a particular value of n. The value of a, x, b, n are input by user in program

(If n=1 y=a x % b), (if n=2 y=ax² + b²), (if n=3 y=a – b/x), (if n=4 y=a + x / b)

Q.4 (CO-3): What is storage class? Write a program to check whether the number is Armstrong number or not.

OR

3

Write a program to find the sum of following series 1/1! + 2/2! + 3/3! ——— Upto n terms entered by user.

Q.5 (CO-4): Explain searching and write a C program to search a specific number in given 10 numbers using binary search. — 4

OR

Write the importance of sorting in problem solving .Write a program in C using bubble sort technique to sort 10 numbers entered by the user.

Q.6 (CO-5): What is dynamic memory allocation? How does it help in building complex programs? What is the task of following memory allocation function malloc(), calloc(), realloc() & free()? 5

OR

What is linked list? Write the self referential structure of a node in linked list? Explain the command line argument in C with suitable example.

Section – C # 50 Marks (Medium / Long Answer Type Questions)

Attempt ALL the questions. Each Question is of 10 marks.

Q.7 (CO-1): Attempt any TWO questions. Each question is of 5 marks.

a. Write the difference between low level language & high level language. 1

b. What are difference between i) compiler & interpreter ii) linker & loader? 1

c. Write the difference between type conversion & type casting using example. 2

Q.8 (CO-2): Attempt any TWO questions. Each question is of 5 marks.

a. Define data types. Discuss primitive data types in terms of memory, formats specifier and range. 1

b. Define operator & its type. What are different bit level operators used in C language? 2

c. Write a program to print the largest number among 3 numbers without using logical operator. 2

Q.9 (CO-3): Attempt any ONE question. Each question is of 10 marks.

a. What is function prototype? Discuss various types of parameter passing mechanism in C with example? 3

b. What is recursion & its principle? Write a C program to generate the Fibonacci Series using recursion. 3

Q.10 (CO-4): Attempt any ONE question. Each question is of 10 marks.

a. Write difference between structure & union. Write a program to multiply two square matrices of dimension N X N (3 X 3) and store the result in another matrix. 4

b. Create a suitable structure in C language for keeping the records of the employees of an organization about their code, Name, Designation, salary, Department, City of posting. Also Write a program in C to enter the records of 100 employees and displays the name of those who earn more than 20,000. 4

Q.11 (CO-5): Attempt any ONE question. Each question is of 10 marks.

a. What is preprocessor directive? Explain the role of any three directives with suitable example. 5

b. Explain the various functions used for operation in file handling. Write a C program to copy the text of one file to another. 5

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Pre University Test (PUT): Even Semester 2022-23

Course/Branch : B Tech (All)

Subject Name : Programming for Problem Solving

Subject Code : BCS201

Semester : II

Max. Marks : 100

Time : 180 min

CO-1 : Translate the algorithms to programs & perform its execution.

CO-2 : Implement conditional branching structure along with use of operators.

CO-3 : Use looping instructions, arrays and structures to develop programs.

CO-4 : Decompose a problem into functions and synthesize a complete program.

CO-5 : Utilize the pointer, file handling, dynamic memory allocation to solve the problems.

Section – A # 20 Marks (Short Answer Type Questions)

Attempt **ALL** the questions. Each Question is of 2 marks (10 x 2 = 20 marks)

Q. No.		COx	Question Description # Attempt **ALL** the questions. Each Question is of 2 marks
1	A	CO1	Define syntax error, runtime error & logical error. (BKL: K1-K2 Level).
2	B	CO1	Explain the structure of C program using example? (BKL: K1-K2 Level).
3	C	CO2	Differentiate between else if ladder & switch statement. (BKL: K1-K2 Level).
4	D	CO2	Write the code of leap year using conditional operator. (BKL: K1-K2 Level).
5	E	CO3	How entry control loop & exit control loop differs. (BKL: K1-K2 Level).
6	F	CO3	What is the role of break & continue in loops. (BKL: K1-K2 Level).
7	G	CO4	What is array of structure? Give proper example (BKL: K1-K2 Level).
8	H	CO4	Write short note on enumerated datatype with syntax. (BKL: K1-K2 Level).
9	I	CO5	What is special about void pointer? Give syntax (BKL: K1-K2 Level).
10	J	CO5	What is double pointer and how is it initialized? (BKL: K1-K2 Level).

Section – B # 30 Marks (Long / Medium Answer Type Questions)

Attempt **ALL** the questions. Each Question is of 6 marks (5 x 6 = 30 marks)

Q.2 (CO-1): What are the major functional units of a digital computer? Explain each with suitable block diagram.

OR

Write the algorithm to generate Fibonacci series of n terms & draw the flowchart to find the largest of 3 numbers.

Q.3 (CO-2): What are the rules for switch statement? Write a program to draw calculator using switch statement.

OR

Write a program to print the roots of quadratic equation for real roots & otherwise print imaginary roots.

Q.4 (CO-3): What are storage classes? Write a program to check whether the number ~~~~ strong number or not.

OR

Write a C function to find the sum of following series $x^1/1! + x^2/2! + x^3/3!$ -------- Upto n terms entered by user.

Q.5 (CO-4): What are searching techniques? Write a C program to search a specific number using binary search.

OR

What are sorting techniques .Write a program using bubble or selection sort technique to sort integer array.

Q.6 (CO-5): What is difference between static memory allocation & dynamic memory allocation? What is the task o following memory allocation function malloc (), calloc (), realloc () & free ()?

OR

What is preprocessor directive? Explain the role of #define, #include & #ifdef directives with suitable example.

Section – C # 50 Marks (Medium / Long Answer Type Questions)

Q.7 (CO-1): Attempt any TWO questions. Each question is of 5 marks.

a. Write the difference between low level language & high level language.

b. What are difference between I) compiler & interpreter II) linker & loader?

c. Define data types. Discuss primitive data types in terms of memory, range etc.

Q.8 (CO-2): Attempt any TWO questions. Each question is of 5 marks.

a. Define operator. Explain any four classification of operator using suitable example.

b. Write the difference between type conversion & type casting using proper example.

c. Write a program to check whether the given character is upper, lower, numeric or symbol.

Q.9 (CO-3): Attempt any ONE question. Each question is of 10 marks.

a. Write difference between structure & union. Write a program to multiply two square matrices of dimension N X N (3 X 3) and store the result in another matrix.

b. Define string. Explain predefined string functions. Write a program to reverse the string without strrev() function.

Q.10 (CO-4): Attempt any ONE question. Each question is of 10 marks.

a. What are actual & formal parameters? Discuss types of parameter passing mechanism in C with example?

b. What is recursion & its principle? Write a C program to generate the Fibonacci Series using recursion.

Q.11 (CO-5): Attempt any ONE question. Each question is of 10 marks.

a. What is linked list? Write the self-referential structure of a node in linked list? Explain the command line argument in C with suitable example.

b. Explain the various file handling operations. Write a C program to read integer value from data.txt & write all odd numbers in file odd.txt & even numbers in file even.txt.

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