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BTECH
(SEM I) THEORY EXAMINATION 2023-24
PROGRAMMING FOR PROBLEM SOLVING

TIME: 3HRS**M.MARKS: 100**

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A**1. Attempt all questions in brief.****2 x 10 = 20**

Q no.	Question	Marks	CO
a.	Write difference between algorithm and flowchart.	2	1
b.	What is format specifier?	2	1
c.	Classify the different types of decision-making statements.	2	2
d.	How switch case works without break statement.	2	2
e.	Write and explain the syntax of function?	2	3
f.	Write and explain syntax of for loop.	2	3
g.	How to declare and initialize 1-D, 2-D array with an example.	2	4
h.	Write a program to read and display the elements using 1-D array.	2	4
i.	Define pointer. How can you declare it?	2	5
j.	Write about different file modes?	2	5

SECTION B**2. Attempt any three of the following:****10 x 3 = 30**

a.	(a) What is constant? Explain different constants in C. (b) What is variable? Give the rules for variable declaration.	10	1
b.	A company gives insurance to its drivers in the following cases: (i) If the driver is married. (ii) If the driver is unmarried, male & above 30 years of age. (iii) If the driver is unmarried, female & above 25 years of age. In all other cases, the driver is not insured. If the marital status, gender and age of a driver are inputs, write a program to determine whether the driver is to be insured or not.	10	2
c.	(a) Write and explain syntax of for loop. (b) Write a program to generate prime numbers between 1 and n.	10	3
d.	Write a program in C to implement insertion sort	10	4
e.	Write a C program to count number of characters, spaces, lines, words of a file.	10	5

SECTION C**3. Attempt any one part of the following:****10 x 1 = 10**

a.	Write an algorithm, flowchart and C program to find the sum of numbers from 1 to n.	10	1
b.	Perform the following operations a. $23 \gg 3$ b. $27 \ll 2$ c. $15 \& 9$ d. $15 \wedge 9$ e. $15 \mid 9$	10	1

4. Attempt any one part of the following:**10 x 1 = 10**

a.	(a) Write and explain about switch statement. (b) Write a Program to perform arithmetic operations using switch.	10	2
b.	(a) Explain else-if ladder with the help of flowchart and program. (b) How does nested if-else works explain with an example?	10	2



PAPER ID-311623

Printed Page: 2 of 2

Subject Code: KCS101

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5. Attempt any *one* part of the following: 10 x 1 = 10

a.	(a) Write a program to find sum of the individual digits of a given number. (b) Write a program to find the sum of even and odd numbers from 1 to n.	10	3
b.	(a) What is a nested loop? Write a program to display multiplications tables from 1 to n. (b) Write a program to display the following pattern. <pre> ***** **** *** ** *</pre>	10	3

6. Attempt any *one* part of the following: 10 x 1 = 10

a.	Write a C program to multiply two matrices of different order.	10	4
b.	(a) Write a C program to read and display a 3 by 3 matrix. (b) Write a C program to add 2 matrices of size n by n.	10	4

7. Attempt any *one* part of the following: 10 x 1 = 10

a.	(a) Write a C program to display the contents of the file in reverse order. (b) Write a C program to copy the contents from one file to another file.	10	5
b.	(a) What are the features of pointers? Write a C program to print address of a variable (b) Explain the declaration of pointers and pointer to pointer with examples.	10	5