

**BACK/SPECIAL-BACK PAPER**

Sub Code: BCST-101/201

ROLL NO.....

**1st & 2<sup>nd</sup> SEMESTER EXAMINATION, 2022 – 23**  
**I-Year, B.Tech – Common to all branch**  
**Programming for Problem Solving**

Duration: 3:00 hrs

Max Marks: 100

*Note: - Attempt all questions. All Questions carry equal marks. In case of any ambiguity or missing data, the same may be assumed and state the assumption made in the answer.*

Q 1.	<p>Answer any four parts of the following.</p> <p>a) Write down any five characteristics of a good programming language.</p> <p>b) Write an algorithm to sort an array of integer into descending order, where the size of array is input by user.</p> <p>c) Explain the process of compiling and running a C program. What is conditional compilation and how does it help a programmer.</p> <p>d) For a digital computer briefly explain the following:</p> <p>(i.) Cache memory.</p> <p>(ii.)Control unit.</p> <p>(iii.)ALU.</p> <p>e) Differentiate between the following:</p> <p>(i.) High level language and low-level language.</p> <p>(ii.) Compiler and interpreter.</p> <p>f) What are the fundamental data types in ‘C’ language, mention their range, space they occupy in memory and keyword used for their representation in writing the program.</p>	5x4=20																														
Q 2.	<p>Answer any four parts of the following.</p> <p>a) Write a program in ‘C’ in which values of variables x, y, z is input by user, then their values are rotated such that x has value of y, y has value of z, z has value of y.</p> <p>b) Complete the following table regarding the operators available in ‘C’ language.</p> <table><tr><th>S.No</th><th>Name of Operator</th><th>Symbol of Operator</th><th>Purpose</th><th>Precedence Rank</th></tr><tr><td>1.</td><td>Increment</td><td></td><td></td><td></td></tr><tr><td>2.</td><td>Modulus</td><td></td><td></td><td></td></tr><tr><td>3.</td><td>Addition</td><td></td><td></td><td></td></tr><tr><td>4.</td><td>Logical OR</td><td></td><td></td><td></td></tr><tr><td>5.</td><td>Assignment operator</td><td></td><td></td><td></td></tr></table> <p>c)What do you mean by type conversion. Explain it by using a suitable example.</p> <p>d) Compare the use of switch statement with the use of nested if-else statement.</p> <p>e) Explain in detail about all the types of loops that exist in a ‘C’ programming language?</p> <p>f) Write a program in ‘C’ to print the following.</p> <pre>1 2 2 3 3 3 4 4 4 4 5 5 5 5 5</pre>	S.No	Name of Operator	Symbol of Operator	Purpose	Precedence Rank	1.	Increment				2.	Modulus				3.	Addition				4.	Logical OR				5.	Assignment operator				5x4=20
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Q 3.	<p>Answer any two parts of the following.</p> <p>a) Explain what is likely to happen when the following situations are encountered in a ‘C’ program.</p>	10x2= 20																														

	<div>(i.) Actual arguments are less than the formal arguments in a function.</div> <div>(ii.) Data type of one of the actual arguments does not match with the type of the corresponding formal argument.</div> <div>(iii.) The order of actual parameters in the function call is different from the order of formal parameters in a function where all the parameters are of the same type.</div> <div>(iv.) The type of expression used in <b>return</b> statement does not match with the type of the function.</div> <div>b) Write a program in ‘C’ to read a (5x4) matrix using array and to calculate the following:<div>(i.) Sum of the elements of the third row of the matrix.</div><div>(ii.) Sum of all the elements of the matrix.</div></div> <div>c) What is a function? What is the meaning of prototype of a function? What is a recursive function? Write a recursive function to calculate the factorial of a positive integer.</div>																									
Q 4.	<div>Answer any two parts of the following.</div> <div>a) Write a program which will read a string and rewrite it in the alphabetical order. For example, the word <b>PROBLEM</b> should be written as <b>BELMOPR</b>.</div> <div>b) What are the pointers. What is a pointer variable? Write the methods of initialization of pointer variables? How are the pointers useful in ‘C’ programming language. Explain the difference between <b>const char *p</b> and <b>char const *p</b>.</div> <div>c) Explain with example the following:<div>i. Array of pointers</div><div>ii. Dynamic memory allocation</div></div>	10x2= 20																								
Q 5.	<div>Answer any two parts of the following.</div> <div>a) Define a structure called <b>cricket</b> that will describe the following information:<div>player name</div><div>team name</div><div>batting average</div></div> <div>Using <b>cricket</b>, declare an array <b>player</b> with 50 elements and write a program to read the information about all the 50 players and print a team-wise list containing names of players with their batting average.</div> <div>b) Write short note on the followings:<div>i. unions</div><div>ii. enumerations</div><div>iii. command line arguments</div><div>iv. typedef</div></div> <div>c) Given high level I/O functions for file management in C, complete the following table.</div> <table><tr><th>Sno.</th><th>Function Name</th><th>Operation</th><th>Syntax of function</th></tr><tr><td>1.</td><td>fopen()</td><td></td><td></td></tr><tr><td>2.</td><td>getc()</td><td></td><td></td></tr><tr><td>3.</td><td>fprint()</td><td></td><td></td></tr><tr><td>4.</td><td>putw()</td><td></td><td></td></tr><tr><td>5.</td><td>fscanf()</td><td></td><td></td></tr></table>	Sno.	Function Name	Operation	Syntax of function	1.	fopen()			2.	getc()			3.	fprint()			4.	putw()			5.	fscanf()			10x2= 20
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