Printed Pages: 3 **Sub Code: BCS101**

Paper Id: 233201 **Roll No.** | | | | | | | | | | |

B.TECH.
(SEM-I) THEORY EXAMINATION 2022-23
PROGRAMMING FOR PROBLEM SOLVING

Time: 3 Hours ***Total Marks: 70***

समयः 03 घण्टे पूर्णांकः 70

Note:

1. Attempt all Sections. If require any missing data; then choose suitably.
2. The question paper may be answered in Hindi Language, English Language or in the mixed language of Hindi and English, as per convenience.

नोटः 1. सभी प्रश्नो का उत्तर दीजिए। किसी प्रश्न में, आवश्यक डेटा का उल्लेख न होने की स्थिति में उपयुक्त डेटा स्वतः मानकर प्रश्न को हल करें।

2. प्रश्नों का उत्तर देने हेतु सुविधानुसार हिन्दी भाषा, अंग्रेजी भाषा अथवा हिंदी एवं अंग्रेजी की मिश्रित भाषा का प्रयोग किया जा सकता है।

SECTION A

1. Attempt *all* questions in brief. **2 x 7 = 14**

निम्न सभी प्रश्नों का संक्षेप में उत्तर दीजिए।

a. Draw memory hierarchical structure of a computer system.
कंप्यूटर सिस्टम की मेमोरी के वर्गीकरण की अनुक्रमित संरचना बनाएं।

b. Explain identifiers and keywords in C Language.
सी लैंग्वेज में अभिज्ञापक (identifiers) और कीवर्ड्स (keywords) को समझाइए।

c. Differentiate between implicit and explicit type conversion.
implicit और explicit टाइप रूपांतरण (type conversion) के बीच अंतर बताइए।

d. Find the output of following code written in C-Language:
C-Language के निम्नलिखित कोड का आउटपुट लिखे :

```
#include<stdio.h>
main()
{
 int i=1;
    for(;;)
    {  printf("%d",i);
       if(i=5)
       break;
     }
 }
```

e. Compare linear search and binary search in terms of complexity.
कम्प्लेक्सिटी (complexity) के संदर्भ में लीनियर सर्च (linear search) और बाइनरी सर्च (binary search) की तुलना करें।

f. Define the structure of a node in linked list.
लिंक्ड लिस्ट में नोड की संरचना को परिभाषित करें।

g. List out various file opening modes.
फ़ाइल खोलने के विभिन्न मोड को सूचीबद्ध कीजिए।

SECTION B

2. Attempt any *three* of the following: 7 x 3 = 21
निम्न में से किन्ही तीन प्रश्नों का उत्तर दीजिए।

a. State desirable characteristics of an algorithm. Write an algorithm to calculate sum of digits of a number entered by user.
एल्गोरिथम की वांछनीय विशेषताओं का उल्लेख कीजिए। उपयोगकर्ता द्वारा दिये गये इनपुट संख्या के अंकों के योग की गणना करने के लिए एक एल्गोरिथम लिखें।

b. Define Data Types in C. Discuss basic data types in terms of memory occupied, format specifier and range.
C-Language में डेटा टाइप को परिभाषित करें। मेमोरी आवश्यकता, प्रारूप विनिर्देशक और सीमा के संदर्भ में बेसिक डेटा टाइप पर चर्चा करें।

c. Differentiate between *call by value* and *call by reference* parameter passing mechanisms using example.
पैरामीटर पासिंग (parameter passing) के तरीको कॉल बाई वैल्यू (*call by value*) और कॉल बाई रेफरेंस (*call by reference)* के बीच का अन्तर उदाहरण सहित समझाइये।

d. Write a program to multiply two matrices (read size and elements of matrices from the keyboard).
दो मैट्रिक्स को गुणा करने के लिए एक प्रोग्राम लिखें (कीबोर्ड से मैट्रिक्स के आकार और तत्वों को पढ़ें)।

e. Discuss dynamic memory allocation. Explain calloc(), malloc(), realloc() and free() functions with suitable example.
डायनेमिक मेमोरी एलोकेशन (dynamic memory allocation) पर चर्चा करें। Explain calloc(), malloc(), realloc() और free() फ़ंक्शन को उपयुक्त उदाहरण के साथ समझाइए।

SECTION C

3. Attempt any *one* part of the following: 7 x 1 = 7
निम्न में से किसी एक प्रश्न का उत्तर दीजिए।

(a) Illustrate basic components of computer system with neat block diagram. Also, explain various functions of Operating System in detail.
स्वच्छ आरेख के साथ कंप्यूटर सिस्टम के मौलिक घटकों को समझाइए। साथ ही ऑपरेटिंग सिस्टम के विभिन्न कार्यों को विस्तार से समझाइए।

(b) Write an algorithm and draw a flow chart to check whether the number entered by user is palindrome or not.
यूजर द्वारा प्रविष्ट संख्या पलिन्ड्रोमे है या नहीं, यह जांचने के लिए flow chart बनाएं और एल्गोरिथम लिखें ।

4. Attempt any *one* part of the following: 7 x 1 = 7
निम्न में से किसी एक प्रश्न का उत्तर दीजिए।

(a) Explain various bitwise operators in C Language with help of an example. When precedence of two operators in an expression is same, how associativity helps in identifying which operator will be evaluated first. Illustrate it with an example.
सी लैंग्वेज में विभिन्न बिटवाइज़ ऑपरेटरों (bitwise operators) को एक उदाहरण की सहायता से समझाइए। जब एक व्यंजक में दो ऑपरेटरों की पूर्वता (precedenc) समान हो, तो कैसे साहचर्य (associativity) यह पहचानने में मदद करता है कि किस ऑपरेटर

का पहले मूल्यांकन किया जाएगा। इसे एक उदाहरण द्वारा समझाइए।

(b) Illustrate various types of storage classes in C-Language with suitable example.
C-Language में विभिन्न प्रकार के स्टोरेज क्लासेज (storage classes) को उपयुक्त उदाहरण सहित समझाइए।

5. Attempt any *one* part of the following: 7 x 1 = 7
निम्न में से किसी एक प्रश्न का उत्तर दीजिए।

(a) Write a program in C to print the given pattern:
दिए गए पैटर्न को प्रिंट करने के लिए C में एक प्रोग्राम लिखें

```
        *
      * * *
    * * * * *
  * * * * * * *
* * * * * * * * *
```

(b) Illustrate recursion. Write a program in C to find GCD (Greatest Common Divisor) of two numbers using recursion.
पुनरावर्ती विधि **(recursion)** क्या होती है, समझाइये। पुनरावर्ती विधि **(recursion)** का उपयोग करके दो संख्याओं का महत्तम समापवर्तक (Greatest Common Divisor) को ज्ञात करने के लिए C में एक प्रोग्राम लिखें।

6. Attempt any *one* part of the following: 7 x 1 = 7
निम्न में से किसी एक प्रश्न का उत्तर दीजिए।

(a) Write a program in C to implement bubble sort.
क्रमबद्ध करने के बबल सॉर्ट (bubble sort) विधि को लागू करने के लिए C में एक प्रोग्राम लिखें।

(b) Construct a structure to 'customer' specify data of customers in a bank. The data to be stored is: Account number, Name, Balance in account. Assume maximum of 200 customers in the bank.
Write a program in C to find and print all details of customers (i.e. Account Number, Name and Balance) having balance less than Rs. 100.
बैंक में ग्राहकों के डेटा को 'customer' नाम का एक structure की रचना करें। संग्रहीत किया जाने वाला डेटा है: Account number, Name, Balance in account. बैंक में अधिकतम 200 ग्राहक मान लें।
100 रुपये से कम बैलेंस वाले ग्राहकों के सभी विवरण (i.e. Account Number, Name and Balance) को प्रिंट करने के लिए C में एक प्रोग्राम लिखें।.

7. Attempt any *one* part of the following: 7 x 1 = 7
निम्न में से किसी एक प्रश्न का उत्तर दीजिए।

(a) What is Macro? Illustrate the working of Macro as a variable and as a function with the help of suitable example.
मैक्रो (Macro) क्या होता है? उपयुक्त उदाहरण की सहायता से एक वेरिएबल (variable) के रूप में और एक फंक्शन (function) के रूप में मैक्रो (Macro) की कार्यप्रणाली को समझाइए।

(b) Discuss various file operations. Write a program in C to read content of an existing file and display the numbers of words and lines in that file.
फ़ाइल संचालन में प्रयुक्त होने वाले विभिन्न ऑपरेशन (file operations) पर चर्चा करें। किसी मौजूदा फ़ाइल की सामग्री को पढ़ने के लिए C में एक प्रोग्राम लिखें और उस फ़ाइल में शब्दों और पंक्तियों की संख्या आउटपुट के रूप में प्रदर्शित करें।

Printed Pages:03 **Sub Code: BCS201**

Paper Id: 238263 **Roll No.** | | | | | | | | | | |

B.TECH
(SEM II) THEORY EXAMINATION 2022-23
PROGRAMMING FOR PROBLEM SOLVING

Time: 3 Hours ***Total Marks: 70***

समयः 03 घण्टे पूर्णांकः 70

Note:

1. Attempt all Sections. If require any missing data; then choose suitably.
2. The question paper may be answered in Hindi Language, English Language or in the mixed language of Hindi and English, as per convenience.

नोटः 1. सभी प्रश्नो का उत्तर दीजिए। किसी प्रश्न में, आवश्यक डेटा का उल्लेख न होने की स्थिति में उपयुक्त डेटा स्वतः मानकर प्रश्न को हल करें।

2. प्रश्नों का उत्तर देने हेतु सुविधानुसार हिन्दी भाषा, अंग्रेजी भाषा अथवा हिंदी एवं अंग्रेजी की मिश्रित भाषा का प्रयोग किया जा सकता है।

SECTION A

1. Attempt *all* questions in brief. **2 x 7 = 14**

सभी प्रश्नों का संछेप में उत्तर दीजिये।

(a) Differentiate between algorithm and program.
एल्गोरिथ्म और प्रोग्राम के बीच अंतर बताइए ।

(b) Discuss the functions of an operating system in brief.
एक ऑपरेटिंग सिस्टम के कार्यों पर संक्षेप में चर्चा करें।

(c) Write the output of following code:
निम्न कोड का आउटपुट लिखिए:

```
#include <stdio.h>
int main()
{
    int a = -10, b = 20;

    if(a > 0 && b < 0)
        a++;
    else if(a < 0 && b < 0)
        a--;
    else if(a < 0 && b > 0)
        b--;
    else
        b--;
    printf("%d\n",a + b);
    return 0;
}
```

(d) Compare linear search and binary search in terms of time complexity.
टाइम कोम्प्लेक्सिटी के संदर्भ में लीनियर खोज और बाइनरी खोज की तुलना करें।

(e) Differentiate between structure and union.
स्ट्रक्चर और यूनियन के बीच अंतर बताइए ।

(f) What do you mean by pointer arithmetic?
पॉइंटर अंकगणित से आप क्या समझते हैं?

(g) Discuss linked list in brief.
लिंक्ड लिस्ट पर संक्षेप में चर्चा करें।

SECTION B

2. Attempt any *three* of the following: 7 x 3 = 21

निम्न में किन्ही तीन प्रश्नों का उत्तर दीजिये ।

(a) Explain flow chart and benefits of using the flow chart in programming. Draw a flow chart to find the sum and average of n integers.
फ़्लो चार्ट और प्रोग्रामिंग में फ्लो चार्ट का उपयोग करने के लाभों की व्याख्या करें। n पूर्णांकों का योग और औसत ज्ञात करने के लिए एक फ्लो चार्ट बनाएँ।

(b) Explain recursion in C. Write a program in C to find the factorial of a given number using recursive method.
C में पुनरावर्ती विधि कि व्याख्या कीजिये। पुनरावर्ती विधि का उपयोग करके किसी दी गई संख्या के फ़ैक्टोरियल ज्ञात करने के लिए C में एक प्रोग्राम लिखें।

(c) Write a program in C to reverse a given number N having any number of digits.
किसी दिए गए संख्या N, जिसमे कितने भी अंक हों, को reverse करने के लिए C में एक प्रोग्राम लिखें।

(d) Discuss the following string functions in C with suitable code snippet:
उपयुक्त कोड अंश के साथ C में निम्न स्ट्रिंग फ़ंक्शंस पर चर्चा करें:
i) strrev ii) strcmp iii) strcat iv) strlen v) strcpy

(e) Explain the process of using fopen() function in C with suitable examples. Also discuss various modes of opening a file in C.
उपयुक्त उदाहरणों के साथ C में fopen() फ़ंक्शन का उपयोग करने की प्रक्रिया को समझाएं। C में फ़ाइल खोलने के विभिन्न modes पर भी चर्चा करें।

SECTION C

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

निम्न में किसी एक प्रश्न का उत्तर दीजिये ।

(a) Discuss various storage classes used in C including the details of storage place, default value, scope and lifetime.
भंडारण स्थान, डिफ़ॉल्ट मान, दायरे और जीवनकाल के विवरण सहित C में उपयोग किए जाने वाले विभिन्न storage classes पर चर्चा करें।

(b) Discuss various primitive data types used in C with suitable examples including their required memory size, format specifier and range.
C में उपयोग किए जाने वाले विभिन्न प्रिमिटिव डेटा टाइप्स पर उनके आवश्यक मेमोरी आकार, प्रारूप निर्दिष्टकर्ता और रेंज सहित उपयुक्त उदाहरणों के साथ चर्चा करें।

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

निम्न में किसी एक प्रश्न का उत्तर दीजिये ।

(a) Write a program in C to print grades as per following criteria for obtained percentage of marks M out of 100:
100 में से M अंक प्राप्त करने के लिए निम्नलिखित मानदंडों के अनुसार ग्रेड मुद्रित करने के लिए C में एक प्रोग्राम लिखें

Obtained Percent Marks (M)	Grade
90 <M≤ 100	A+
80 <M≤ 90	A
70 <M≤ 80	B+
60 <M≤ 70	B
50 <M≤ 60	C
M≤ 50	F

(b) Explain different types of bitwise operators used in C with suitable examples. Find the value of following expressions:
उपयुक्त उदाहरणों के साथ C में उपयोग किए जाने वाले विभिन्न प्रकार के बिटवाइज ऑपरेटरों की व्याख्या करें। निम्नलिखित व्यंजको का मान ज्ञात कीजिये।
i) 10 >>2 ii) 20 << 2 iii) 25 & 30 iv) 25 | 30

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

निम्न में किसी एक प्रश्न का उत्तर दीजिये ।

(a) Differentiate between while and do-while loop. Write a program in C to print the following pattern:
while और do-while लूप के बीच अंतर करें। निम्न पैटर्न मुद्रित करने के लिए C में एक प्रोग्राम लिखें:
1 2 3 4 5
1 2 3 4
1 2 3
1 2
1

(b) Explain array in C. Write a program in C to multiply two matrices, each of order NxN and display it on console.
C में array की व्याख्या करें। NxN आर्डर के दो मैट्रिक्स को गुणा करने के लिए C में एक प्रोग्राम लिखें और इसे आउटपुट के रूप में प्रदर्शित करें।

6. Attempt any *one* part of the following: 7 x 1 = 7
निम्न में किसी एक प्रश्न का उत्तर दीजिये ।

(a) Explain call by value and call by reference with suitable example.
उपयुक्त उदाहरण के साथ call by value और call by reference को समझाइए ।

(b) Discuss sorting. Write a program in C for selection sorting.
सॉर्टिंग पर चर्चा करें। सिलेक्शन सॉर्टिंग के लिए C में एक प्रोग्राम लिखें।

7. Attempt any *one* part of the following: 7 x 1 = 7
निम्न में किसी एक प्रश्न का उत्तर दीजिये ।

(a) Explain static memory allocation and dynamic memory allocation with suitable examples.
स्थैतिक मेमोरी आवंटन और गतिशील मेमोरी आवंटन को उपयुक्त उदाहरणों के साथ समझाएँ।

(b) Discuss various file handling methods used in C in brief. Write a program in C to write some text matter into a file "example.txt" and then read this text matter and display on console using file handling methods.

संक्षेप में C में उपयोग की जाने वाली विभिन्न फ़ाइल हैंडलिंग विधियों पर चर्चा करें। कुछ पाठ सामग्री को "example.txt" फ़ाइल में लिखने के लिए C में एक प्रोग्राम लिखें और उसके उपरांत इस पाठ सामग्री को पढ़ें और फ़ाइल हैंडलिंग विधियों का उपयोग करके कंसोल पर प्रदर्शित करें।

PAPER ID-411592

Subject Code: KCS101T

Roll No: | | | | | | | | | | | | | |

BTECH
(SEM I) THEORY EXAMINATION 2021-22
PROGRAMMING FOR PROBLEM SOLVING

Time: 3 Hours ***Total 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

Qno.	Question	Marks	CO
a.	Differentiate between algorithm and pseudocode.	2	1
b.	What are header files? Why are they important?	2	1

c.	Find the output of the following code:
	void main()
	{
	int x=3 , y = 4 , a=6 , z=7,result ;
	result = (x>y) + ++a || !c ;
	printf("%d", result);
	}
		2	2

d.	Write limitations of switch case.	2	2
e.	Show the usage of break statement.	2	3
f.	Differentiate between scope and lifetime of variable.	2	3
g.	Write limitations of subscript operator in an array.	2	4
h.	Compare linear and binary search in terms of complexity.	2	4

i.	Find the output of the following code:
	void main()
	{
	int a ,*p;
	//value of a is input by the user and assumed it is equal to 7.
	p = &a;
	scanf("%d", p);
	printf("%d",a);
	}
		2	5

j.	Explain the significance of End of File (EOF).	2	5

SECTION B

2. Attempt any *three* of the following: 3x10=30

Qno.	Question	Marks	CO
a.	Draw block diagram of computer and explain each of its components in brief.	10	1
b.	Differentiate between type conversion and typecasting. Write a program to input a floating-point number and find leftmost digit of integral part of a number.	10	2
c.	Write a program to find the sum of series using function 1! + 2! + 3! + 4! +---------- n terms.	10	3
d.	Write a program to find transpose of matrix.	10	4
e.	Why are preprocessor required? Explain any two preprocessor directives	10	5

PAPER ID-411592

Roll No: | | | | | | | | | | | | | |

BTECH
(SEM I) THEORY EXAMINATION 2021-22
PROGRAMMING FOR PROBLEM SOLVING

SECTION C

3. Attempt any *one* part of the following: 1x10=10

Qno.	Question	Marks	CO
a.	Define flowchart and draw a flowchart to find largest among three numbers.	10	1
b.	Explain in detail about all storage classes with proper example.	10	1

4. Attempt any *one* part of the following: 1x10=10

Qno.	Question	Marks	CO
a.	Explain Logical, Unary and Bitwise operators in detail.	10	2
b.	Compare if-else-if ladder and switch case. Write a menu driven program to perform basic functions of calculator.	10	2

5. Attempt any *one* part of the following: 1x10=10

Qno.	Question	Marks	CO
a.	Define recursion. Write a program to find sum of Fibonacci series using recursion.	10	3
b.	Differentiate between call by value and call by reference with proper example.	10	3

6. Attempt any *one* part of the following: 1x10=10

Qno.	Question	Marks	CO
a.	Implement sorting technique using bubble sort on the following sequence: 34,78 ,12, 5 ,3, 98, 101, 15	10	4
b.	What is searching? Write a program to implement linear search.	10	4

7. Attempt any *one* part of the following: 1x10=10

Qno.	Question	Marks	CO
a.	Define dynamic memory allocation. Differentiate between malloc () and calloc () with proper example.	10	5
b.	Explain different file opening modes. Write a program to read content of any file and display the number of lines and words in that file.	10	5

PAPER ID-411591

Subject Code: KCS101

Roll No: | | | | | | | | | | | | | |

BTECH
(SEM I) THEORY EXAMINATION 2021-22
PROGRAMMING FOR PROBLEM SOLVING

Time: 3 Hours ***Total Marks: 100***

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

SECTION A

1. Attempt *all* questions in brief. 2x10 = 20

Qno.	Question	Marks	CO
a.	Draw the Memory hierarchy representation.	2	1
b.	Why is RAM called a Volatile memory?	2	1
c.	Write down the output of following code. #include <stdio.h> int main() { int a=23; ; ;printf("%d",a); ; return 0; }	2	2

d.	Write down the output of following code.
	#include<stdio.h>
	int main()
	{ int a = 5;
	a = 1, 2, 3;
	printf("%d", a);
	return 0;
	}
		2	2

e.	Write the use of continue statement.	2	3
f.	What is the difference between entry control loop and exit control loop?	2	3
g.	How the size of the structure defined in c programming?	2	4
h.	Why is sorting process required?	2	4
i.	Write the advantages of using macro in C programming.	2	5
j.	Draw the basic structure of Linked List and explain its node.	2	5

SECTION B

2. Attempt any *three* of the following: 3x10 = 30

Qno.	Question	Marks	CO
a.	Differentiate between Compiler and Interpreter. Draw the flow chart of swapping of two numbers.	10	1
b.	What do you mean by Operands? Discuss the operator precedence and associatively of all the operators.	10	2
c.	Write the advantage of recursive function? Write a program to print the Fibonacci series up to n number with recursive function.	10	3
d.	Write short note on array. Write the program for matrix multiplication of two matrix elements.	10	4
e.	Explain the concept of pointer in self-referential structure with proper example.	10	5

PAPER ID-411591

Subject Code: KCS101

Roll No: | | | | | | | | | | | | | |

BTECH
(SEM I) THEORY EXAMINATION 2021-22
PROGRAMMING FOR PROBLEM SOLVING

SECTION C

3. Attempt any *one* part of the following: 1x10=10

Qno.	Question	Marks	CO
a.	Differentiate between High level and Low-Level Programming. Draw and explain the diagram of Digital computer.	10	1
b.	Explain the different kind of storage classes used in C programming with proper syntax.	10	1

4. Attempt any *one* part of the following: 1x10=10

Qno.	Question	Marks	CO
a.	Write the use of Break statement in switch case. Write a program to find out the greatest number out of three numbers.	10	2
b.	Explain different type of operators in C programming. Which concept makes the difference between operators when precedence is same?	10	2

5. Attempt any *one* part of the following: 1x10=10

Qno.	Question	Marks	CO
a.	Write a program to print the pattern 1 2 3 4 5 6 7 8 9 10	10	3
b.	Write a Program to find the entered number is Armstrong number or not.	10	3

6. Attempt any *one* part of the following: 1x10=10

Qno.	Question	Marks	CO
a.	Write a program two find out the odd place and even place numbers from the array elements and print the sum of these numbers respectively.	10	4
b.	Write the program for bubble sorting an explain it with example list 5, 7, 2, 1, 3, 6.	10	4

7. Attempt any *one* part of the following: 1x10=10

Qno.	Question	Marks	CO
a.	Write the importance of free () function in Dynamic memory allocation. Explain dynamic memory allocation with the functions use in it.	10	5
b.	Difference between read and write mode in file handling. Write a program to copy the content from file to another file and count the characters.	10	5

PAPER ID-421233

Subject Code: KCS201T

Roll No: | | | | | | | | | | | | | |

BTECH
(SEM II) THEORY EXAMINATION 2021-22
PROGRAMMING FOR PROBLEM SOLVING

Time: 3 Hours ***Total Marks: 100***

Note: Attempt all Sections. If you require any missing data, then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2x10 = 20

Qno	Questions	CO
(a)	Differentiate between void and int datatypes.	1
(b)	Draw the Pyramid structure of memory hierarchy.	1
(c)	Describe the syntax and working of Ternary operator.	2
(d)	Write advantages of Switch statement.	2

(e)	Find the output:
	#include <stdio.h>
	int main()
	{
	int a=100;
	printf("%d\n"+1, a);
	printf("Value is = %d"+3, a);
	return 0;
	}
		3

(f)	Define function and its type.	3

(g)	Find the output:
	#include<stdio.h>
	int main()
	{
	int arr[1]={10};
	printf("%d\n", 0[arr]);
	return 0;
	}
		4

(h)	Define time and space complexity. What is the complexity of bubble sort?	4

(i)	Find the output:
	#include<stdio.h>
	int main()
	{
	printf("%d", sizeof(void *));
	return 0;
	}
		5

(j)	What is the requirement of FREE() function in Dynamic memory allocation.	5

SECTION B

2. Attempt any *three* of the following: 10x3 = 30

Qno	Questions	CO
(a)	Discuss the various symbols used in flow chart and Draw the flow chart to find the reverse of a number.	1
(b)	Illustrate the concept of type conversion and type casting with program.	2
(c)	Write a program to print the pattern 1 12 123 1234 123 12 1	3

PAPER ID-421233

Subject Code: KCS201T

Roll No: | | | | | | | | | | | | | |

BTECH
(SEM II) THEORY EXAMINATION 2021-22
PROGRAMMING FOR PROBLEM SOLVING

(d)	Explain bubble sort concept and write the program.	4
(e)	Discuss about the command line argument with example.	5

SECTION C

3. Attempt any *one* part of the following: 10x1 = 10

Qno	Questions	CO
(a)	Explain the different kind of storage classes in C programming.	1
(b)	Draw the architecture of Digital computer System and explain its all components.	1

4. Attempt any *one* part of the following: 10x1 = 10

Qno	Questions	CO
(a)	Define Operator and Operands. Discuss about the different type of operators used in programming.	2
(b)	What is use of break in switch case? Write a program to develop a calculator using case in character format.	2

5. Attempt any *one* part of the following: 10x1 = 10

Qno	Questions	CO
(a)	Write a Program for pattern ***** **** *** ** * ** *** **** *****	3
(b)	Write a program to print the Fibonacci series using recursive function. Take the limit from the user as input.	3

6. Attempt any *one* part of the following: 10x1 = 10

Qno	Questions	CO
(a)	Write a program for the selection sort and explain it with example.	4
(b)	Write a program to find the product of two 2-dimensional array and print the output in separate array.	4

7. Attempt any *one* part of the following: 10x1 = 10

Qno	Questions	CO
(a)	Write a program to allocate the memory with dynamic memory allocation concept. Take the input from the user and find the sum of all elements.	5
(b)	Discuss about the file handling concept and write a program to copy the content of one file to another and print the count of these coping elements.	5

PAPER ID-421232

Subject Code: KCS201

Roll No: | | | | | | | | | | | | | |

BTECH
(SEM II) THEORY EXAMINATION 2021-22
PROGRAMMING FOR PROBLEM SOLVING

Time: 3 Hours ***Total Marks: 100***

Note: Attempt all Sections. If you require any missing data, then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2x10 = 20

Qno	Questions	CO
(a)	What do you mean by command line arguments?	5
(b)	Explain strlen() and strcpy() function with example.	4
(c)	What do you mean by linked list?	5
(d)	What do you mean by function prototype?	3
(e)	Describe the use of logical AND and logical OR operators in C with example.	2
(f)	Write down the difference between syntax error and logical error.	1
(g)	What is algorithm? Discuss its characteristics.	1
(h)	Why we use do while loop in C?	3
(i)	Differentiate between structure and union.	4
(j)	Explain Bitwise operator with example.	2

SECTION B

2. Attempt any *three* of the following: 10x3 = 30

Qno	Questions	CO
(a)	Explain Basic data type with their size and range and format specifier.	1
(b)	Write a program to find the largest of three numbers using conditional operator.	2
(c)	Write a program to print the following pattern. 1 22 333 4444	3
(d)	Write a program to store a record of 100 student like name, marks and roll number and print using structure.	4
(e)	Explain DMA along with their all function in detail.	5

SECTION C

3. Attempt any *one* part of the following: 10x1 = 10

Qno	Questions	CO
(a)	What is operating System? Explain its type.	1
(b)	What is meant by type conversion? Explain about implicit and explicit type conversion with examples.	1

4. Attempt any *one* part of the following: 10x1 = 10

Qno	Questions	CO
(a)	Write a Program to print the all prime numbers between 1 to 500.	2
(b)	What do you mean by Operator precedence and operator associativity?	2

PAPER ID-421232

Subject Code: KCS201

Roll No: | | | | | | | | | | | | | |

BTECH
(SEM II) THEORY EXAMINATION 2021-22
PROGRAMMING FOR PROBLEM SOLVING

5. Attempt any *one* part of the following: 10x1 = 10

Qno	Questions	CO
(a)	Write a program to find the sum of N natural number using recursion.	3
(b)	What do you mean by call by value and call by reference? Write a program to read two integers X and Y and swap the contents of the two variables X & Y using pointers.	3

6. Attempt any *one* part of the following: 10x1 = 10

Qno	Questions	CO
(a)	Write a program to find maximum and minimum element of an array.	4
(b)	Write a program to find the number of vowels in a string.	4

7. Attempt any *one* part of the following: 10x1 = 10

Qno	Questions	CO
(a)	Explain the role of C-pre-processor. What is Macro? And advantages of using macro definitions in a program. Give an example.	5
(b)	List out various file opening modes in C. Write a program to copy the content from one file to another file.	5

PAPER ID-311065

Subject Code: KCS101T

Roll No: | | | | | | | | | | | | | |

B TECH
(SEM-I) THEORY EXAMINATION 2020-21
PROGRAMMING FOR PROBLEM SOLVING

Time: 3 Hours ***Total 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 the fundamental data type in C Programming and its range.	2	1
b.	Write the algorithm for addition of two numbers.	2	1
c.	Define all Arithmetic operators.	2	2
d.	Explain the need of break in switch statement with example.	2	2
e.	Write the syntax of continue statement.	2	3
f.	What is the difference between while and do-while loop?	2	3
g.	Difference between structure and union.	2	4
h.	Define Sorting Algorithm with example.	2	4
i.	Define preprocessor and its usage in programming.	2	5
j.	Write the advantage for the use of Linked list.	2	5

SECTION B

2. Attempt any *three* of the following:

Q no.	Question	Marks	CO
a.	Brief the Generations of the Programming languages with examples.	10	1
b.	What do you mean by Operands? Discuss the operator precedence and associativity of all the operators.	10	2
c.	Define recursive function? Write a program to find the factorial of a number with recursive function.	10	3
d.	Write the advantage of using array. Write the program for matrix multiplication of two matrix elements.	10	4
e.	Explain file handling and write a program for copying the content of one file into another file.	10	5

SECTION C

3. Attempt any *one* part of the following:

Q no.	Question	Marks	CO
a.	Write the short notes on (i) Compiler (ii) Interpreter (iii) Linker (iv) Loader	10	1
b.	Brief the storage classes in C with proper example.	10	1

4. Attempt any *one* part of the following:

a.	Write a program to find out the greatest number out of three numbers.	10	2
b.	Explain different type of control statements used in c programming with example.	10	2

5. Attempt any *one* part of the following:

a.	Write a program to print the pattern: **** *** ** *	10	3
b.	Write a Program to find the entered number is Palindrome number or not.	10	3

6. Attempt any *one* part of the following:

a.	Write a program two find out the odd and even number from the array elements and its count.	10	4
b.	Explain the Selection sort with example.	10	4

7. Attempt any *one* part of the following:

a.	Explain dynamic memory allocation concept with proper example.	10	5
b.	Explain the different type of modes and I/O function in file handling.	10	5

PAPER ID-311064

Subject Code: KCS101

Roll No: | | | | | | | | | | | | | |

B TECH
(SEM-I) THEORY EXAMINATION 2020-21
PROGRAMMING FOR PROBLEM SOLVING

Time: 3 Hours ***Total 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 the fundamental data type in C Programming and its range.	2	1
b.	Write the algorithm for addition of two numbers.	2	1
c.	Define all Arithmetic operators.	2	2
d.	Explain the need of break in switch statement with example.	2	2
e.	Write the syntax of continue statement.	2	3
f.	What is the difference between while and do-while loop?	2	3
g.	Difference between structure and union.	2	4
h.	Define Sorting Algorithm with example.	2	4
i.	Define preprocessor and its usage in programming.	2	5
j.	Write the advantage for the use of Linked list.	2	5

SECTION B

2. Attempt any *three* of the following:

Q no.	Question	Marks	CO
a.	Brief the Generations of the Programming languages with examples.	10	1
b.	What do you mean by Operands? Discuss the operator precedence and associativity of all the operators.	10	2
c.	Define recursive function? Write a program to find the factorial of a number with recursive function.	10	3
d.	Write the advantage of using array. Write the program for matrix multiplication of two matrix elements.	10	4
e.	Explain file handling and write a program for copying the content of one file into another file.	10	5

SECTION C

3. Attempt any *one* part of the following:

Q no.	Question	Marks	CO
a.	Write the short notes on (i) Compiler (ii) Interpreter (iii) Linker (iv) Loader	10	1
b.	Brief the storage classes in C with proper example.	10	1

4. Attempt any *one* part of the following:

a.	Write a program to find out the greatest number out of three numbers.	10	2
b.	Explain different type of control statements used in c programming with example.	10	2

5. Attempt any *one* part of the following:

a.	Write a program to print the pattern: **** *** ** *	10	3
b.	Write a Program to find the entered number is Palindrome number or not.	10	3

6. Attempt any *one* part of the following:

a.	Write a program two find out the odd and even number from the array elements and its count.	10	4
b.	Explain the Selection sort with example.	10	4

7. Attempt any *one* part of the following:

a.	Explain dynamic memory allocation concept with proper example.	10	5
b.	Explain the different type of modes and I/O function in file handling.	10	5

Sub Code:KCS101

Paper Id: 110111 Roll No: | | | | | | | | | | | | | |

B. TECH.
(SEM-I) THEORY EXAMINATION 2019-20
PROGRAMMING FOR PROBLEM SOLVING

Time: 3 Hours *Total 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

Qno.	Question	Marks	CO
a.	Name different storage class with one example of each.	2	CO1
b.	Describe the functionalities of operating system.	2	CO1
c.	Differentiate between implicit & Explicit type conversion.	2	CO2
d.	What do you understand by mixed operands? Explain with example.	2	CO2
e.	What is the meaning of prototype of a function?	2	CO3
f.	Differentiate between while and do-while loop.	2	CO3
g.	Write an algorithm to find second largest element in an array.	2	CO4
h.	Differentiate structure with union.	2	CO4
i.	Explain the role of C preprocessor.	2	CO5
j.	What do you mean by pointer arithmetic?	2	CO5

SECTION B

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

Qno.	Question	Marks	CO
a.	Discuss the major components of a digital computer with suitable block diagram. Also discuss the function of each component.	10	CO1
b.	What are operators? Mention different types of operators in C. Explain the difference between operator precedence and associativity with suitable example.	10	CO2
c.	Take the three digit number from the user then write a program to check entered number is palindrome or not.	10	CO3
d.	Write a program that prints the real roots of a quadratic equation. Also draw flowchart for the same.	10	CO4
e.	Write macro definition with arguments for calculation of simple interest and amount. Store these macro definitions in a file called 'interest.h'. Include this file in your program and use the macro definitions for calculating simple interest and amount.	10	CO5

SECTION C

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

Qno.	Question	Marks	CO
a.	Differentiate between: (i) Compiler and Interpreter (ii) Linker and Loader (iii) break and continue	10	CO1
b.	(i) Define data types in C. Discuss primitive data types in terms of memory size, format specifier and range. (ii) Explain structure of a C program.	10	CO1

Paper Id: 110111 Roll No: | | | | | | | | | | | | | |

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

Qno.	Question	Marks	CO
a.	What are different conditional statements in C programming? Explain with proper example of each.	10	CO2
b.	if three sides of triangle are input through keyboard, draw a flowchart to check whether a triangle is isosceles, equilateral, scalene or right-angled triangle.Also write a program in C for the same.	10	CO2

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

Qno.	Question	Marks	CO
a.	(i) Write a program in C to generate the Fibonacci series up to the last Fibonacci number less than 100. Also finds the sum of all Fibonacci numbers and total count of all Fibonacci numbers. (ii) Write a program in C to print the following pattern: 2 3 4 5 6 7 3 4 5 6 7 4 5 6 7 5 6 7 6 7 7	6 4	CO3
b.	Differentiate between call by value and call by reference. Write a program in C that computes the area and circumference of a circle with radius taken as input using call by reference in functions.	10	CO3

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

Qno.	Question	Marks	CO
a.	What do you mean by sorting? Write a program in C to sort 'n' positive integers using bubble sort. Also draw the flow chart for the same.	10	CO4
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.	10	CO4

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

Qno.	Question	Marks	CO
a.	What are different file opening modes? Write a program in C that reads a series of integer numbers from a file named INPUT and write all odd numbers to a file to be called ODD and all even numbers to a file to be called EVEN.	10	CO5
b.	State the features of a pointer. Explain dynamic memory allocation with the help of an example.	10	CO5

Printed Pages: 02 **Sub Code: KCS 101**

Paper Id: 110111 **Roll No.** | | | | | | | | | | |

B.TECH.
(SEM I) THEORY EXAMINATION 2018-19
PROGRAMMING FOR PROBLEM SOLVING

Time: 3 Hours ***Total 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**

Qn.	Question	Marks	CO
a.	What is the difference between compiler and Interpreter?	2	CO1
b.	What are the good characteristics of an algorithm?	2	CO1
c.	What do you mean by scope and lifetime of a variable?	2	CO1
d.	Write a recursive function in C, which takes an input from user to calculate a factorial using the recursion concept.	2	CO3
e.	How to use break statement in C? Explain with some sort of code.	2	CO3
f.	What do you mean by precedence and associativity while solving some arithmetic expressions?	2	CO1
g.	While compiling a code, write the name of two syntax and two logical errors.	2	CO2
h.	What is an array? In which situation array is advantageous over linked list?	2	CO5
i.	What is linked list? Write the self-referential structure of a node in linked list?	2	CO5
j.	Write the difference between structure and union.	2	CO5
k.	Draw the memory hierarchical structure of computer system.	2	CO1

SECTION B

2. Attempt any *three* of the following:

a.	Explain linear search and binary search technique for searching an item in a given array. Also write the complexity for each searching technique.	10	CO4
b.	A certain grade of steel is graded according to the following conditions: i. Hardness must be greater than 50 ii. Carbon content must be less than 0.7. iii. Tensile strength must be less than 5600 The grades are as follows: Grade is 10 if all the three conditions are met. Grade is 9 if condition (i) and (ii) are met Grade is 8 if condition (ii) and (iii) are met Grade is 7 if condition (i) and (iii) are met Grade is 6 if only one condition is met. Grade is 5 if none of the conditions are met. Write a program, which will require the user to give values of hardness, carbon content and tensile strength of the steel under consideration and output the grade of the steel.	10	CO3

c.	What do you mean by call by value and call by reference? Write an algorithm for swapping two numbers using call by reference technique. Also write a C program for the above stated algorithm.	10	CO5
d.	Explain Selection sort technique for sorting problem. Also write an algorithm for selection sort. Sort the following numbers using selection sort technique. 26,54,93,17,77,31,44,55,20	10	CO2
e.	Write a short note on following preprocessor directives with example: i. Macro Expansion ii. File Inclusion	10	CO5

SECTION C

3. Attempt any *one* part of the following:

a.	Describe the basic components of computer system with neat and clean block diagram. What do you mean by operating system? Ex	10	CO1
b.	Defined data types in C. Discuss primitive data types in terms of memory occupied, format specifier and range.	10	CO1

4. Attempt any *one* part of the following:

a.	Explain various types of arithmetic operators in C language with help of example. When precedence of two operators in an arithmetic expression is same, how associativity helps in identifying which operator will be evaluated first. Illustrate it with the example.	10	CO1
b.	What is case control structure in C.? What is the reason for using break statement at the end of each case in case control block?	10	CO1

5. Attempt any *one* part of the following:

Qn.	Question	Marks	CO
a.	Write the syntax format for **while**, **do while** and **for** loops. Write a program in C to multiply a matrix of dimension 4*4 and store the result in another matrix.	10	CO3
b.	What is a function? Why programmers use functions in code? While executing a function, how the values are passed between calling and called environment?	10	CO4

6. Attempt any *one* part of the following:

a.	Write short notes on following. 1. Enumerated Data Type 2. String	10	CO5
b.	What do you mean by order of complexity? Explain various notions to represent order of complexity with diagram	10	CO2

7. Attempt any *one* part of the following:

a.	What is dynamic memory allocation? Explain the calloc(), malloc(), realloc() and free() functions in detail. What is lifetime of a variable, which is created dynamically?	10	CO5
b.	Explain command line arguments in C with the help of example.	10	CO5

KCS101 CORRECTION M 15.12.18

Q.1. Attempt any TEN questions.

Printed Pages:02 **Sub Code: KCS 201**

Paper Id: 110265 **Roll No.** | | | | | | | | | | |

B. TECH
(SEM II) THEORY EXAMINATION 2018-19
PROGRAMMING FOR PROBLEM SOLVING

Time: 3 Hours ***Total Marks: 100***

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

SECTION A

1. Attempt *all* questions in brief.

		Marks	CO
a.	What is the difference between .obj and .exe files in C?	**2**	**2**
b.	List the components of C language.	**2**	**1**
c.	Differentiate assignment and equality operators in C.	**2**	**1**
d.	Correlate else if ladder and switch case statement.	**2**	**3**
e.	Differentiate while and do while loop.	**2**	**3**
f.	Differentiate recursion and iteration.	**2**	**3**
g.	Explain the significance of null character in string.	**2**	**5**
h.	Differentiate linear and binary search.	**2**	**4**
i.	Differentiate static and dynamic memory allocation.	**2**	**5**
j.	Define the structure of a node in linked list.	**2**	**5**

SECTION B

2. Attempt any *three* of the following:

		Marks	CO
a.	Draw the block diagram of a computer system. Explain its different components with suitable example.	**10**	**1**
b.	Differentiate operator precedence and associativity. Write a program in C to elaborate the use of logical AND and logical OR operators in C.	**10**	**1**
c.	What is the use of break statement in loops? Write a program in C using while loop to elaborate the use of break statement.	**10**	**3**
d.	Write a program in C to input two 3x3 matrix from the user and print multiplication as the result in matrix form. (Write comments also at appropriate places in the program)	**10**	**3**
e.	Explain the importance of pointers in C. Write a program in C to swap the values of two numbers entered by user using function call by reference method.	**10**	**4**

SECTION C

3. Attempt any *one* part of the following:

		Marks	CO
a.	Write an algorithm and draw a flowchart to find the sum of digits of an integer number entered by the user.	**10**	**2**
b.	Write an algorithm and draw a flowchart to reverse an integer number entered by the user.	**10**	**2**

4. Attempt any *one* part of the following:

		Marks	CO
a.	Define the term mixed operands in an arithmetic expression with few examples. Write a program in C to elaborate the use of type casting.	**10**	**1**
b.	Explain the use of default in switch statement. Write a program that takes two operands and one operator from the user and perform the operation and prints the result by using switch statement.	**10**	**3**

5. Attempt any *one* part of the following:

		Marks	CO
a.	Write a program in C to print following pattern with appropriate comments: 10 9 8 7 6 5 4 3 2 1	**10**	**3**
b.	Discuss the concept of assembler. Explain complier, interpreter, loader and linker with example.	**10**	**3**

6. Attempt any *one* part of the following:

		Marks	CO
a.	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.	**10**	**4**
b.	Explain the importance of structure in C programming. Write a program in C using structure to enter and print the record of 10 books available in your library. Following fields may be included in the record: - book_title, book_price and number_of_pages.	**10**	**5**

7. Attempt any *one* part of the following:

		Marks	CO
a.	Define various file operations in C. Write a program in C to count and print the number of characters in a file.	**10**	**5**
b.	Explain the following: (i) Macros. (ii) Union (iii) Enumerated data types (iv) Type conversion	**10**	**5**