

Code : 100104/100204

B.Tech 2nd Semester Special Exam., 2020

( New Course )

PROGRAMMING FOR PROBLEM SOLVING

Time : 3 hours

Full Marks : 70

Instructions :

- (i) The marks are indicated in the right-hand margin.
- (ii) There are **NINE** questions in this paper.
- (iii) Attempt **FIVE** questions in all.
- (iv) Question No. 1 is compulsory.

1. Choose the correct alternative (any seven) :  
2x7=14

(a) A variable name in C should be a/an

- (i) reserve word
- (ii) keyword
- (iii) identifier
- (iv) All of the above

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( Turn Over )

(b) Why do we write (int\*) before malloc?

`int *p=(int*)malloc(sizeof(int));`

- (i) It is for the syntax correctness
- (ii) It is for the type casting
- (iii) It is to inform malloc() function about data-type expected
- (iv) None of the above

(c) Which header file is used for reading and writing to a file?

~~(i) #include<iostream.h>~~

(ii) #include<fstream.h>

(iii) #include<file.h>

(iv) All of the above

(d) Which of the following functions displays the keyboard character for pressed key?

(i) getch()

~~(ii) getch()~~

(iii) Both (i) and (ii)

(iv) None of the above

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( Continued )

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(c) What does the following declaration mean?

```
int (*ptr) [10];
```

(i) ptr is array of pointers to 10 integers

(ii) ptr is a pointer to an array of 10 integers

(iii) ptr is an array of 10 integers

(iv) ptr is a pointer to array

(f) Automatic variables are initialized to

(i) zero

(ii) junk value

(iii) None of the above

(iv) Both of the above

(g) Which of the following symbols is the type-specifier?

(i) &

(ii) \*

(iii) #

(iv) %

(h) The && and || operators

(i) compare two numeric values

(ii) compare two numeric values shorthand operators

(iii) compare two Boolean values

(iv) None of the above

(i) Identify the correct sequence of steps to run a program.

(i) Link, load, code, compile and execute

(ii) Code, compile, link, execute and load

(iii) Code, compile, link, load and execute

(iv) Compile, code, link, load and execute

(j) An external variable is the one

(i) which resides in the memory till the end of the program

(ii) which is globally accessible by all the functions

(iii) which is declared outside the body of the function

(iv) All of the above

- 2. (a) Discuss about some methods or methodologies used for problem solving. 5
- (b) How programming utilizes different components of computer system? 5
- (c) What is algorithm? Give an example algorithm for any problem. 4
  
- 3. (a) What is the difference between compilation and execution of a program? 4
- (b) What is the effect of warning and syntax error on program execution? What we get as an output of compilation step? 6
- (c) What are variables? List the 'data types' which can be associated to a variable in C language. 4
  
- 4. (a) What is the role of 'header files' in C language? List any four with their usage. 6
- (b) Draw a flowchart to find the average of 10 numbers of an array. 4
- (c) Write the syntax for conditional operator in C. Also write the syntax for some conditional statements used in C. 4

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- 5. (a) List the looping constructs used in C. What are the roles of 'break' and 'continue' statements in loops? Show with examples. 7
- (b) Given a list of 11 numbers. Write a C program to find the median of that list. 7
  
- 6. (a) What are functions? How are they useful? Comment on two categories in which various functions can be categorized. 6
- (b) Write a C program to generate Fibonacci series using function. 5
- (c) List three different ways to read a string from the prompt. 3
  
- 7. (a) What are the ways of parameter passing in functions? Explain each. 6
- (b) Write a C program to find the largest number from an array using pointer. 5
- (c) What are the structures in C? How are they different from Union? 3
  
- 8. (a) What is dynamic memory allocation? How is this achieved in C? Explain. 6
- (b) Write a C program to copy the content of one file into other. 6
- (c) How is merge sort different from other sorting algorithms? 2

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9. (a) Write a C program to create an array of structures named "STUDENT" with fields Name, Roll No, Address and Marks. Also add the code for inserting, deleting and printing any student record. 10
- (b) What do you mean by command line argument? Give an example. 4

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