

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) :
2×7=14

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

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

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

`int* ip=(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

- (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 <https://www.akubihar.com>
- (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

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

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
