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Question Paper Code: 52809

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2019

Second Semester

Information Technology

15UIT209 - PROBLEM SOLVING AND PROGRAMMING TECHNIQUES

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. AC preprocessor directive begins with _____ CO1- R
(a) # (b) include (c) main() (d) Functions
2. If #include is used with file name in angular brackets CO1- R
(a) The file is searched for in the standard compiler include paths
(b) The search path is expanded to include the current source directory
(c) The search path will expand
(d) None of the mentioned
3. Regarding the scope of the variables identify the incorrect statement: CO2- R
(a) Automatic variables are automatically initialized to 0
(b) Static variables are automatically initialized to 0
(c) The address of a register variable is not accessible
(d) static variable cannot be initialized with any expression.
4. Which of the following uses structure? CO2- R
(a) Array of structures (b) Linked Lists
(c) Binary Tree (d) All the above.

5. What is the output of this C code? CO3- R
- ```
#include <stdio.h>
void main()
{
 char *s = "hello";
 char *p = s;
 printf("%p\t%p", p, s);
}
```
- (a) Different address is printed                      (b) Same address is printed  
(c) Run time error                                              (d) Nothing
6. Give float \*pf; int \*pi; which of the following is true? CO3- R
- (a) sizeof(pf) > sizeof(pi)                              (b) sizeof(pf) < sizeof(pi)  
(c) sizeof(pf) == sizeof(pi)                              (d) none of these above
7. What is the return value of getc()? CO4- R
- (a) The next character from the stream is not referred by file pointer  
(b) EOF for end of file or error  
(c) Nothing  
(d) None of the mentioned
8. What is the return value of putchar()? CO4- R
- (a) The character written                              (c) EOF if an error occurs  
(b) Nothing                                                      (d) Both character written & EOF if an error occurs
9. What is the advantage of bubble sort over other sorting techniques? CO5- R
- (a) It is faster                                                      (b) Consumes less memory  
(c) Detects whether the input is already sorted              (d) All of the mentioned
10. The time complexity of a quick sort algorithm which makes use of CO5- R  
median, found by an O(n) algorithm, as pivot element is
- (a) O(n<sup>2</sup>)                                                      (b) O(n log n)  
(c) O(n log log n)                                                      (d) O(n)
- PART – B (5 x 2= 10 Marks)
11. Enumerate the rules that apply to a function call. CO1- R
12. What is Extern? Write the syntax of “Extern”. CO2- R

13. Explain the effects of the following statement: CO3- R
- (a) `double (*f) ();`
- (b) `a = ((float*) &x)`
14. In `#include` directives, some file names are enclosed in angle brackets while others are enclosed in double quotation marks. Why? CO4- R
15. Define sorting with its types. CO5- R

PART – C (5 x 16= 80 Marks)

16. (a) List the categories of functions and also mention the advanced features of functions CO1- U (16)
- Or
- (b) Write a C Program to calculate fibonacci sequence using recursion CO1- U (16)
17. (a) Construct a C program to maintain a record of “n” student details using an array of structures with four fields (Roll number, Name, Marks, and Grade). Each field is of an appropriate data type. Print the marks of the student use student name as input. CO2- U (16)
- Or
- (b) (i) Write a program using pointers to read in an array of integers and print its elements in reverse order. CO2- U (8)
- (ii) Write a function (using pointer parameters) that reverses the elements of a given array. CO2- U (8)
18. (a) Build a C program for the following concepts: CO3- U (16)
- (i) Passing pointers to function.
- (ii) Array of Pointers.
- Or
- (b) Write a C program to find the sum of all elements in an array using pointer. CO3- U (16)
19. (a) Explain in detail about the various types of standard input and output functions. CO4- U (16)
- Or
- (b) Discuss in detail about various string handling functions with an example program. CO4- U (16)

20. (a) Write the algorithm for merge sort with example. CO5- U (16)
- Or
- (b) Write a C program to perform linear search and binary search CO5- U (16)