

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 1232

Roll No.

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B. Tech.**(Semester II) Even Semester Theory Examination, 2012-13****COMPUTER PROGRAMMING****Time : 3 Hours]****[Total Marks : 100****Note :** Attempt questions from each Section as per instructions.**Section-A**Attempt *all* parts of this question. Each part carries 2 marks. 2×10=20

1. (a) What do curly braces denote in C? Why does it make sense to use curly braces to surround the body of a function?
- (b) The following lines of code, when arranged in the proper sequence, output the simple message "All your base are belong to us" :
 - (i) return 0;
 - (ii) const char msg[] = MSG1;
 - (iii) }
 - (iv) #define MSG1 "All your base are belong to us!"
 - (v) mt main(void) {
 - (vi) #include <stdio.h>
 - (vii) puts(msg);
- (c) Convert each of the following octal numbers to decimal and hexadecimal formats :
 - (i) (3754)₈
 - (ii) (7777)₈
- (d) What is the need of an operating system?
- (e) Classify the OS into different types based on their processing capability.

- (f) Differentiate the following :
- (i) Unary operator and Binary operator
 - (ii) Local variables and Global variables
- (g) What is the need of function?
- (h) What are escape sequences characters?
- (i) What is the need of dynamic memory allocation?
- (j) Write down few commands available in /bin and /sbin directory.

Section-B

Attempt any *three* parts of this question. Each part carries 10 marks. $10 \times 3 = 30$

2. (a) Describe the generations of computer based on the (i) Hardware (ii) Software (iii) Computing characteristics (iv) Physical appearance and (v) Their applications.
- (b) What is a recursive function? What are its basic properties? Write a function which finds the sum of first n integers; where n is the argument to the function.
- (c) Write a C program that accepts name and marks scored by students in five subjects. Use functions :
- (i) ADD to add records with student names and marks to a file.
 - (ii) CALCULATE to read the records from the file, calculate the result and display.
- (d) Write an algorithm for quick sort. Explain its working for sorting 35, 26, 10, 13, 45, 92, 30, 60.
- (e) (i) What is the difference between a zombie process and an orphan process?
(ii) What purpose do the functions `getpid()` and `getppid()` serve?
(iii) Explain Parent and Child processes in Linux with example.

Section-C

Attempt *all* questions of this Section. Each question carries 10 marks. $5 \times 2 \times 5 = 50$

3. Attempt any *two* parts :
- (a) Convert each of the following decimal numbers to binary, octal and hexadecimal formats :
- (i) $(3479)_{10}$
 - (ii) $(555)_{10}$

- (b) Draw a flowchart to play a dice game according to the following rules :
- If you throw two identical numbers, you win.
 - If the numbers are not the same, but are both even, or both odd, you have another turn.
 - If one number is odd, and the other is even, you lose.
- (c) Differentiate between a Linker and Compiler.
4. Attempt any *two* parts :
- Differentiate between automatic variable, static variable and dynamic variable.
 - Explain any two file operations and two bitwise operators with example.
 - What are subscripts? How are they specified? What restrictions apply to the values that can be assigned to subscripts in 'C' language?
5. Attempt any *two* parts :
- Write a program to construct a 3×3 matrix B that contains only the fractional part of another 3×3 matrix A that contains floating point numbers. Assume that elements of matrix A contain only two digit fractional numbers.
 - What is the difference between call by value and call by reference? Write a program to swap two floating point numbers using call by reference method.
 - Explain with example, the syntax and usage of the following in C program :
 - Nested Structure Definition
 - Array of Structures
6. Attempt any *two* parts :
- A program in 'C' language contains the following declaration :

```
static int x[8] = {1,2,3,4,5,6,7,8};
```

 - What is the meaning of x ?
 - What is the meaning of (x+2)?
 - What is the meaning of *x?
 - What is the meaning of (*x+2)?
 - What is the meaning of *(x+2)?
 - Differentiate the use of break and continue statements with an example.
 - What is dynamic memory allocation? How does it help in building complex programs? What is the task of following memory allocation functions?
 - malloc
 - calloc.

7. Attempt any two parts :

- (a) Explain with example defining and calling macros and conditional compilation.
- (b) Write a simple C program to show the use of string handling functions.
- (c) Write a program print out our array using the array notation and by dereferencing pointer.