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Invigilator's Signature : 

CS/B.Tech/SEM-2/CS-201/2010
2010

INTRODUCTION OF COMPUTING

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP - A

(Multiple Choice Type Questions)

I. Choose the correct alternatives for the following :

10 × 1 = 10

i) Which of the following is a bitwise operator ?

- | | |
|-------|-------|
| a) < | b) >= |
| c) << | d) && |

ii) A pointer is

- a) a memory location containing the address of a variable
- b) a memory location
- c) a value
- d) none of these.

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- iii) RAM stands for
- a) Read-Write Access Member
 - b) Random Access Memory
 - c) Read Access Memory
 - d) none of these.
- iv) Number of bytes required for double in a 32 bit machine is
- a) 64
 - b) 4
 - c) 8
 - d) 128.
- v) The purpose of mode `r+` is to
- a) open for only reading
 - b) open for only writing
 - c) open for both reading and writing
 - d) none of these.
- vi) What will be the correct output of the following code ?
- ```
int x = 9;
if(10)
 printf("%d", ++x);
else
 printf("%d", x++);
```
- a) 9
  - b) 10
  - c) 11
  - d) 12.
- vii) Which is the range of unsigned short integer ?
- a) 0 to 65535
  - b) 0 to 255
  - c) - 128 to 127
  - d) None of these.
- viii) Which of the following declarations is invalid ?
- a) `int 2A`
  - b) `int A2A`
  - c) `int A2`
  - d) `int AA2.`

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- ix) Members of a union use
  - a) different storage locations
  - b) same storage location
  - c) no storage location
  - d) none of these.
- x) Which among the following is a special operator ?
  - a) <<
  - b) ++
  - c) ?:
  - d) sizeof( ).

**GROUP - B**

**( Short Answer Type Questions )**

Answer any *three* of the following 3 × 5 = 15

- 2. Briefly describe the functions of different components of a conventional digital computer with a suitable block diagram.
- 3. Write a C program to arrange a set of *n* numbers in ascending order.
- 4. Using ternary operator write a macro to find out the absolute value of a number.
- 5. Draw a flowchart to find the largest among three numbers taken as input.
- 6. a) What are the differences between recursion and iterations ?  
b) Write a recursive C-function to calculate factorial of a number. 2 + 3

**GROUP - C**

**( Long Answer Type Questions )**

Answer any *three* of the following. 3 × 15 = 45

- 7. a) Differentiate between while and do-while statements with suitable example.  
b) Differentiate between break and continue statements with suitable example.  
c) Write a C program to check whether a given number is prime or not. 5 + 4 + 6

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8. a) i) Convert  $(1011010)_2$  to Octal  
ii) Convert  $(35.453)_{10}$  to Binary  
iii) Convert  $(3AC)_{16}$  to Decimal  
iv) Convert  $(-496)_{10}$  to Octal  
v) Convert  $(1001011)_2$  to Hexadecimal.
- b) What are 2's complement numbers ? Using 2's complement system perform  $(55_{10} - 34_{10})$  in binary.  
 $(5 \times 2) + 2 + 3$
9. a) What is an array ? What condition must be satisfied by the entire element of any given array ? What are subscripts ?
- b) Write a program in C to multiply two 2D matrices and display the resultant matrix.
- c) Explain the role of the C preprocessor. What is macro and how is it different from a C variable name ?  
 $4 + 5 + 6$
10. a) What is a function ? What are the advantages of using functions ? What is the purpose of the return statement ?
- b) What are function prototypes ? When and where are the prototypes normally used ?
- c) Write a C program to find out the GCD of a number using recursion.  
 $5 + 5 + 5$
11. a) Explain the "Call by Value" and "Call by Reference" mechanism for passing arguments into a function call in general with example.
- b) Write a program in C to find out the number of vowels in a string.  
 $10 + 5$