- (iv) What would be the output of the following code snippet? int main(void) int a = 10; float b = 2.5: if(b = 0){ printf("%d ",printf("%d",b)); } else { printf("%d ",printf("%d",b)); } return 0; } (d) 1 2. (a) 0 1 (b) 1 0 (c) 2 1 Assume a 2-d array has been declared and initialized as follows: (v) int $x[3][5] = \{ \{1,2,3,4,5\}, \{6,7,8,9,10\}, \{11,12,13,14,15\} \};$ Which of the following is incorrect statement? (a) printf("%d",*(*(x+2)+1)); prints 12 (b) printf("%d",*(*(x+1))); prints 6 (c) printf("%d",*(*(x)+2)+1); prints 5 (d) printf("%d",*(*(x+1)+3); prints 9. A -> B is syntactically correct if (vi) (a) a and b are structure (b) a is a structure and b is a pointer to structure (c) a is a pointer to structure and b is a structure (d) a is a pointer to structure in which b is a field of the structure. Select the fastest memory unit (vii) (b) Cache (a) Register (d) Hard disk. (c) RAM In which part of the program compilation process macros are dealt (viii) with? (a) Assembly (b) Pre-processing (c) Linking (d) None of the above.
- (ix) Meaning of x >> 3 is same as, (a) x / 3 (b) x * 8 (c) x * 3 (d) x / 8.

B.TECH/AEIE/BT/CE/CHE/CSE/ECE/EE/IT/ME/2ND SEM/CSEN 1201/2017

Group – D

- 6. (a) Write a function ceil() with prototype int ceil(float), so that it converts a floating point number into the smallest integer which is not less than the number. Example: ceil(1.02) will return 2.00 and ceil(-1.02) will return -1.00.
 - (b) Write a C program to reverse any number using recursion.
 - (c) How does a local static variable behave differently from a local variable in a function?

4 + 6 + 2 = 12

- 7. (a) Write a program that defines SCUBE(a, b), a macro, as $a^3 + b^3$ and test the program to find SCUBE (4, 5 + 6).
 - (b) Write a program that multiplies two matrices of dimensions m × n and p × q, using a function.

```
5 + 7 = 12
```

Group – E

- 8. (a) Write a program to merge two numbers using pointers so that the new number is constructed by sequentially putting the digits of the first number as the odd digits in the new number and the digits of the second number as the even digits of the new number. Example: 123 and 456 will be merged to create 142536.
 - (b) Write a program that takes two strings as command line arguments and compares them to see whether they are same or not. (Do not use any function from string.h library)

6 + 6 = 12

- 9. (a) State the difference between malloc() and calloc(). Write a C programme to perform matrix multiplication using dynamic memory allocation. (Do not forget to free your used memory)
 - (b) Write a C program which will take a file name as a command line input and search that file in the current working directory. It will print "SUCCESS" if the file is present in the current working directory else it will print "FAILURE".

(2+6)+4=12

2

5

B.TECH/AEIE/BT/CE/CHE/CSE/ECE/EE/IT/ME/2ND SEM/CSEN 1201/2017

INTRODUCTION TO COMPUTING (CSEN 1201)

Time Allotted : 3 hrs

(iii)

Full Marks : 70

Figures out of the right margin indicate full marks.

Candidates are required to answer Group A and any 5 (five) from Group B to E, taking at least one from each group.

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

Group – A (Multiple Choice Type Questions)

1. Choose the correct alternative for the following:

 $10 \times 1 = 10$

(i) What will be the standard SOP expression for the following table?

		Inputs	T.	Output	7
	A	В	С	X	
	0	0	0	0	
	0	0	1	1	
	0	1	0	0	
	0	1	1	1	
	1	0	0	0	
	1	0	1	0	
	1	1	0	1	
	1	1	1	0	
(a) $X = \overline{A} \overline{B} \overline{C} + A B C$	+ A B	С			(b) $X = ABC + ABC + ABC$
(C) $X = A \overline{B} C + \overline{A} B C$	+ A B	5			(d) $X = \overline{A} \overline{B} C + \overline{A} B C + A B \overline{C}$
			-l C	- 11	

```
(ii)
       What would be the output of the following code snippet?
       int main(void)
```

{ const int a = 10: int *p = &a;*p = 20; printf("%d", a); return 0; (a) Compilation error (b) 10 (c) 20 (d) None of the above. What is the default return type of functions? (a) int (b) char (c) float (d) double. 1 **CSEN 1201**

B.TECH/AEIE/BT/CE/CHE/CSE/ECE/EE/IT/ME/2ND SEM/CSEN 1201/2017

	(x)	What will be the output of the following code snippet? #define SQUARE(X) X * X int main ()							
		printf ("\n Square = %d" , SQUARE(10+2)); return 0;							
		} (a) 144 (b) 32 (c) 122 (d	l) 12.						
		Group – B							
2.	(a)	Draw a flowchart to check whether a number is prime or not.							
	(b)	Convert from one number system to the other: (i) $(29.65)_{10} = (?)_2$ (ii) $(364364364)_8 = (?)_{16}$							
	(c)	Simply the expression: $AB + A(B + C) + B(B + C)$							
		5 + (2 × 2) + 3	= 12						
3.	(a)	What will be 32-bit full precision floating representation for 24.75?							
	(b)	State the differences between compiler and interpreter.							
	(c)	What is a universal logic gate?							
	(d)	Draw a logic circuit to simulate an XOR gate by using only NOR gates. (Minimum number of NOR gates should be used)							
		6+2+1+4	= 12						
		Group – C							
4.	(a)	Write a program to check whether a number is a palindrome or not, without using array.							
	(b)	Explain explicit and implicit type casting with an example. How would you use these techniques to round off a floating point number?							
		6 + (4 + 2)	= 12						
5.	(a)	Write a C program to print this pattern, where the number of rows will be taken as an input from the user. $*$							
		* *							
		* * *							

B.TECH/AEIE/BT/CE/CHE/CSE/ECE/EE/IT/ME/2ND SEM/CSEN 1201/2017

```
Explain the output (error) of the following code snippets:
(i) int main ()
           double degC, degF = 96;
           degC = 5/9 * (degF - 32);
           printf ("%f", degC);
           return 0;
            }
(ii) int main ()
            {
           int x = 0, y = 2, z = -1;
           x = x \& \& y || z;
           printf ("%d", x);
           x = y = z = -1;
           ++x || ++y && ++z;
           printf ("%d%d%d", x, y, z);
           return 0;
            }
(iii) int main ()
            {
           const int num = 20;
           float x = 10.7356;
           num + = num;
           printf ("%d", num);
           printf ("%0.0f %8.2f", x, x);
           return 0;
            }
(iv) int main ()
            {
           int loop;
           for(loop = 15; loop >= 0; loop--)
                   if( (1 << loop) & n)
                     printf("1");
                   else
                     printf("0");
           return 0;
            }
```

* * * *

* * * * *

(b)

 $4 + (4 \times 2) = 12$