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B. Tech

BCSE 3101/BE2105

First Semester Examination – 2008

PROGRAMMING IN 'C'

Full Marks – 70

Time – 3 Hours

*Answer Question No. 1 which is compulsory
and any five from the rest.*

*Figures in the right hand margin
indicate marks.*

1. Answer the following questions : 2×10
 - (a) Give a C language preprocessor statement that will create a constant named MAX with value 100.
 - (b) What is a subscript ? What range of values is permitted for the subscript of a one dimensional, n element array ?

P.T.O.

- (c) What is the purpose of the *goto* statement? How the associated target statement is identified?
- (d) Describe two different forms of the if-else statement. How do they differ?
- (e) What is the precedence of comma operator compared with other C operators?
- (f) What is a variable? How are keywords different from them?
- (g) List the different types of constants used in C. Give two examples in each type.
- (h) What are the different escape sequences in C?
- (i) What is a conditional operator? Execute the following statement:
- $$y = (x > z) ? (2 * x + 5) : (1.5 * x + 3);$$

- (j) Identify the syntax errors in the following program:

```
main {
    {
    float x;
    x=25;
    y=exp(x);
    /** printing section**/
    print(x,y)
}
```

1 b.
1 x
1 3
1 a.
1 v

- (a) Give the basic structure of a C program and explain with an example to find the area and *perimeter* of a circle of given radius 'r'. State the purpose of each line in the program. 5
- (b) Write a C program to find the squares and cubes of a 2 digit odd number. 5

3. (a) List the different types of control statements explain the types of if statement gives one example for each. 5
- (b) Write a C program to solve a quadratic equation using switch statement. 5
4. (a) Define pointer in C language. How the declarations are made for pointer variables? What is the difference between the function pointer and pointer to a function? What is a far pointer? 5
- (b) Write a C program using a do-while loop, to calculate the sum of every third integer, beginning with $i=2$, for all values of i that are less than 100. 5
5. (a) What is a function? What is meant by a function call? Define and differentiate between formal argument and actual argument. 5

- (b) Write a function in C that takes a string as the single parameter and returns the integer 1 if the string is a palindrome. Otherwise zero should be returned. 5
6. (a) What is an operator? Describe several different types of operators that are included within the C language. 5
- (b) Write a complete C program that computes the sum of two square matrix A [$n \times n$] and B [$n \times n$]. 5
7. (a) What is a structure? What is a **structure member**? What is the relationship between a **structure member** and a **structure**? 5
- (b) Write a C program that accepts a character as input data and determine if the character is an uppercase letter. An uppercase letter is any character that is greater than or equal to 'A' and less than or equal to 'Z'. If the

entered character is an uppercase letter, display the message "The character just entered is an uppercase letter". If the entered character is not uppercase, display the message "The character just entered is not an uppercase letter". 5

8. (a) What will be the output of following program? 5

Program 1	Program 2
<pre>void main () { float k=25.5f; int x=5; clrscr(); printf("%d",k%x); getch(); }</pre>	<pre>void main () { int y=15,z=25; function(&y,&z); clrscr(); printf("%d\t%d",z,y); getch(); } function (int *p,int *q) { return(*p=(*p+*q)-(*q=*p)); }</pre>

- (b) Write a C program that will generate a table of values for the equation :

$$f(x, y) = 2e^{x^3} + (23 + y)^x$$

where $1 \leq x \leq 5$ with an increment 0.5 and $1 \leq y \leq 5$ with an increment 0.25. 5

OR

- (a) Draw the flow chart to calculate the real roots of the quadratic equation : 5

$$ax^2 + bx + c = 0.$$

- (b) What is structure programming? What is the key benefit of structure programming? What are different control structure associated with C language supports structure programming? 5