B.E.(with Credits)-Regular-Semester 2012 - Mining Engineering Sem IV

MN404 - Programming in C Language

P. Pages : 2 **GUG/W/16/3930**

Time : Three Hours * 4 0 4 5 * Max. Marks : 80

Notes : 1. All questions carry equal marks.
2. Assume suitable data wherever necessary.
3. Illustrate your answers wherever necessary with the help of neat sketches.
4. Marks are indicated to the right side.

1. What is an algorithm? What are the desirable characteristics a good algorithm should possess? What is a flowchart? Draw a flowchart to determine and print the smallest of given four non – equal integers. **16**

OR

2. a) Given three points with Cartesian co – ordinates (x_1, y_1), (x_2, y_2), and (x_3, y_3), write a program in C to check if all the three points fall on the same straight line. **9**

b) Simple interest i accrued on a principal sum P for a period of n years at an annual interest rate of r is given by: **7**

$$i = \frac{p.n.r}{100}$$

Write a program in C to read 10 sets of p, n and r and to calculate and print the accrued sum.

3. a) Write three customised functions that ask the user to enter the values of diameter (d) and height (h) of a right circular cylinder and return (i) curved surface area of the cylinder (given by $2\pi rh$, r being the radius), (ii) total surface area and (iii) volume of the cylinder (given by $\pi r^2 h$). Call these functions from main ( ) and print the results in main ( ). **9**

b) Write a program in C using recursion to calculate and print the value of factorial of a number keyed in by the user. **7**

OR

4. What is an array? What is the utility of arrays in C? What is (i) base address and (ii) the principle of contiguous memory allocation in the case of arrays? Write a program in C using two – dimensional array to enter and then print the number of pages contained in 10 chapters of 5 different books. **16**

5. What is a string? What is its use? Enlist four important string handling functions. Briefly describe their use with the help of suitable examples. **16**

OR

6. What is a pointer? What is its speciality and significance? What types of arithmetic operations are permitted on pointers? Explain with suitable examples. **16**

7. What is a structure? Are structures more versatile than arrays? Can we have arrays within structures and also create arrays of structure? Demonstrate with the help of a program in C how to use a structure named "Book" with book title, publisher, author, price and no. of pages as its elements. Calculate the space in memory occupied by each such structure. Create two instances of the structure, feed values into them and retrieve the values thus saved by printing them. **16**

OR

8. What are the pre – processor directives? How do they work in C programming? Enlist and explain with the help of suitable examples some important pre – processor directives and their use. **16**

9. What is a file in C? What are the different operations that can be carried out on a file? In how many different modes can a file be opened? Write a program in C to create a file "Trial1.txt", to enter a few lines of text into it and to print its contents. **16**

OR

10. Write a program in C to draw (i) a rectangle, (ii) two parallel horizontal lines and (iii) a circle and put some text below each of them. **16**

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