

B.E. Mining Engineering Fourth Semester  
**MN404 - Programming in C Language**

P. Pages : 2

Time : Three Hours



**GUG/W/18/1587**

Max. Marks : 80

- Notes :
1. Due credit will be given to neatness and adequate dimensions.
  2. Assume suitable data wherever necessary.
  3. Illustrate your answers wherever necessary with the help of neat sketches.
  4. Weightage to the question indicated to its right.

1. What is a flowchart ? What is its use in computer programming ? Draw a flowchart to find if the three given points form a triangle or not and also to determine, if a triangle is formed, will the triangle be an isosceles, equilateral or scalene triangle. 2+2+  
12=  
16

**OR**

2. What are identifiers and keywords ? What are the rules for selecting a valid identifier name ? What does a variable mean to a compiler ? 4+3+  
3+6  
=16  
Write a program in C to calculate and print the accumulated sum (including principle and Interest) at the end of 1yr, 2 years, 3 years, 4 years and 5 years if a principle sum P is lent at an annual rate of interest, R, in percent-at simple interest.
3. What is an array ? Why is it called a subscripted variable ? Is it compulsory to store all the elements of a given array in contiguous memory locations ? Why or why not ? 2+2+  
4+8  
=16  
Write a program in C to find and print the smallest number from a 3 x 4 matrix of numbers keyed-in by the user.

**OR**

4. What do you understand by recursive call ? For a single digit integer n(where  $n < 10$ ), it is required to print the sum of all the integers between n and 1. Accomplish the task by using - 2+14  
=16  
i) an ordinary function and  
ii) recursion
5. What is a string ? Show how a string can be read and printed using different types of format specifiers. 2+5  
+9=  
16  
Write a program in C asking the user to key-in any two different strings and to  
i) find out if the two strings are exactly identical or not,  
ii) print the difference in the size/length of the two strings,  
iii) form a new string by joining the first string at the back or end of the second string.

**OR**

6. What is a pointer ? What is the rationale of using pointers in C ? How are the concepts of arrays and pointers interlinked ? 2+2+  
4+8  
=16  
Using pointers illustrate the difference between calling a function by value and by reference.

7. What is a structure ? What are the similarities and differences between an array and a structure ? What is a dot (.) operator and what is its use in structures ?  
Write a program in C to create a structure to store and print the students particulars studying in the Dept. of Mining Engineering of a college using arrays within structures as well as arrays of structures.

2+4+  
2+8  
=16

OR

8. What are pre-processor directives ? What is their use ? Describe the different types of pre-processor directives with suitable examples.
9. What is FILE and why is it used ? What do 'r', 'w', 'a', 'rb', 'r+' and 'w+' modes signify ? How would you write a character to, and read a character from a file ?

3+3+  
10=  
16  
4+9+  
3=  
16

OR

10. Use your knowledge of C programming to draw the following on screen :
- i) a diagonal joining the top left of the screen to its right bottom,
  - ii) a point in the centre of the screen,
  - iii) a circle of 100 units radius with right vertical edge of the screen as tangent to it.
  - iv) an ellipse at the centre of the screen with 100 units and 50 units as its axes.

4x4=  
16

\*\*\*\*\*