

B.TECH. DEGREE EXAMINATION, NOVEMBER 2014**Third Semester**

Branch : Automobile Engineering/Mechanical Engineering/Production Engineering

AU 010 305	} PROGRAMMING IN C (AU, ME, PE, MT)
ME 010 305	
PE 010 305	
MT 010 305	

(2010 Admission onwards—New Scheme)

[Regular/Improvement/Supplementary]

Time : Three Hours

Maximum : 100 Marks

*Write neat and efficient C programs wherever needed.***Part A**

*Answer all questions briefly.
Each question carries 3 marks.*

1. What is a preprocessor directive ? Give one example and its functioning.
2. With examples, show how one-dimensional and two-dimensional arrays are initialised.
3. How the array name is interpreted when it is passed to a function ? Give an example.
4. What are the practical differences between arrays and pointers ?
5. How random files can be implemented ?

(5 × 3 = 15 marks)

Part B

*Answer all questions.
Each question carries 5 marks.*

6. What are variables in C ? Give different ways of variable declaration.
7. Write a structure specification that includes give "float" variables called length, breadth, height, surface area and volume. Call this structure "cube".
8. When a multi-dimensional array is passed to a function, how are the formal argument declarations written ? Compare with one-dimensional arrays.
9. List out and explain various linear list operations.
10. Describe the file closing and file opening commands in C.

(5 × 5 = 25 marks)

Turn over

Part C

Answer all questions.

Each full question carries 12 marks.

11. Write an interactive C program to check whether the given number n is a prime. If not, find out and print any two factors of the given number n .

Or

12. Evaluate $\sin(x)$ for x in the range 0 to 90° at intervals of 5° and print the result as a table. Use Trapezoidal rule.

13. Write an interactive C program to find the longest word in a given sentence and print the longest word.

Or

14. A square matrix is symmetric if the row elements and column elements are identical. Write a program to check if the given square matrix A is symmetric or not ?

15. Write a function SORT that arranges the elements of an array in descending order. Assume that the array does not contain more than 300 elements.

Or

16. Trace of a matrix is the sum of the leading diagonal elements of the matrix. Write a function to obtain the trace of the given matrix of order $n \times n$. Prove a matrix of order not greater than 20×20 .

17. Using pointers, write a C program to add and subtract two matrices of order $m \times n$.

Or

18. Develop a linked list program to read the following information of employees :

Employee name, date of birth, permanent number, salary. The program should display the list of employees with their salary in ascending order. Also make provision for deleting an employee.

19. Write an interactive file-oriented C program that will maintain a list of names, addresses and telephone numbers in alphabetical order with a menu that will allow the user to select any of the following features :

- (i) Add a new record.
- (ii) Delete a record.
- (iii) Exit.

Or

20. (a) Write a C program to read a line of text from a file and display the text on the screen.

(7 marks)

- (b) Explain the various bit-wise operators in C with appropriate examples.

(5 marks)

[5 × 12 = 60 marks]

