

Roll No.

Total Pages : 04

MDE/J-21

4672

COMPUTER PROGRAMMING (THEORY)

MM-409

Time : Three Hours]

[Maximum Marks : 80

Note : Attempt *one* question from each of the Section I to Section IV. Section V is compulsory.

Section I

1. (a) Write the precedence order of various operators used in arithmetic expressions. Illustrate through example expressions. **4**
- (b) Explain the domain allowed and working of the functions :
ABS, SQRT, LOG, REAL, CMPLX, ACOS, NINT, MOD. **8**
- (c) Write a source program to convert an amount in \$ into Rs and paisa, for 1\$ = 75 Rs & 56 paisa. **4**
2. (a) Check three sticks with given lengths, if these can make a triangle or not. **4**

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- (b) Explain the rules to be followed, while using the DO loop structures. **6**
- (c) Write source program to evaluate $S = \sum (-1)^{n-1} x^{n/2} / (2n)!$ for $n = 1$ to 10. **6**

Section II

- 3. (a) Write source program, using SELECT CASE to sort the character (real, equal, complex) of the roots of a quadratic equation with given coefficients. **6**
- (b) Use SELECT CASE in writing a source program to find the days in a given month of a given year. **10**
- 4. (a) Write a generalized syntax to define a subroutine subprogram and discuss the rules to be followed in this definition. **10**
- (b) Write source program to calculate the difference between $\sum_{m=1}^n m^3$ and $\sum_{m=1}^n m^2$ for given n , invoking a function subprogram only once. **6**

Section III

- 5. (a) Discuss the notable points, which should be kept in mind while using FORMAT specifications for PRINT statements. **8**

- (b) Use example to illustrate the access to characters and parts in a given string. **4**
- (c) Write a source program that combines the first name, middle name and surname to make the complete name for a person. **4**
- 6. (a) Write a source program that uses a function subprogram to check if the string provided as argument makes a valid identifier or not. **8**
- (b) Use a derived data type for date, in writing a source program to check any employee in a company, being on the probation of one year or a regular. **8**

Section IV

- 7. (a) In the statement READ (15, 16, REC=b) a, b, c; explain the significance of various keywords, constants and identifier used. **4**
- (b) Write a source program to create a sequential file that contains the exam records (roll, name, marks of 5 subjects) of all the students in class. **6**
- (c) Write a source program to read a matrix from one sequential file and to write its transpose to another sequential file. **6**

8. (a) Write a source program to create a linear linked list of 3 characters. **4**
- (b) Write a note on the feature of FORTRAN-90, represented by WHERE. **4**
- (c) Write a source program to illustrate the use of in-built functions, which can accept the arguments of COMPLEX data type. **8**

Section V

9. (a) Write the major steps in the anatomy of a simple FORTRAN-90 source program.
- (b) Relate the functions INT() and NINT(), for their use in FORTRAN-90.
- (c) Explain the meaning of the statement REAL :: x(-1 : 3), y(0 : 5) in a FORTRAN-90 program.
- (d) How can a two-dimensional array be declared with a variable size.
- (e) Explain the purpose of format rescan rule.
- (f) Give an example of an array of a derived data type.
- (g) Write a generalized syntax for opening of a direct access file.
- (h) Explain the working of BACKSPACE keyword in relation to sequential files. **8×2=16**