B. Pharm. (Sem. II)

SPECIAL CARRYOVER EXAMINATION, 2006-07

COMPUTER FUNDAMENTALS AND PROGRAMMING

Time : 3 Hours] [Total Marks : 80

Note : Attempt all questions.

1. Answer any two of the following : 4 × 2
   (a) Draw a block diagram to illustrate the basic organisation of a computer system and explain the functions of various unit.
   (b) What is the function of the storage unit of a computer system? How many types of storage are there in storage unit? Justify the need for each storage.
   (c) What do you understand by the term 'software of computer'? Define the terms systems software and application software.

2. Answer any two of the following : 4×2
   (a) Define flow-chart. Explain the necessity of flow-chart in programming.
   (b) Give an algorithm to check whether a number is prime or not.
   (c) Draw a flow-chart to print the sum of even numbers of a set of natural numbers.

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3. Answer any four of the following: 4×4
   (a) Define the following terms with example in C language:
       (i) Keyword
       (ii) Unary operator
       (iii) Break statement
       (iv) Double constant.
   (b) Give the general formats of input and output statements in C. Give example for each.
   (c) Write a complete C-program to find the sum of cubes of the digits of a 3-digit number.
   (d) The following are the Fibonacci numbers: 0, 1, 1, 2, 3, 5, 8, 13, 21...... Write a C-program to print all the Fibonacci numbers less than 50.
   (e) How can you declare an array in C-Language? Write a program to find the sum of elements of each row of a matrix of order 5×4.

4. Answer any four of the following: 4×4
   (a) What do you mean by FORTRAN variables? Which of the following are valid FORTRAN integer variables? If it is invalid, give the reason:
       (i) NEXT ;
       (ii) INPUT ;
       (iii) FIRST
       (iv) J+22
   (b) Write a FORTRAN program to solve a quadratic equation,
       \[ ax^2 + bx + c = 0; \]
       where \( a, b \) and \( c \) are real constants.
   (c) Write a program to find the value of
       \[ 1 + \frac{1}{2^2} + \frac{1}{3^2} + \frac{1}{4^2} + \ldots + \frac{1}{30^2} \]
(d) Write a FORTRAN program to find the mean and standard deviation of N numbers. Let \( a_1, a_2, \ldots, a_N \) are the numbers. The Mean = \( \sum_{i=1}^{N} a_i \); standard deviation = \( \sqrt{\frac{\sum a_i^2}{N} - (\text{mean})^2} \)

(e) What do you mean by \( X \) format and/(slash) format in FORTRAN? If \( A = 145.78, B = 18.4; I = 95 \), Describe the output of the following statements:

(i) Write (*, 5) A, B, I
   5 FORMAT (F10.5, F4.1, I2)

(ii) Write (*, 10) I, B, A
    10 Format (I2, 'A=', F5.2, 2x, F4.2).

5. Answer any four:

(a) What is a database model? Name four commonly used database models and describe any two.

(b) If a new type of data is to be added to an existing relational database, it is not necessary to redesign the database afresh. Discuss this statement with an example.

(c) Explain with an example how 'Find' command can be used for making the database query.

(d) Explain with an example how database can be used to tackle a drug related problem.

(e) List out three commonly supported features in modern database system that may be used for searching desired information from a database.