AB-3159
Third Year B. Sc. (Sem. V) Examination
March/April – 2015
Mathematics

(Computer Oriented Numerical Methods - I)
(E.G)

Time : 3 Hours] [Total Marks : 70

Instructions :

(1) Fill up strictly the details of signs on your answer book.
Name of the Examination:
Third Year B. Sc. (Sem. V)
Name of the Subject:
Mathematics
Subject Code No.: 3 1 5 9
Seat No.:
Section No. (1, 2, ....): Nil

(2) All questions are compulsory.
(3) Figures to the right indicate the marks of the corresponding question.
(4) Follow usual notations.

1  Answer the following:  5
   (1) Write character set used in FORTRAN.  2
   (2) Explain the difference between STOP and END statement.  2
   (3) Define: Algorithm.  1

2  (a) Draw a block diagram of computer and explain the following terms:  5
    (i) Input unit
    (ii) Output unit
    (iii) Program.
(b) Draw flow chart and algorithm to calculate the area of a circle.  5
(c) Given set of 100 integers. Write a flowchart to find:
   (i) Sum of all even integers.
   (ii) Sum of all odd integers.
   (iii) Total number of all even integers.
   (iv) Total number of all odd integers.

OR

2 (a) Explain common symbols used in Flowchart.
2 (b) Draw a Flowchart to find largest of three numbers.
     Also write algorithm of it.
2 (c) Draw a flowchart to calculate the sum of the series:
     \[-x + \frac{x^2}{2!} - \frac{x^3}{3!} + \frac{x^4}{4!} - \frac{x^5}{5!} + \ldots - \frac{x^{15}}{15!}\]

3 (a) Explain: The Rules of real expression.
3 (b) Check the validity of following integer variable names. Give reason it is not an integer variable name.
     (i) MAN
     (ii) NO.
     (iii) LIMITED
     (iv) COUNT
     (V) MIN-77
3 (C) Evaluate the following:
     (i) ISUM = 6/2 + 3 ** (2 ** 3) – 8 * 8
     (ii) AB = 3 | 2 * 4 – 3 / 8 * 3 * * 3

OR

3 (a) Write a short note on library function.
3 (b) Check the validity of the following real constants.
     Give reason if it is not real constant.
     (i) 365
     (ii) –201.4
     (iii) 3.65+
     (iv) 11.8E63
     (v) 152.0E18
(c) Write the following into FORTRAN expression:

(i) \[ \frac{a}{\sqrt{a^2 + b^2}} \sin \left( (C \times D) + \theta \right) \]

(ii) \[ 2014 \cos x + 2015 \cos^2 x + 2.6 \sin x^3 \]

4  
(a) Explain: Hierarchy of operations in expression.

(b) Two sides 'a' and 'b' and angle 'θ' of triangle are given. Write a program to find area of triangle and length of third side.

(c) Mango's cost per dozen is given. Write a program to prepare a bill for customer in rupees and paise.

OR

4  
(a) Explain: Output statement in FORTRAN 77.

(b) Given (X, Y) co-ordinate of points. Write a program to convert it in polar co-ordinate (r, θ).

Where \[ r = \sqrt{X^2 + Y^2}, \tan^{-1} \left( \frac{Y}{X} \right) \]

(c) Let a, b and c are three sides of triangle. Write a program to find the area of triangle.