



**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)

<p>नीचे दर्शायेव निशानीवाणी विगतो उत्तरवही पर अवश्य कपनी. Fillup strictly the details of signs on your answer book.</p> <p>Name of the Examination : Third Year B. Sc. (Sem. V)</p> <p>Name of the Subject : Mathematics</p> <p>Subject Code No. : 3 1 5 9 Section No. (1, 2,...): Nil</p>	<p>Seat No. : □ □ □ □ □ □</p> <p style="text-align: center;">Student's Signature</p>
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- (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: **5**
- (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. **5**
- 2** (b) Draw a Flowchart to find largest of three numbers. **5**  
Also write algorithm of it.
- (c) Draw a flowchart to calculate the sum of the series : **5**

$$-x + \frac{x^2}{2!} - \frac{x^3}{3!} + \frac{x^4}{4!} - \frac{x^5}{5!} + \dots - \frac{x^{15}}{15!}$$

- 3** (a) Explain: The Rules of real expression. **5**
- 3** (b) Check the validity of following integer variable names. Give reason it is not an integer variable name. **5**
- (i) MAN
  - (ii) NO.
  - (iii) LIMITED
  - (iv) COUNT
  - (v) MIN-77
- 3** (C) Evaluate the following: **5**
- (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. **5**
- (b) Check the validity of the following real constants. **5**  
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: **5**

(i)  $\frac{a}{\sqrt{a^2 + b^2}} \sin((C \times D) + \theta)$

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

4 (a) Explain: Hierarchy of operations in expression. **5**

(b) Two sides 'a' and 'b' and angle 'θ' of triangle are given. **5**

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. **5**

(b) Given (X, Y) co-ordinate of points. Write a program to convert it in polar co-ordinate (r, θ). **5**

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

(c) Let a, b and c are three sides of triangle. Write a program to find the area of triangle. **5**