



AAN-7349-7350 Seat No. _____

M. Sc. (Sem. II) Examination

April / May - 2018

(1) Mathematics : Paper - SSB - III

(Introduction to Computer Graphics)

(2) Mathematics : SSB-7

(Introduction to MATLAB)

Time : 2 Hours]

[Total Marks : 50

(1) Mathematics : Paper - SSB - III

(Introduction to Computer Graphics)

1 Attempt any two :

- (a) Write Line Drawing Algorithm.
- (b) How Cathode- Ray- Tube work ?
- (c) Write a Matlab Program of Line BDA Algorithm.

2 Attempt any two :

- (a) Derive the formula of 2-D Geometric Transformation Rotation formula.

$$R = \begin{pmatrix} \cos \theta & -\sin \theta \\ \sin \theta & \cos \theta \end{pmatrix}$$

- (b) Explain Translate the ellipse ad Symmetries of the ellipse.
- (c) Explain Reflections of an object about angle 180° , x-axis.

3 Attempt any two :

- (a) Explain 2D -Viewing.
- (b) How are curved (non planner) surfaces and curve described ?
- (c) Explain 3-D Displays Process pipeline.

4 Attempt any one :

- (a) How many Types of Three Dimensional Displays Methods? Explain Any Three.
- (b) Briefly Explain Parallel Projections.

5 Attempt any three :

- (a) What is Grayscale ?
- (b) Which Line drawing algorithm Line DDA or Bresenhman is better ? Why ?
- (c) Give a name of input- output devices in graphical system.
- (d) Write 4×4 matrix for 3-D reflection about X - Y.
- (e) Explain eight- connected method to boundary fill.

(2) Mathematics : SSB-7
(Introduction to MATLAB)

- Instructions :** (1) All questions are compulsory.
(2) Follow standard notations and conventions.
(3) Each question carries 10 marks.

1 Attempt any two of the following :

- (a) Generate a table of conversions from degrees to radians, starting from 0° to 360° with increment of 10° .
(b) Describe the following command :

- (i) who
(ii) whos
(iii) quit
(iv) format long e
(v) home.

(c) If matrices $A = \begin{bmatrix} 21 & 27 \\ -18 & 8 \end{bmatrix}$ and $B = \begin{bmatrix} -7 & -3 \\ 9 & 4 \end{bmatrix}$. Then

find

- (i) Their array product
(ii) Their array right division
(iii) B raised to the third power element by element.

- 2 Attempt any two of the following :
- Explain area (x,y) and its example.
 - How can we represent polynomial in Matlab using matrices ? Explain the command to find value and root of the polynomial in Matlab.
 - Explain continuous command with suitable example with all the details.
- 3 Attempt any two of the following :
- Explain various Relational operators and logical Variables in Matlab.
 - Discuss the difference between plot and plot 3 command with example.
 - Write a Matlab function to compute $n!$ using recursion.
- 4 Attempt any two of the following :
- Use fix point algorithm to find given equation's roots and plot a graph. $y = \cos(z) - 2z$
 - Explain the Conditional statement with example.
 - Write a Matlab program for trapezoidal rule for the equation $y = \sin(x)$.
- 5 Answer the following questions :
- Explain 'for' loop.
 - Find the root of the equations $f(x) = 2x^4 + 2x^2 + 12$ by using Matlab command.
 - Explain special matrices.
 - What is the difference between 'mesh' and 'surf' plotting functions?
 - Use Matlab command then Find the remainder of 777^{333} under modulo 10.