Sub: CGVRS Computer Graphics & Virtual Reality System

TE (IT) V (Rev) 21/5/2014

QP Code : **MV-18464**

(3 Hours) **[Total Marks : 100**

N. B. : (1) Question No. **1** is **compulsory**.
(2) Attempt any **four** out of remaining **six** questions.
(3) Assume suitable **data** if **necessary** and state the assumptions **clearly**.

1. Solve any **four** :-
   (a) Differentiate between Raster Scan Display and Random Scan Display. **5**
   (b) Draw and explain basic block diagram of Virtual Reality System. **5**
   (c) Calculate the pixel co-ordinates of line AB using DDA algorithm where A is (0,0) and B is (4,6). **5**
   (d) What are fractals ? Derive an equation D = log N/log S. **5**
   (e) Explain the significance of homogeneous co-ordinate system. **5**

2. (a) Explain five 2D transformations with suitable example of each. **10**
   (b) Explain Bezier Curve in detail. **10**

3. (a) Describe any two VR arhitectures with neat diagrams. **10**
   (b) Derive 3D transformation for translation and scaling. **4**
   (c) What is computer Animation ? Explain its significance in real life. **6**

4. (a) What are different types of projection ? Derive the matrix representation for perspective transformation in XY plane and on negative Z-axis. **10**
   (b) Explain Cohen-Sutherland line clipping algorithm with suitable example. List the shortcomings/advantages of this method, if any. **10**

5. (a) Explain the terms Antialising and Morphing in detail. **10**
   (b) Explain different Input and Output devices used in VR systems. Describe 3D tracker in detail. **10**

6. (a) Describe Physical and Geometric modeling. **10**
   (b) List various polygon filling algorithms and explain scanline fill in detail. **10**

7. (a) Write a detailed note on VR applications. **10**
   (b) Describe Text Clipping and Polygon Clipping with suitable examples. **10**
