INSTITUTE OF AERONAUTICAL ENGINEERING
(Autonomous)
Dundigal-500043, Hyderabad

B.Tech VII SEMESTER END EXAMINATIONS (REGULAR) - DECEMBER 2023
Regulation: UG-20
VIRTUAL REALITY
CSE (ARTIFICIAL INTELLIGENCE & MACHINE LEARNING)

Time: 3 Hours   **Max Marks: 70**

Answer ALL questions in Module I and II
Answer ONE out of two questions in Modules III, IV and V
All Questions Carry Equal Marks
All parts of the question must be answered in one place only

MODULE – I

1. (a) Discuss the role of real-time computer graphics in creating a compelling virtual reality (VR) experience.   [BL: Understand| CO: 1|Marks: 7]

   (b) Analyze the requirements of a virtual environment and their contribution to the effectiveness of VR.   [BL: Apply| CO: 1|Marks: 7]

MODULE – II

2. (a) What is meant by procedural modeling? Discuss the importance of geometrical transformations in creating virtual environments.   [BL: Understand| CO: 2|Marks: 7]

   (b) Explain how collision detection enhances the interactivity of VR systems. Elaborate on 3D boundary representation and its significance in VR.   [BL: Apply| CO: 2|Marks: 7]

MODULE – III

3. (a) Discuss the principles of linear and non-linear interpolation in VR animation.

                                                      [BL: Understand| CO: 3|Marks: 7]

   (b) Illustrate with example how free form deformation techniques are used for modeling?

                                                      [BL: Understand| CO: 3|Marks: 7]

4. (a) How elastic collisions are achieved by direct impact of two particles and oblique impact of two particles.   [BL: Understand| CO: 4|Marks: 7]

   (b) Assess the following
   i) Shape inbetweening
   ii) Object inbetweening
   iii) Parametric line inbetweening   [BL: Understand| CO: 4|Marks: 7]

MODULE – IV

5. (a) Describe the impact of the somatic senses on the VR experience. Compare integrated VR systems with other types of VR hardware.   [BL: Understand| CO: 5|Marks: 7]

(b) Draw the neat diagram and explain about Brodmann's mapping of the somatic sensory area of the cortex. [BL: Understand| CO: 5|Marks: 7]

6. (a) Summarize about sound perception. Discuss the role of physical simulation in VR software. [BL: Understand| CO: 5|Marks: 7]

(b) Evaluate the effectiveness of different VR tool kits in creating virtual worlds. How Sense8's word tool kit is used to write program for developing and interacting virtual world? [BL: Apply| CO: 5|Marks: 7]

MODULE – V

7. (a) List the application of VR in scientific contexts. How will you predict future advancements in VR technology? Discuss their potential impact. [BL: Understand| CO: 6|Marks: 7]

(b) Write the features incorporated into 3D cartoon character. Analyze the future potential of VR in training scenarios. [BL: Apply| CO: 6|Marks: 7]

8. (a) List few VR system used for architectural design. Describe the evolution of interaction modes in virtual environments. [BL: Understand| CO: 6|Marks: 7]

(b) Explain in detail on the application of VR in architecture and human factor modeling. [BL: Apply| CO: 6|Marks: 7]

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