ARVR-QBank

UNIT - I

1. List the requirements of Virtual reality, explain any 5 among them. ( 10 marks)
2. From the context of Virtual reality, explain any 5 of the following
3. Virtual data bases
4. B) Real-time image generation
5. Database interaction
6. Physical simulation
7. Immersive and Non-immersive VR syatems
8. Hybrid VR systems
9. The CAVE
10. With the help of cross section of the human eye, explain the working principle from the context of Virtual reality. ( 8 marks)
11. With the help of simple diagram of the human ear, explain the various features from the context of Virtual reality. ( 9 marks)
12. From the context of AR/VR explain the concept of sound perception, frequency range, intensity, direction, sound range, HRTFs, Ambisonics and Head related transfer functions. ( 9 marks)
13. List the somatic senses; explain in brief from the context of VR. ( 5 marks)
14. Sensing equilibrium, write a note on it. ( 5 marks)
15. Write a short note on tracking sensors any 5 among the following,
16. Flock of birds
17. ADL-1
18. Logitech Head tracker
19. Dextrous Hand master
20. Spaceball 2003
21. BioMuse
22. Space ball
23. What is force feedback device, explain feedback sensor with the help of Touch master and Force feedback Master.
24. What is Head- coupled displays? , distinguish between General-purpose and Military HMD’s.
25. What is Head- coupled displays? , explain Boom devices and virtual screens. ( 5marks)
26. Explain the Acoustic hardware, with the help of Crystal river Engineering, Inc. ( 5 marks)
27. Briefly describe some of the configurations, which reflect important trends in the way future VR systems are evolving. (10 marks).
28. Discuss about Virtual reality hardware & software with the help of examples. ( 20 marks)
29. Discuss the requirements to model the Virtual worlds.
30. Discuss the various features required to Simulate Physics based Virtual world. ( 20 marks)
31. List the VR toolkits available; explain any two of them in brief. ( 10 marks)
32. What are the Virtual reality applications, explain them with the help of examples. ( 10 marks)
33. What are the Augmented Reality applications, explain them with the help of examples. ( 10 marks)
34. With the help of 5 classic components of a VR system, explain the VR system Architecture.
35. How does VR differ from AR and telepresence?
36. What are commonalities and differences between Virtual reality and 3F computer graphics?.
37. 3D viewing…
38. Display file…..

UNIT-II

1. With the help of neat sketches, design 3D position tracking devices. ( 10 marks)
2. Explain any 4 mechanism of the following:
3. Mechanical Trackers
4. Magnetic Trackers
5. Ultrasonic Trackers
6. Optical Trackers
7. Hybrid Inertial Trackers
8. Explain the working principle of the following Navigation and manipulation Interfaces
9. Cubic mouse
10. Trackballs
11. 3D probes
12. Design a technology to track hand and finger motions, as a part of gesture Interfaces.
13. Explain the working principle of 5DT Data Glove and Pinch glove, with the help of neat sketches.
14. Explain the working principle of Didjiglove and Cyber glove, with the help of neat sketches.
15. With the help of neat sketches, explain the Physiological model of stereoscopic vision which suits to human Visual System.
16. With the help of neat sketches, explain the Simplified optics model of an HMD, which suits to human Visual System.
17. Explain Monoscopic and stereoscopic VR system (with the help of block diagram) to integrate Head Mounted Displays.
18. Write a short note on any four of the following ( 20 marks)
19. Head mounted Displays
20. Hand-supported Displays
21. Floor-supported Displays
22. Desk-supported Displays
23. Large-volume Displays
24. Monitor-based Large-volume Displays
25. Projector-Based Displays
26. Draw and explain the architecture of the CAVE.
27. What are the human auditory range cues?
28. How do speaker-based 3D audio systems work?
29. How does touch feedback differ from force feedback?
30. What human sensors are responsible for touch? What are the ideal characters of Haptic feedback actuators?
31. Design a cyber Touch glove and tactile mouse, make a drawing and explain.
32. What is temperature feedback? How it is realized? Make a drawing and explain.
33. What is the cyberGrasp? Where are its actuators placed and how is force feedback produced in this case?
34. The house extends from 30 to 54 in z, from 0 to 16 in x, and from 0 tp 16 in y, by keeping this as data, sketch the viewing situation in 3D as well as outcome of the setup for perspective projection.

VRP: (0,0,54) : origin (WC)

VPN: (0,0,1) : z axis (WC)

VUP: (0,1,0) : y axis (WC)

PRP: (8,6,30) : ( VRC)

Window: ( -1,17,-1,17) : (VRC)

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PRP: (8,6,84) : ( VRC)

Window: ( -50,50,-50,50) : (VRC)

1. Describe the functions for segmenting the display file.
2. Why double buffering is required, explain from the context of Display file compilation.
3. Write a note on “Free Storage Allocation” and “Display file structure”
4. With the help of simple Geometric model explain the connectivity table showing components, wire segments and component lines.
5. Write a note on the following
6. Defining symbols by procedures
7. Display procedures
8. Boxing
9. Advantage and disadvantage of display procedures.
10. Write a short note on the following Input techniques
11. Positioning techniques
12. Rubber band techniques
13. Pointing and selection
14. Inking and painting
15. Online character recognition
16. Discuss appropriate ways of event handling for the following
17. Polling
18. Interrupts
19. The event Queue
20. Functions for handling events
21. Polling task design
22. Light –pen Interrupts

UNIT III

1. With the help of neat sketches explain the Integration of the various elements of a generic VR system. ( 12 marks)
2. The computer Environment to support VR system, discuss I/O channels, VE database and run-time services. ( 5 marks)
3. Discuss the immersive interaction with the help of examples. ( 5 marks)
4. Explain the Graphic Rendering pipeline with the help of appropriate example ( 10 marks)
5. What are the stages of Haptic Rendering? explain the pipeline with the help of appropriate example (7 marks)
6. With the help of PC VR Engine Adopted from Intel Co. explain PC Graphics Architecture. (10 marks)
7. Write a short note on PC Graphics Accelerators and graphics Benchmarks
8. Explain workstation-based Architectures, with the help of appropriate examples.
9. Explain Distributed VR Architectures, with the help of appropriate examples.

Ref : 6th chapter in VRS by John Vince & 4th chapter in VRT by Wiley…..

UNIT IV

1. List 5 various methods by which Virtual object surfaces/shape can be constructed, explain any 3 among them.
2. Explain Scene illumination and Texture mapping from the context of Object Visual Appearance.
3. Explain the 5 parameters which involves in Kinematics Modeling.
4. Explain the 5 parameters which involves in Physics based modeling.
5. Write short note on Behavior modeling and Model management.
6. What are VR toolkits? How can we classify them? Give examples of each category and describe advantages and disadvantages.
7. What is scene graph? Is it limited to Graphics? Discuss.
8. How is object geometry and appearance modeled in World toolkit?
9. How is the World toolkit scene graph traversed? What happens when we display two views of the same universe on the same Display?
10. Explain use of World toolkit movable nodes to construct a virtual hand.
11. What are World toolkit sensors and how are they used? What are action functions? Explain Event scheduling during the WTK simulation loop.
12. Explain the java 3D from the context of the following
13. Modeling geometry and appearance and Scene graph
14. Sensors and behaviors and 3D networking.
15. How is the Haptic scene graph traversed and why? How is the PHANTOM represented in the scene graph?
16. How is collision detection done and what is the collision response mechanism in GHOST?

Make a drawing and explain.

1. How is the graphics scene updated based on the Haptics change of state? How is the interface work volume mapped to the virtual scene?
2. Write a short note on the following related to People Shop
3. Character path
4. Sensors and behaviors
5. Live Reckoning

Ref: 5th and 6th chapter from VRT by Wiley……

UNIT V

1. Discuss conventional, computer assisted Animation, Interpolation and simple animation effects.
2. Explain the 3 categories of animation languages. ( 10 marks)
3. Explain the methods of controlling animation ( 15 marks)
4. Write a short note of the following
5. Basic rules of Animation
6. Problems peculiar to animation.
7. Free form Deformation
8. Particle systems
9. Simulate the following cases using physics based modeling
10. Objects falling in a gravitational field
11. Rotation of wheel ( combined linear & rotational)
12. A steerable wheel
13. Clocks
14. Elastic collisions
15. The motion of a projectile
16. Simple pendulum
17. Springs