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Question Paper Code: U9875

B.E./B.Tech. DEGREE EXAMINATION, NOV 2024

Open Elective

Information Technology

21UIT975-INTRODUCTION TO 3D ANIMATION

(Common to ALL Branches)

(Regulations 2021)

Duration: Three hours   Maximum: 100 Marks

Answer All Questions

PART A - (10 x 2 = 20 Marks)

1.	Name three popular 3D animation software programs.	CO1 U
2.	Explain the importance of adjusting material properties such as glossiness and transparency in enhancing 3D models.	CO1 U
3.	What is the difference between modeling and rigging in 3D animation?	CO1 U
4.	What is a vertex in 3D modeling?	CO1 U
5.	Why is topology important in character modeling?	CO1 U
6.	What is a normal map, and how is it different from a bump map?	CO1 U
7.	What is the purpose of blocking in animation?	CO1 U
8.	How does refining enhance the quality and fluidity of an animation?	CO1 U
9.	Explain the steps involved in loading a character into Virtools. Why is it important to ensure proper character setup before loading?	CO1 U
10.	What is the primary focus when refining an animation?	CO1 U

PART – B (5 x 16= 80 Marks)

11. (a) Discuss the process and importance of polygonal (poly) modeling   CO1 U   (16)
in 3D animation. Explain the key techniques and tools used in
poly modeling, and describe how they contribute to creating
detailed and complex 3D models. Illustrate answer with
examples.

Or

(b) Explain the concept of sub-object modeling in 3D animation. CO1 U (16)
Discuss the significance of sub-object levels, such as vertices, edges, and faces, and describe the techniques and tools used to manipulate these sub-objects to create detailed 3D models. Provide examples to illustrate how sub-object modeling is applied in a typical 3D modeling workflow.

12. (a) How can you apply and customize materials to create a realistic CO2 App (16)
metallic surface on a 3D object? Explain the steps involved and discuss how different material properties affect the final appearance. Use a specific example, such as a metallic robot part.

Or

(b) Explain how displacement maps can be generated from high- CO2 App (16)
resolution sculpted models in programs like ZBrush or Mudbox. What are the key settings or considerations when exporting a displacement map?.

13. (a) Explain the complete workflow of creating a 3D animated scene, CO1 U (16)
starting from modeling to final rendering. Provide examples of how each stage (modeling, texturing, rigging, lighting, animation, and rendering) works together to create the final output.

Or

(b) Explain the step-by-step process of creating path animation in any CO1 U (16)
3D software (e.g., Maya, Blender). Include key concepts such as motion paths, tangents, and timing.

14. (a) What are shaders, and how do they affect the appearance of CO1 U (16)
materials in 3D animation? Explain the difference between Lambert, Phong, and Physically Based Rendering (PBR) shaders. Discuss the advantages of using PBR in modern 3D workflows.

Or

(b) Discuss the role of UV mapping in character texturing. Why is CO1 U (16)
proper UV unwrapping critical, and what challenges are faced when creating UV maps for complex character models?

15. (a) Examine the challenges of keyframe animation in achieving CO1 U (16)
realistic motion, particularly in organic characters. Discuss how animators use motion paths, graph editors, and breakdown poses to control and refine complex movements. Provide examples of how keyframe techniques can create lifelike animation.

Or

2

U9875

(b) Explain the principle of squash and stretch in animation. How CO1 U (16)
does this principle affect the motion and flexibility of characters
or objects? Provide an example of its application in character
animation.

U9875