

(Time: 2^{1/2} Hours)

(Total Marks:75)

- N.B**
- 1) All questions are compulsory
 - 2) Figures to the right indicate marks
 - 3) Mixup of questions not allowed

Q1a Choose the correct answer from the given options:

5

- 1 The relation between vertices, faces and edges of a 3D Polygon object is given as
 a) Vertices= faces – edges +2 b) Vertices= faces + edges+2
 c) Vertices= faces – edges --2 d) Vertices=faces+ edges-- 2
- 2 The basic building block in 3D object model is
 a) Rectangle b) triangle c) polygon d) cube
- 3 Which one of the following is not a valid geometric transformation
 a) Scaling b) Revolution c) Rotation d) Reflection
- 4 The API used in Unity 3D is
 a) OpenGL b) Direct3D c) OpenGL ES d) Proprietary API
- 5 The process of computing pixel color from projected 3D triangle is known as
 a) Blending b) Shading c)Rasterization d) positioning

Q1b Answer in one or two sentences:

5

- 1 Mention the four co-ordinate systems used in graphics pipeline
- 2 What is the relation between a Quaternion and its inverse
- 3 State the Pythagoras theorem for 3D
- 4 Mention the use of interpolant in computer graphics
- 5 Define the Term Virtual Reality and give its application

Q1c Fill in the blanks taking answer from the pool of values:

5

[Controller, Swapping, Double,Presenting, Animation, Stencil, Tessellation, Translation, Rigidbody]

- 1 Interchanging the roles of back buffer and front buffer is called -----
- 2 A 8 bit -----Buffer is always attached to depth buffer
- 3 Subdividing the triangles of a mesh to add new triangles is called -----
- 4 ----- allow game objects to act under the control of Physics Engine.
- 5 Manipulating images and objects in dynamic medium as moving images is called-----

Q2 Answer any Three from the following: 15

- 1 Define Lambert's law and explain its use in lighting calculation
- 2 Explain in detail the stages in the rendering pipeline
- 3 Describe any two 2D transformation in detail
- 4 Bring out the advantages of GPU architecture
- 5 Differentiate between super sampling and multisampling techniques
- 6 Write a short note on Direct 3D Feature levels

Q3 Answer any Three from the following : 15

- 1 What are B-Splines .State its types and advantages
- 2 Describe the steps in perspective projection
- 3 Explain the procedure of interpolating two Vectors
- 4 Obtain the Hessian Normal form for a straight line
- 5 Describe the intersection points of two straight lines
- 6 Write a short note on Quarternions

Q4 Answer any Three from the following : 15

- 1 Explain the use of asset and asset store in unity 3D
- 2 Define HMD and explain any two such devices
- 3 What is meant by specular lighting
- 4 Explain the term MR and state its applications
- 5 Describe how a material is associated with a game object in Unity 3D.
- 6 Explain the following functions with example Update() and FixedUpdate().

Q5 Answer any Three from the following: 15

- 1 Describe how parallelism is achieved in GPU Architecture
- 2 Explain the depth buffering technique applied on Graphic objects
- 3 Write a short note on Linear Interpolation
- 4 Explain the AddForce method used with Scripting in Unity
- 5 Define Components and explain how they are used with game objects
