

(2½ Hours)

[Total Marks: 75]

- N. B.: (1) All questions are compulsory.
 (2) Make suitable assumptions wherever necessary and state the assumptions made.
 (3) Answers to the same question must be written together.
 (4) Numbers to the right indicate marks.
 (5) Draw neat labeled diagrams wherever necessary.
 (6) Use of Non-programmable calculators is allowed.

1. Attempt any four of the following:

20

- Explain in detail the Cartesian xy-plane
- Write a short note on Theorem of Pythagoras in 3D.
- Explain the following terms
 - Position Vectors
 - Unit Vectors
 - Cartesian Vectors
- How Dot product helps in Back Face Detection?
- Write a short note on 2D transformations.
- Explain in detail GPU architecture.

2. Attempt any four of the following:

20

- Explain rendering pipeline.
- Write a short note on meshes.
- Write a note on blending.
- What is interpolation?
- What is trigonometry and trigonometric ratio?
- What is intersection point?

3. Attempt any four of the following:

20

- What is Virtual Reality? Explain any two applications of it in detail.
- What is Augmented Reality? Explain any two applications of it in detail.
- What is Mixed Reality? Explain any two applications of it in detail.
- Write a short note on Unity rendering engine.
- Explain various unity essential component.
- Explain the concept of scripting in unity.

4. Attempt any three of the following:

15

- What is DirectX?
- State the difference between update(), FixedUpdate() and LateUpdate() method in Unity script
- Write a short note on Theorem of Pythagoras in 2D.
- What is primitive topology?
- Explain the following with respect to rendering
 - Mobile phones
 - Smart classes
 - HMD's
- What are B-Splines?