



NATIONAL OPEN UNIVERSITY OF NIGERIA
PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI-ABUJA
FACULTY OF COMPUTING
DEPARTMENT OF COMPUTER SCIENCE
2025_2 EXAMINATIONS

COURSE CODE: CIT371

COURSE TITLE: Introduction to Computer Graphics and Animation

COURSE CREDIT: 3 Units

TIME ALLOWED: 3 Hours

INSTRUCTION: Answer Question One (1) and any other Three (3)

Question 1

- 1a. List three (3) coordinate systems used in graphics processing. **(3 Marks)**
- 1b. With the aid of diagrams, explain the Graphics Rendering Pipeline for a model-to-scene-to-image conversion. **(10 Marks)**
- 1c. Compare the hardware of early Vector Graphics with Raster Graphics. **(4 Marks)**
- 1d. Briefly explain these two types of display hardware. **(8 Marks)**
 - i. Liquid Crystal Display (LCD)
 - ii. Vector Displays

Question 2

- 2a. Describe an algorithm for using Quadtrees for Inside/Outside tests for Odd Shapes. **(4 Marks)**
- 2b. Briefly explain the term Binary Space Partitioning Trees (BSP Trees) and how are they used to represent scenes in graphics processing? **(2 Marks)**
- 2c. Discuss the following three (3) characteristics of BSP Trees that make them useful in graphics processing applications. **(6 Marks)**
 - i. Each node holds a facet
 - ii. Organization
 - iii. Rules
- 2d. Identify three (3) strategies used in the construction of Bounded Volume Hierarchies (BVH). **(3 Marks)**

Question 3

- 3a. Discuss three (3) uses of BSP trees. **(3 marks)**
- 3b. Describe the state of graphics processing Software and Algorithms in the early 1970's. **(6 Marks)**
- 3d. The retina uses both rods and cones for sensing light. Discuss cones. **(6 Marks)**

Question 4

- 4a. In colour printing green paper is green because it reflects green and absorbs other wavelengths. Fill in the blank entries in the following table, which summarizes the properties of the four primary types of printing ink. **(4 Marks)**

Dye Colour	Absorbs	Reflects
Cyan	_____	_____ and _____
Magenta	_____	_____ and _____
Yellow	_____	_____ and _____
Black	_____	_____

- 4b. Write short notes on Hardware Frame Buffers. **(6 Marks)**
- 4c. Why do light rays bend? Mention five (5) factors responsible for this. **(5 Marks)**

Question 5

- 5a. Name three (3) types of Line Drawing Algorithms. **(3 Marks)**
- 5b. What is the normal vector to a plane containing the points (1,0,2), (2,3,0) and (1,2,4). **(7 Marks)**
- 5c. In the context of real Inter-Object Illumination, list five (5) conditions, that the colour at the intersection point depends on. **(5 Marks)**

Question 6

- 6a. Define the term Texture and list three (3) issues involved in texturing graphics. **(5 Marks)**
- 6b. Briefly describe five (5) Pixel Operations used in graphics processing. **(10 Marks)**