



**NATIONAL OPEN UNIVERSITY OF NIGERIA**  
UNIVERSITY VILLAGE, 91 CADASTRAL ZONE, NNAMDI AZIKWE EXPRESSWAY, JABI, ABUJA  
**FACULTY OF SCIENCES**  
**DEPARTMENT OF COMPUTER SCIENCE**  
**2023\_2 EXAMINATIONS**

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**COURSE CODE: CIT 371**

**COURSE TITLE: COMPUTER GRAPHICS AND ANIMATION**

**CREDIT: 3 UNITS**

**TIME ALLOWED: 2<sup>1</sup>/<sub>2</sub> HOURS**

**INSTRUCTION: ANSWER QUESTION ONE (1) AND ANY OTHER FOUR (4) QUESTIONS**

**QUESTIONS**

**Question One (22 marks)**

- 1a) Write briefly on the different connotations of Computer Graphics. **(3mks)**
- 1b. Find the (i) sum and (ii) difference of two vectors  $a, b$  if  $a = [u, v]^T$  and  $b = [s, t]^T$ . **(2mks)**
- 1c. Identify the three uses of transformation as it relates to rendering in Computer Graphics. **(3mks)**
- 1d. Briefly explain the interfacing between the Central Processing Unit (CPU) and the display. **(2mks)**
- 1e. Write the expression for the explicit, implicit and parametric forms of a line and a circle respectively. **(8mks)**
- 1f. State one difference between antialiasing and direct manipulation. **(2mks)**
- 1g. State the three types of culling. **(2mks)**

**Question Two (12mks)**

- 2a. Discuss the origin of Sketchpad. **(2mks)**
- 2b. Outline the various layers that make up the Liquid Crystal Display (LCD). **(5mks)**
- 2c. Compare the working principles of the Field Emission Devices (FEDs) and the Liquid Crystal Display (LCD). **(5mks)**

**Question Three (12 marks)**

- 3a. Briefly describe the application of Computer Graphics in Medical Imaging and Computer Aided Design (CAD). **(2mks)**
- 3b. Briefly distinguish between a quadtree and an octree. **(3mks)**



3c. Outline and describe briefly any two of the basic line drawing algorithms. (7mks)

**Question Four (12mks)**

- 4a. Briefly discuss what you understand by interactive Computer Graphics. (4mks)
- 4b. Enumerate the procedures for the construction of Binary Space Partition (BSP) tree. (6mks)
- 4c. what is Bounding Volume Hierarchies (BVH)? (2mks)

**Question Five (12mks)**

- 5a. What is rendering in Computer Graphics? (2mks)
- 5b. Discuss the uses of Bounding Volume Hierarchies (BVH). (4mks)
- 5c. Outline the three primary colors. (3mks)
- 5d. Briefly describe how the human eye sees the object in front of it. (3mks)

**Question Six (12marks)**

- 6a. In Computer Graphics rendering, outline the five coordinate systems used. (5mks)
- 6b. Describe electromagnetic spectrum in terms of its wave length. (5mks)
- 6c. In a tabular form, summarize the properties of the four primary types of painting ink. (2mks)