

NATIONAL OPEN UNIVERSITY OF NIGERIA
UNIVERSITY VILLAGE, 91 CADASTRAL ZONE, NNAMDI AZIKWE EXPRESSWAY, JABI, ABUJA
FACULTY OF SCIENCES
DEPARTMENT OF COMPUTER SCIENCE
2021_2 EXAMINATION

COURSE CODE: CIT 371

COURSE TITLE: COMPUTER GRAPHICS AND ANIMATION

CREDIT: 3 UNITS

TIME ALLOWED: 2¹/₂ 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)