

# **UNIVERSITY EXAMINATIONS 2021/2022 ACADEMIC YEAR**

## **END OF SEMESTER EXAMINATIONS** YEAR THIRD SEMESTER TWO **EXAMINATIONS**

## FOR THE DEGREE OF **BACHELOR OF SCIENCE COMPUTER** SCIENCE

COURSE CODE

: CSC 320

COURSE TITLE

: COMPUTER GRAPHICS

**DATE:** 30/08/2022 **TIME**: 9:00 A.M - 11:00 A.M

**INSTRUCTIONS TO CANDIDATES** 

ANSWER QUESTIONS ONE AND ANY OTHER TWO.

### QUESTION ONE (COMPULSORY) [30 MARKS]

a) Differentiate the following terms. [4Marks] i. Computer Graphics and Image Processing ii. Simulation and Animation b) Computer Graphics is a field in computer science that is gaining fame day by day, using relevant examples, explain why this is so. [6Marks] c) The higher the resolution, the better the quality of pictures. What effects does high resolution have on pixels? [2Marks] d) Computer Graphics borrows many concepts from different scientific disciplines, explain relationship between computer graphics and other 3 disciplines. [6Marks] e) CRT is one of the graphic devices, explain how it displays images on the screen using a well labelled diagram. [4Marks] f) Explain why C language is one of the most preferred programming language in computer graphics. [4Marks] g) Explain why closegraph () method must be invoked after display in C. [2Marks] h) Determine the new position of a point(x,y) when moved:-[4Marks] i) To a point which is at a distance of  $T_x$  along x axis ii) To a point which is at a distance of Ty along y axis QUESTION TWO [20 MARKS] a) Define the following terms. [4Marks] i) Persistence ii) DVST b) Explain how CRT parts help in achieving the common goal of displaying graphics on the screen. [4Marks] c) Tablets are perfect in getting input of a two dimensional picture, how can it be modified to get input from three dimensional picture? [6Marks] d) What is Scan conversion with respect to computer graphics? [2Marks] e) It is important to be specific about polygons, in your own opinion, why do you think so? [4Marks]

f) Describe why yx algorithm is called so?

[2Marks]

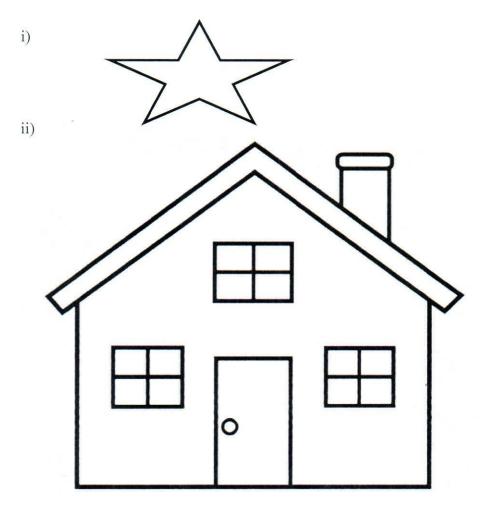
### **QUESTION THREE [20 MARKS]**

a) Explain the following concepts used in graphics programing.

[4Marks]

- a. Coordinate System
- b. Graph Mode
- b) Write C program to draw the following figures using lines.

[8Marks]



c) Write a C program that keeps drawing a circle of random centre and a radius of 20 Pixels throughout the screen until a user presses any key from the keyboard.

[4Marks]

d) Using fill effects of your choice, write a C program that draws a rectangle that has the fill effects of your choice. [4Marks]

#### **QUESTION FOUR [20 MARKS]**

a) What do you know about the following terms?

[4Marks]

- i) DDA
- ii) Transformation
- b) Explain requirements that a good line drawing algorithm should meet. [4Marks]
- c) Write a C program to generate a line using Bresenham's algorithm [6Marks]
- d) Describe various difficulties that arise in drawing circles using DDA method with it's differential equation and how to overcome them. [6Marks]

### **QUESTION FIVE [20 MARKS]**

a) Define the following terms with respect to computer graphics.

[4Marks]

- i) Dragging
- ii) Gravitational Constraint
- b) Explain the 4 bit code to define regions used in rejection method. [6Marks]
- c) One the most stressing shapes to clip is Polygon, however Sutherland-Hodgeman algorithm make this easier. Explain how this algorithm work? [6Marks]
- d) Explain the concept of Rubber band techniques in positioning. [4Marks]