



*(Knowledge for Development)*

**KIBABII UNIVERSITY**

35

**UNIVERSITY EXAMINATIONS  
2019/2020 ACADEMIC YEAR**

**SPECIAL/SUPPLEMENTARY  
EXAMINATIONS  
YEAR FOUR/THIRD SEMESTER TWO  
EXAMINATIONS**

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

**COURSE CODE : CSC 320/420  
COURSE TITLE : COMPUTER GRAPHICS**

**DATE: 02/02/2021 TIME: 08:00 A.M – 10:00 A.M**

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**INSTRUCTIONS TO CANDIDATES**

**ANSWER QUESTIONS ONE AND ANY OTHER TWO.**

**QUESTION ONE [COMPULSORY] [30 MARKS]**

[2Marks]

a) Define the following terms as used in computer graphics.

- i. Computer Graphics
- ii. Simulation

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) Give 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  $T_y$  along y axis

**QUESTION TWO [20 MARKS]**

[4Marks]

a) Define the following terms.

- 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]

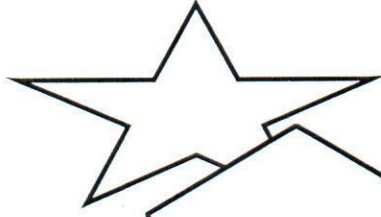
f) Describe why yx algorithm is called so? [2Marks]

**QUESTION THREE [20 MARKS]**

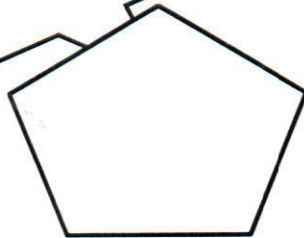
- a) Explain the following concepts used in graphics programing. [4Marks]  
a. Coordinate System  
b. Graph Mode

- b) Write C program to draw the following figures using lines. [8Marks]

i)



ii)



- 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]