(Knowledge for Development)

KIBABII UNIVERSITY

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 T_y 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]

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]