(Knowledge for Development)

KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS
2020/2021 ACADEMIC YEAR

SPECIAL/SUPPLEMENTARY EXAMINATIONS
YEAR THIRD SEMESTER TWO EXAMINATIONS

FOR THE DEGREE OF
BACHELOR OF SCIENCE COMPUTER SCIENCE

COURSE CODE : CSC 320

COURSE TITLE : **COMPUTER GRAPHICS**

DATE: 18/01/2022 **TIME:** 08:00 A.M – 10:00 A.M

INSTRUCTIONS TO CANDIDATES

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

QUESTION ONE (COMPULSORY) [30 MARKS]

a) Define the following terms as used in computer graphics. [4Marks]
   i. Rotation
   ii. Clipping

b) A video is one of the most common computer graphics in use, giving reasons, which category of computer graphics will you put it. [4Marks]

c) You are given a large graphic bigger than the device screen, how will you handle it so that it is seen clearly by the user. [6Marks]

d) C initgraph() function is one of the most important functions when working with computer graphics, Explain its use and the parameters it takes? [4Marks]

e) It is said that the future of computing is computer graphics, explain areas that computer graphics can be used in modern day. [4Marks]

f) Suppose you are required to rotate a point(x,y) clockwise through an 60^0 about the origin of the coordinate system. Give the resulting points. [4Marks]

g) Write a C program that uses **ellipse()** to draw ¾ with radius of 50px [4Marks]

QUESTION TWO [20 MARKS]

a) Explain the following terms. [4Marks]
   i) Singularity Problem
   ii) Coherence

b) Describe how Algorithm singularity works. [6Marks]

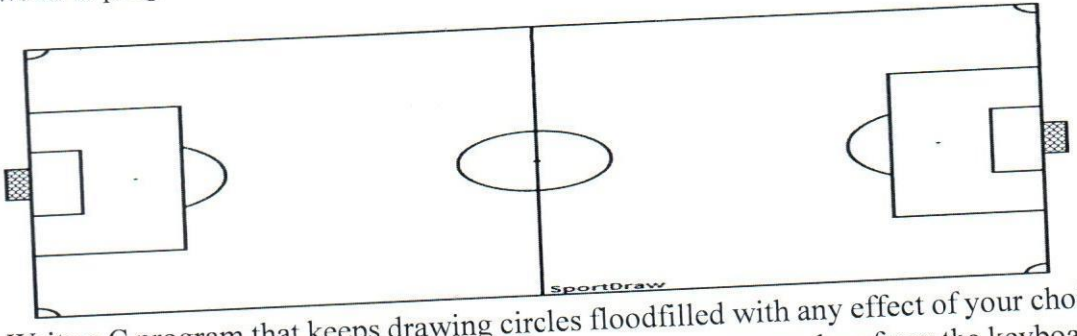
c) The Direct View Storage Tube ensured that persistence of graphics on the screen was greatly improved, by using a suitable diagram, explain how this was accomplished. [6Marks]

d) Most CRTs have a problem of persistence which needs pictures to be refreshed after every 100 Milliseconds, Explain how this problem can be eliminated. [4Marks]

QUESTION THREE [20 MARKS]

a) Explain the relationship between the following in computer graphics. [4Marks]
   a. Pixel and Resolution
   b. Graphic Clarity and Pixels

b) Write C program to draw the following figure. [6Marks]



c) Write a C program that keeps drawing circles floodfilled with any effect of your choice at random places throughout the screen until a user presses any key from the keyboard. [6Marks]

d) Explain why it is important to know screen resolution of device before any graphic is drawn. [4Marks]

QUESTION FOUR [20 MARKS]

a) Describe the following terms as used in Computer Graphics. [4Marks]
   i) Rotation
   ii) Translation

b) Given the differential equation of a circle if dy/dy=-x/y, write a C program that generates a circle using DDA [6Marks]

c) Explain how Bresenham's algorithm works. [6Marks]

d) Using a Rectangle, write a C program that shows rotation of 80^0 about the origin of the coordinate system. [4Marks]

QUESTION FIVE [20 MARKS]

a) Define the following terms. [2Marks]
   i) Clipping
   ii) Windowing

b) Why do you think there is need for Clipping and Windowing? [4Marks]

c) There exist many clipping algorithms, in your own view give the best algorithm, explain and justify your choice. [6Marks]

d) Positioning is one of the basic graphical input operations, explain using different techniques how this can be accomplished. [6Marks]

e) Event handling is a principal behind many computer graphics fields, state two important functions for handling events in computer graphics. [2Marks]