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KIRIRI WOMEN'S UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2023/2024 ACADEMIC YEAR
THIRD YEAR, SECOND SEMESTER EXAMINATION
FOR THE DEGREE OF BACHELOR OF SCIENCE
(COMPUTER SCIENC)
KCS 310 – COMPUTER GRAPHICS

Date: 13th April, 2023
Time: 11:30am– 1:30pm

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS

QUESTION ONE (30 MARKS)

- a) Define the Bresenham's Line Algorithm (2 Marks)
- b) Animation includes all the visual changes on the screen of display devices. List any four of the changes. (2 Marks)
- c) Differentiate between flood fill and boundary fill algorithm with an illustration (6 Marks)
- d) Explain the two types of computer graphics (4 Marks)
- e) Calculate the aspect ratio of a 512 x 512 image and a 1024 x 768 image respectively. (4 Marks)
- f) A Triangle with (2, 2), (0, 0) and (2, 0). Apply Shearing factor 2 on X-axis and 2 on Y-axis. Find out the new coordinates of the triangle? (6 Marks)
- g) Visual Effects is a process in which we can make a mixture of real shooting with animated images, discuss the two parts of the process (6 Marks)

QUESTION TWO (20 MARKS)

- a) Discuss the properties of a video monitor (6 Marks)
- b) Contrast between screen resolution and image resolution giving an example (5 Marks)
- c) Using illustrations, highlight the types of perspective projection indicating where it's used in computer graphics. (9 Marks)

QUESTION THREE (20 MARKS)

- a) With the aid of a well labelled diagram, highlight the parts of a display processor. (10 Marks)
- b) Plot 6 points of circle using Bresenham Algorithm. When radius of circle is 10 units. The circle has centre (50, 50). (10 Marks)

QUESTION FOUR (20 MARKS)

- a) Giving examples, explain the two basic color models (6 Marks)
- b) A 3D object that have coordinates points P(1, 4, 4), Q(4, 4, 6), R(4, 1, 2), T(1, 1, 1) and the scaling parameters are 3 along with x-axis, 4 along with y-axis and 4 along with z-axis. Apply scaling to find the new coordinates of the object? (8 Marks)
- c) Elucidate the two different ways on how to represent graphics (6 Marks)

QUESTION FIVE (20 MARKS)

- a) Illustrate the two types of scanning or travelling of beam in raster scan (6 Marks)
- b) There are two popular approaches for producing color displays with a CRT, using suitable diagrams, differentiate the two. (8 Marks)
- c) The process of producing 3D animations is divided into three parts, elaborate on parts expressing what happens. (6 Marks)