THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

A. M. E. C. E. A

P.O. Box 62157

00200 Nairobi - KENYA

MAIN EXAMINATION

Telephone: 891601-6

JANUARY – APRIL 2019 TRIMESTER

FACULTY OF SCIENCE

DEPARTMENT OF COMPUTER AND LIBRARY SCIENCE

REGULAR PROGRAMME

CMT 313: COMPUTER GRAPHICS

Date: APRIL 2019	**Duration: 2 Hours**
INSTRUCTIONS: Answer Question ONE and any other TWO Questions	

Q1. a) Discuss with five explicit examples, areas of mathematics that may apply in computer graphics. **(10 marks)**

b) Justify with any five reasons the study of computer graphics at a university **(5 marks)**

c) Explain the meaning of the following concepts as they apply to a canvas context. **(8 marks)**

    a) context.strokeStyle
    b) context.fillStyle
    c) context.fill();
    d) context.stroke();
    e) context.globalAlpha
    f) context.shadowColor
    g) context.shadowOffsetX
    h) context.save();

d) Explain how the graphics subsystem works including management of display problems that may arise **(7 marks)**

Q2. a) Define the following terms

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i)   depth   **(1 mark)**
    ii)   Display resolution   **(1 mark)**
    iii)   Raster-scan   **(1 mark)**
    iv)   Rendering   **(1 mark)**
    v)   Specular highlights   **(1 mark)**

b) A pixel is an important component in computer graphics. Discuss **(4 marks)**

c) State the law of reflection and explain how it contributes to computer graphics.
      (4 marks)

d) Write an SVG that creates an ellipse with a horizontal linear gradient from green to blue.   **(7 marks)**

Q3.   a)   What is aliases and how is it resolved?   **(4 marks)**

b) Explain with examples the use of any five Uppercase commands and any five Lowercase commands in SVG <path> element   **(10 marks)**

c) Write a canvas code that you can use to draw a canvas shadow.   **(6 marks)**

Q4.   a)   Write an svg code that creates two markers, a circle and an arrow of your own attributes values and use circle as the start of a path and the arrow as the end of the path.   **(8 marks)**

b) Explain JavaScript features and concepts that make it an ideal application to drive web based computer graphics   **(8 marks)**

c) You are given the canvas statement *var grd = context.createRadialGradient(238, 50, 10, 238, 50, 300);*. Explain what it is supposed to do.   **(4 marks)**

Q5. a) Svg is equipped with tools (tags) that support the development of graphic animations. Discuss theses tools and give an example for each. **(12 marks)**

    b)   Explain with an examples parameters needed to draw :
        i) Canvas Quad curve   **(2 marks)**
        ii) Canvas Bezier Curve   **(2 marks)**
        iii) Canvas Arc   **(4 marks)**

END

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