

**EXAM2**



**TECHNICAL UNIVERSITY OF MOMBASA**

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**BACHELOR OF SCIENCE IN MATHEMATICS AND COMPUTER SCIENCE**

**(BSMC)**

**BACHELOR OF SCIENCE IN STATISTICS AND COMPUTER SCIENCE (BSSC)**

**BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY(BSIT)**

**BACHELOR OF TECHNOLOGY INFORMATION TEHNOLOGY(BTIT)**

**EIT4214/ICS 2311: COMPUTER GRAPHICS**

**END OF SEMESTER EXAMINATION**

**SERIES:2016/2017**

**TIME:TWO HOURS**

**DATE:Pick DateAPRIL2016**

Instructions to Candidates

**You should have the following for this examination**

**-Answer Booklet, examination pass and student ID**

**This paper consists of FIVE questions. Attempt Question ONE ( Compulsory) and OTHER TWO from the rest.**

**Do not write on the question paper.**

### QUESTION ONE

a) Explain the following concepts and their importance in graphic modeling

- (i) point ( 2 marks)
- (ii) pixel ( 2 marks)
- (iii) rendering ( 2 marks)
- (iv) vector ( 2 marks)
- (v) vertex ( 2 marks)
- (vi) edge ( 2 marks)

b) Identify and explain two methods of modeling, identifying the techniques and primitives they employ ( 8marks)

c) Explain the process of graphic modeling: (10 marks)

### QUESTION TWO

a) Explain the rendering pipeline of OpenGL ( 10 marks)

b) (i) explain the term pixallation and any effects it has on vector graphics and raster images ( 5marks)

c) Explain any two color models and their application (5 marks)

### QUESTION THREE

a) Explain how Computer Graphic is applied in the following areas (10 marks)

- (i) Virtual reality
- (ii) Geometry
- (iii) Imaging
- (iv) rendering

b) Explain the difference between Vector Graphic and Raster image

( 5 marks)

c) Explain any five graphic file formats and their suitability of use (5 marks)

### QUESTION FOUR

a) Explain the following methods of creating animation

- (i) polygonal method
- (ii) motion capture
- (iii) sprites

(9 marks)

b) A customer wants you to create an animation on a person playing football.

**Identify:**

- (i) A suitable method and reason for suitability (2 marks)
- (ii) An appropriate software application and (1marks)
- (iii) The a list of suitable tools for the task (4 marks)
- (iv) The process or steps for creating the animation (4 marks)

**QUESTION FIVE**

a) (i) Explain the meaning of video graphic card (2 marks)

(ii) Identify the major components of the video graphic card and the respective functions

(8 marks)

b) The following is an OpenGL code written in C++ programming environment:

```
#include <GL/gl.h>
#include <GL/glu.h>
#include <GL/glut.h>
drawBox()
{
glClearColor(0.0, 0.0, 0.0, 0.0);
glClear(GL_COLOR_BUFFER_BIT);
glColor3f(1.0, 1.0, 1.0);
glOrtho(0,1,0,1,-1,1);
glBegin(GL_POLYGON);
glVertex2f(-0.5, -0.5);
glVertex2f(-0.5, 0.5);
glVertex2f(0.5, 0.5);
glVertex2f(0.5, -0.5);
glEnd();glFlush();
}
```

(i) Identify the OpenGL actions of any four of the program statements (4 marks)

(ii) Explain the purpose of the section of the program above the draw() function (2marks)

c) OpenGL is an API.

- (i) Explain the meaning of API in this context (2marks)
- (ii) Explain the services that OpenGL API provides (2marks)