KENYATTA UNIVERSITY

EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE

SCO 305: COMPUTER GRAPHICS

2ND SEMESTER 2023/2024 TIME: 2 HOURS

INSTRUCTIONS:

1. This paper contains FIVE questions. Answer question ONE (Compulsory) from Section A and any TWO Questions from Section B
2. All optional questions carry equal marks
3. Write all your answers in the answer booklet

SECTION A (COMPULSORY)

QUESTION ONE (30 MARKS)

a) Moha who is an ultra sound image specialist at Aga Khan University Hospital, Nairobi, would like to use the machine, State and explain any five major elements of his computer graphic system. (10 marks)

b) Discuss the applications of graphic transformation. (4 marks)

c) The Avenue hospital uses High Dynamic Range (HDR) imaging pipeline, discuss the Stages of raytracing. (6 marks)

d) Discuss any five applications of graphical modelling techniques. (10 marks)

QUESTION TWO (20 MARKS)

a) Discuss five types of necessary specifications that identify a viewer or camera. (10 marks)

b) State and explain any five benefits of 2D animation of graphics. (10 marks)

QUESTION THREE (20 MARKS)

a) Discuss any five computer graphic image Shading methods. (10 marks)

b) Using a suitable diagram describe the graphics image viewing pipeline. (10 marks)

QUESTION FOUR (20 MARKS)

a) Describe any four types of graphic modelling techniques. (8 marks)

b) Photon mapping is the process of emitting photons into a scene and tracing their paths probabilistically to build a photon map, a data structure which describes the illumination of the scene independently of its geometry. Discuss the rendering algothims of photon mapping. (12 marks)

QUESTION FIVE (20 MARKS)

a) Computer graphics cards can render over 10 million polygons per second, discuss its limitations. (10 marks)

b) List any five advantages of 3D animation in computer graphics. (10 marks)