



MACHAKOS UNIVERSITY

University Examinations for 2017/2018

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

THIRD YEAR SECOND SEMESTER EXAMINATION FOR BACHELOR OF
SCIENCE (MATHEMATICS AND COMPUTER SCIENCE)

SCO 305 : COMPUTER GRAPHICS

DATE: 14/12/2017

TIME: 11.00-1.00 PM

INSTRUCTIONS: Answer Question One and Any Other Two Questions

QUESTION ONE-COMPULSORY (30 MARKS)

- a) Explain the term computer graphics (2 marks)
- b) Explain any five applications of computer graphic (10 marks)
- c) Discuss the hardware devices used for computer graphics (4 marks)
- d) Write the OpenGL lighting equation using these symbols k_a , k_d , k_s , L , N , V , R , n_s (4 marks)
- e) Using well labeled diagrams, explain the difference between vector and raster graphics. (10 marks)

QUESTION TWO (20 MARKS)

- a) Draw a picture of lighting on a surface at point x. Labeling the light and eyepoint. Also label the vectors for L , N , V , R . (4 marks)
- b) Describe the three basic classes of transformations in computer graphics (6 marks)
- c) Using a well labeled diagram, illustrate the working principle of CRT (10 marks)

QUESTION THREE (20 MARKS)

- a) Explain the steps in DDA line drawing algorithm (10 marks)
- b) Explain the steps in Bresenham's line drawing algorithm (10 marks)

QUESTION FOUR (20 MARKS)

- a) Describe scaling as used in computer graphics (2 marks)
- b) Explain the steps in Bresenham's circle drawing algorithm (8 marks)
- c) What are Bezier Curves? Explain its properties (10 marks)

QUESTION FIVE (20 MARKS)

- a) Explain the significance of 2d transformation (2 marks)
- b) Discuss hidden surface removal algorithms for Curved Surfaces (8 marks)
- c) Demonstrate the midpoint circle and ellipse algorithms (10 marks)