UGANDA MARTYRS UNIVERSITY

NKOZI

UNIVERSITY EXAMINATIONS

FACULTY OF SCIENCE

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION SYSTEMS

END OF SEMESTER FINAL ASSESSMENT

SEMESTER II, 2021/2022

DIPLOMA IN COMPUTER SCIENCE

COMPTER GRAPHICS-DIP II

INSTRUCTIONS:

PAPER:	COMPUTER GRAPHICS AND ANIMATION
PAPER CODE:	DIP 2201
DATE:	19 JULY/2022
TIME:	(3 HRS)

ATTEMPT ALL QUESTIONS

QUESTION ONE

a) With examples, explain any four areas where computer graphics can be applied [8 Mks]

b) With examples discuss any four five basic output primitives (elements) used in computer graphics [8 Mks]

c) Based on your knowledge in graphics systems, describe any four elements of typical graphics system [4 Mks]

QUESTION TWO

a) With examples, describe any two types of computer graphics systems [4 Mks]

b) Using a diagram, illustrate a computer graphics systems framework [6 Mks]

c) Explain any four types of angles that could be considered in graphics distance and direction computations [8 Mks]

d) Compute the magnitude of vector v = [4 3 5]   [2 Mks]

QUESTION THREE

Rotate a point with coordinates (12, 6) in 2D by an angle θ=90 clockwise about the origin. Find the new coordinates after rotation: [20 Mks]

i) Using the functional form x' = xcosθ + ysinθ and y' = − xsinθ + ycosθ.

ii) Prove your answer using the matrix computation

iii) Plot the original point and the point after rotation on the Cartesian plane (x, y coordinate system).

QUESTION FOUR

a) With examples, discuss any four techniques used in computer graphics animation [8 Mks]

b) With examples, differentiate between Raster and vector graphics [4 Mks]

c) From your experience in graphics processing, differentiate between OPENGL and GLUT [4 Mks]

d) Normalise vector p = [11, 33] [2 Mks]

QUESTION FIVE

Supertone studios continues to improves its service department for quality product promotion and increased revenue base. Recently the managing board recommended submission of all departmental requirements for review and funding. As the lead consult Supertone studios,

a) Discuss any four transformation methods used in computer graphics [8 Mks]

b) Discuss any application of interpolation and approximation curves [4 Mks]

c) With examples explain any four reasons for applying transformations in graphics systems. [8 Mks]

QUESTION SIX

a) Find the inverse of matrix M below [6 Mks]

$$\begin{bmatrix} 14 & 17 \\ 12 & 16 \end{bmatrix}$$

b) Imagine point M has coordinates of [3,4]and p = [6,8] [10 Mks]
Point M has only arrange of 3 and can only shoot arrange of 3 and point P has arrange of 7 and can only shoot arrange of 7. Predetermine whether two points can hit each other.

c) Identify any four output devices as used in computer graphics [4 Mks]

QUESTION SEVEN

a) Write notes on the following terms as used in computer graphics: (i) world space, (ii) view point, (iii) screen space [6 Mks]

b) Explain any three input and three output devices that can be used in graphics systems [6 Mks]

c) Explain any two graphics cards used in computer graphics systems [4 Mks]

d) Briefly discuss the components of a graphics card [4 Mks]

END

SUCCESS