Student Name/Roll Number :

National University of Computer and Emerging Sciences

CS418 Computer Graphics

Fall 2020 Sessional I Examination

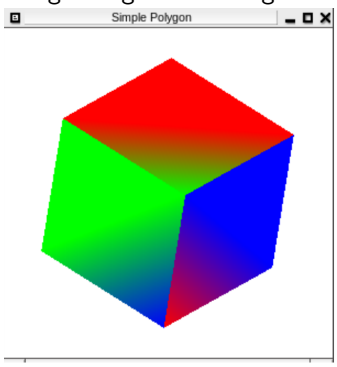
Time Allowed: **1 Hour** Instructor: **Dr. Omar Usman Khan**

Q1 Present the diagrammatic representation of graphics pipeline, using which OpenGL can draw graphic objects (**4**)

Q2 Draw the quadrant system used for (monitor) screens and that of OpenGL world view. (**3**)

Q3 What is a framebuffer, and how does it fit into the overall display pipeline? (**3**)

Q4 Consider a cube that is centered at (0,0,0) and has volume of 1 unit^3. Draw any two adjacent surfaces of this cube using triangular meshing scheme. (**5**)



Q5 Consider the vertex points below (in this order), joined together using a polygonal mesh.

$v_1 = (0, 0, 0)$
$v_2 = (2, 0, 0)$
$v_3 = (3, 1, 0)$
$v_4 = (1, 2, 0)$
$v_5 = (1, 3, 0)$
$v_6 = (0, 3, 0)$

(a) Draw a visual representation of the surface.

(b) Using the vector method, identify the vertex that is contributing to concavity of the surface.

(**4**)

Q6 Geometrically speaking, how can textured images be applied to spherical objects? (Don't discuss OpenGL code) (**3**)

Expected Attempt Time: 51 minutes
Total Paper Marks: 22
Paper Weightage: 15%