UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2019

Course: Computer Graphics
Program: B-Tech CSE All Branches
Course Code: CSEG329

Semester: VI
Time 03 hrs.
Max. Marks: 100

Instructions:

SECTION A (Attempt all)

S. No.		Marks	CO
Q 1.	Illustrate and discuss Reflection and Shearing?	4	CO3
Q 2.	Explain the term clipping, also illustrate Weiler Atherton polygon clipping?	4	CO2
Q 3.	Justify that Open GL platform independent with proper explanation.	4	CO1
Q 4.	How to draw a curve using NURBS ? Do explain its advantages.	4	CO4
Q 5.	Explain Gouraud and Phong Shading along with their advantages and disadvantage.	4	CO5

SECTION B (Attempt all)

Q 6.	a) The position vectors for the vertices of a triangular surface are given by A(10,0,0) B(0,10,0), C(0,0,10). A point light source is at P(0,0,20).Find the intensities at the vertices of the quadrilateral. If the ambient light intensity is 1 and the directional light intensity is 10.Assume Ka=Kd=0.3.Neglect any intensity attenuation and specular effect. b) State the differences between Beam Penetration and Shadow Mask method	7+3=10	CO5,CO1
Q 7.	a) Prove that 2D rotation and scaling commutative if Sx=Sy or $\theta=n\pi$ b) Consider a square A(1,0), B(0,0), C(0,1), D(1,1) and rotate the square ABCD by 45 degree clockwise about A(1,0). **OR** c) State and explain the Z-buffer algorithm and mention the advantage and disadvantages of it. d) Define the term blending function.	4+6=10 8+2=10	CO4,CO1,CO2
Q 8.	a) Construct enough points on the Bezier curve whose control points are P0(4,2),P1(8,8),P2(16,4) to draw an accurate sketch. And answer the followings (i) What is the degree of the curve (ii) What are the co ordinates at U=0.5 b) Illustrate the different types of Knot Vector.	7+3=10	CO4
Q 9.	a) State Sutherland-Hodgeman polygon clipping algorithm and mention its advantages.	6+4=10	CO2,CO3

	b) State the differences between concave & convex polygon with diagram.		
	SECTION-C (Attempt all)		
Q 10.	a) A solid tetrahedron is given by position vectors A(1,1,1),B(3,1,1),C(2,1,3) and D(2,2,2) and a point light source is kept at P(2,3,4).Using back face detection method, find the surfaces on which the light falls and the surfaces which are to be shadowed. b) Perform reflection of Unit cube about the xy plane. c) A rectangular parallelepiped is given having length on x axis,y axis and z axis as 3,2,1 respectively. Perform a rotation by an angle -90 degree about x-axis and an angle 90 degree about y-axis.	**10+5+5=20**	**CO5,CO4,CO3**
Q 11.	a) Explain Color models used in Computer Graphics illumination method and discuss the concepts of Liang Barsky Line clipping. OR b) Differentiate between Beizer Curve and B Spline Curve with proper mathematical terms, and explain the term Reflection through XY,YZ,XZ planes with proper diagram and matrix formulations.	**10+10=20**	**CO2,CO3,CO4**