Name: **Enrolment No:**	UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, July 2020

Course: Computer Graphics	**Semester: VI**
Program: B.Tech(CSE+IOT&SC)	**Time**
Course Code: CSEG3003	**Max. Marks:**

MC	(CO2) If the pixel is already filled with desired color then leaves it otherwise fills it. This is called	Flood fill algorithm	Incorrect	Boundary fill algorithm	Correct	Scan line polygon filling algorithm	Incorrect	None of these	Incorrect
MC	(CO2) The function of scan line polygon fill algorithm is to ________	Find intersection point of the boundary of polygon and scan line	correct	Find intersection point of the boundary of polygon and point	Incorrect	Both a & b	Incorrect	None of these	Incorrect
MC	(CO2) Some common form of clipping include	Curve clipping	Incorrect	Point clipping	Incorrect	Polygon clipping	Incorrect	All of these	Correct
MC	(CO3) Reflection of a point about x-axis, followed by a counter-clockwise rotation of 90 degree , is equivalent to reflection about which line?	x = -y	Incorrect	y = - x	Incorrect	x = y	Correct	x + y = 1	Incorrect
MC	(CO2) There are 2 types of polygons. They are?	convex and concave	Correct	square and rectangle	Incorrect	hexagon and square	Incorrect	Octagon and convex	Incorrect

FIB	(CO1) Full form of GPU is ___________? Note: 1st letter of each word should be in capital and remaining will be in small.	Graphics Processing Unit							
MC	(CO1) Suppose a pixel (3,4) is given in raster surface, then the neighbours of this point are______.	(3,3)(4,4)(2,4)(3,5)	Incorrect	(2,3)(4,3)(2,5)(4,5)	Incorrect	Both A and B	Correct	None of these	Incorrect
TF	(CO1) The m-adjacency removes the ambiguity present in 8 adjacency?	TRUE	Correct	FALSE	Incorrect				
MC	(CO1) Consider a display area of a video monitor to be 12''*10''. If the resolution of the monitor is 1280*1024, What is the dimension of each pixel?	width=9.4*10^-3 inch height=9.7*10^-3 inch	correct	width=9.4*10^-3 inch height=9.4*10^-3 inch	Incorrect	width=9.7*10^-3 inch height=9.4*10^-3 inch	Incorrect	width=9.4*10^3 inch height=9.7*10^3 inch	Incorrect
MC	(CO1) Consider a raster system with the resolution of 1280 x 1024 pixels and the color palette calls for 1024 colors. What is the minimum amount of video RAM that the computer must have to support the	1.63 GB	Incorrect	1.63 MB	Correct	1.63 KB	Incorrect	None of these	Incorrect

	above-mentioned resolution and number of colors?								
MC	(CO1) How much time is spent scanning across each row of pixels during screen refresh on a raster system with resolution of 1280x1024 and a refresh rate of 60 frames per second?	16.3 ns	Incorrect	16.3 micro second	Correct	16.3 sec	Incorrect	16.3 ms	Incorrect
MC	(CO1) Full color frame buffer can produce __________ colors.	2^8	Incorrect	2^16	Incorrect	2^32	Incorrect	2^24	Correct
MC	(CO1) If N-bit plane gray level/color frame buffer with W-bit wide Look Up table is given then _________	N<W<=24	Correct	N<W<24	Incorrect	N=W=24	Incorrect	None of these	Incorrect
MC	(CO2) Summation of all blending functions in bezier curve is equal to ________.	0	Incorrect	1	Correct	2	Incorrect	3	Incorrect
MC	(CO3) What is the centroid of the unit cube?	(0.5,0.5,0)	Incorrect	(0.5,0.5,0.5)	Correct	(0,0.5,0.5)	Incorrect	(0.5,0,0.5)	Incorrect

MC	(CO3) Apply 2-D reflection over a triangle ABC with vertices A(5, 1), B(8, 3), and C(10, 1) about a straight line PQ. Line PQ can be formed by applying rotation over a straight line y=-x through an angle of 75 degrees in anticlockwise direction. Find out the resultant coordinate of A after transformations.	((5+√3)/2,(5√3-1)/2)	correct	((5+√3),(5√3-1))	Incorrect	((5+√3),(5-√3))	Incorrect	None of these	Incorrect
MC	(CO3) Apply 2-D reflection over a triangle ABC with vertices A(5, 1), B(8, 3), and C(10, 1) about a straight line PQ. Line PQ can be formed by applying rotation over a straight line y=-x through an angle of 75 degrees in anticlockwise direction. Find out the resultant coordinate of B and C after transformations.	((8+3√3),(8√3-3)) and ((10+√3),(10√3-1))	Incorrect	((8+3√3)/2,(8√3-3)/2) and ((10+√3)/2,(10√3-1)/2)	Correct	((10+√3),(10√3-1)) and ((8+3√3),(8√3-3))	Incorrect	((10+√3)/2,(10√3-1)/2) and ((8+3√3)/2,(8√3-3)/2)	Incorrect

MC	(CO2) An Animation shows a car driving along a road which is specified by a Bezier curve with the following control points: X: 0 5 40 50 Y: 0 40 5 15 The animation lasts 10 seconds and the key frames are to be computed at 1 second intervals. Calculate the position of car on the road at the start of the 6th second of animation. What is the x coordinate of the position?	2.952	Incorrect	29.52	Correct	295.2	Incorrect	0.2952	Incorrect
MC	(CO2) An Animation shows a car driving along a road which is specified by a Bezier curve with the following control points: X: 0 5 40 50 Y: 0 40 5 15 The animation	16.92	correct	1.692	Incorrect	169.2	Incorrect	0.1692	Incorrect

	lasts 10 seconds and the key frames are to be computed at 1 second intervals. Calculate the position of car on the road at the start of the 6th second of animation. What is the y coordinate of the position?								
MC	(CO3) Magnify the triangle with vertices A(0,0), B(1,1) and C(5,2) to twice its size while keeping C(5,2) fixed.	(1,1), (2,2), (5,2)	Incorrect	(0,0), (2,2), (5,2)	Correct	(0,0), (1,1), (5,2)	Incorrect	None of these	Incorrect
MC	(CO4) 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).Find out the normal of the surface ABC.	(-4j)	correct	(+4j)	Incorrect	(2j-2k)	Incorrect	(2j+2k)	Incorrect
TF	(CO4) 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	TRUE	correct	FALSE	Incorrect				

	detection algorithm the surface ABC is backface (True/False).								
MC	(CO5) Assume that at point P on the surface, the normal, light and sight (viewing) vectors are: n=j, L=-i+2j-k, V=i+1.5j+0.5k Assuming that there is one object in the scene, d=0 and k=1. The light source is assumed 10 times more intense than the ambient light. The surface is to have a shiny metallic appearance; hence, most of the light is specularly reflected. Thus assume ks=0.8, kd=ka=0.15 and m=5. Note that ks+kd=0.95, which implies that 5% of the energy from the light source is absorbed. Determine the intensity with the help of	7.65	Incorrect	8.65	Correct	9.95	Incorrect	None of these	Incorrect

	illumination model.								
MC	(CO5) Assume that at point P on the surface, the normal, light and sight (viewing) vectors are: n=j, L=-i+2j-k, V=i+1.5j+0.5k Assuming that there is one object in the scene, d=0 and k=1. The light source is assumed 10 times more intense than the ambient light. The surface is to have a shiny metallic appearance; hence, most of the light is specularly reflected. Thus assume ks=0.8, kd=ka=0.15 and m=5. Note that	3.35	Correct	4.35	Incorrect	5.35	Incorrect	None of these	Incorrect

	ks+kd=0.95, which implies that 5% of the energy from the light source is absorbed. Determine the intensity also when halfway vector is used.								
MC	(CO2) The eccentricity of parabola is ________	e>1	Incorrect	e<1	Incorrect	e=1	Correct	None of these	Incorrect
MC	(CO2) B-Spline curve is made up of (n+1) control points and the order of the curve is K, where range of K is?	2<K<n+1	Incorrect	2<=K<=n+1	Correct	2>K>n+1	Incorrect	2>=K>=n+1	Incorrect
FIB	(CO2) B-Spline curve has n=6 and k=3, how many segments will be there in given B-Spline curve? Note: Answer should be written as a number not in words.	5							
MC	(CO2) In circle drawing using bresenham algorithm, R=10 is given, how many pixel points will be claculated to	6	Incorrect	5	Incorrect	7	Correct	8	Incorrect

	draw the circle in one octant?								
MC	(CO2) In DDA algorithm, the value of x and y will be incremented by ____ if slope<1.	x=x+1, y=y+1	Incorrect	x=x+1/m, y=y+1	Incorrect	x=x+1, y=y+m	Correct	x=x+1/m, y=y+m	Incorrect
MC	(CO2) The region codes of the two points are given as 1001 and 0101, then the line is ___________	Partially inside and partially outside	Incorrect	Completely outside	Correct	Completely inside	Incorrect	None of these	Incorrect
MC	(CO2) The starting point of the line is (5,8) and the ending point is (9,11). How many intermediate points will be calculated using bresenham line drawing algorithm?	5	Incorrect	4	Incorrect	2	Incorrect	3	Correct
MC	(CO3) Two successive scaling are _________ in nature.	Additive	Incorrect	Multiplicative	Correct	Subtractive	Incorrect	None of these	Incorrect
MC	(CO4) Execute the Z buffer algorithm to illuminate the pixels on an 8*8 display. The surfaces to be probed for visibility are: A: (1,4,3) (3,4,3) (3,6,3) (1,,6,3)	1	Incorrect	2	Correct	3	Incorrect	None of these	Incorrect

	B: (2,3,2) (4,3,2) (4,5,2) (2,5,2) C: (4,1,1) (7,1,1) (4,4,1) Assume the intensities of the surfaces A, B, C as 10, 20, 30 respectively. What is the value of depth buffer on location (4,3). Viewing point is at +infinity. (Note: Pixel indexing should start from 0)								
MC	(CO4) Execute the Z buffer algorithm to illuminate the pixels on an 8*8 display. The surfaces to be probed for visibility are: A: (1,4,3) (3,4,3) (3,6,3) (1,,6,3) B: (2,3,2) (4,3,2) (4,5,2) (2,5,2) C: (4,1,1) (7,1,1) (4,4,1) Assume the intensities of the surfaces A, B, C as 10, 20, 30 respectively. What is the value of refresh buffer on location (6,1). Viewing point is at +infinity. (Note: Pixel indexing should start from 0)	10	Incorrect	20	Incorrect	30	Correct	None of these	Incorrect

MC	(CO3) A circle, if scaled only in one direction becomes a/an?	Hyperbola	Incorrect	Ellipse	Correct	Parabola	Incorrect	Remains a circle	Incorrect
MC	(CO4) Back face detection algorithm works on ___________ approach?	Object space	Correct	Image space	Incorrect	Both A and B	Incorrect	None of these	Incorrect
MC	(CO3) In 3D, rotation through an arbitrary line that does not passes through an origin requires ____________ number of rotations.	7	Incorrect	5	Correct	3	Incorrect	None of these	Incorrect
MC	(CO4) The method which is based on the principle of checking the visibility point at each pixel position on the projection plane are called	Object space methods	Incorrect	Image space methods	Correct	Both A and B	Incorrect	None of these	Incorrect
MC	(CO5) How many types of shading techniques are present?	2	Incorrect	3	Correct	4	Incorrect	5	Incorrect
MC	(CO5) Flat shading suffers from an effect called_________ ________	Mocha effect	Incorrect	Mach band effect	Correct	Both A and B	Incorrect	None of these	Incorrect
MC	(CO3) If we want to rotate an arbitrary axis to coincide with any principal axis in	3	Incorrect	1	Incorrect	2	Correct	4	Incorrect

	3D, how many rotations will be performed?								
MC	(CO4) Area sub-division algorithm is also known as ________	Quad tree method	correct	Octree method	Incorrect	Bothe A and B	Incorrect	None of these	Incorrect
MC	(CO5) Illumination models are categorized into:	Local and global	correct	Static and dynamic	Incorrect	Phong and half way	Incorrect	None of these	Incorrect
MC	(CO5) In diffuse reflection, the intensity is calculated as I=L*(Kd)*cos(theta) where, L is intensity of light source, Kd is diffuse reflection coefficient and theta is the angle between light direction and surface normal. What is the range of theta here?	0<=theta<=180	Incorrect	0<theta<180	Incorrect	0<theta<90	Incorrect	0<=theta<=90	Correct
MC	(CO5) In diffuse reflection, the intensity is calculated as I=L*(Kd)*cos(theta) where, L is intensity of light source, Kd is diffuse reflection coefficient and theta is the angle between light direction	Behind	Correct	Infront of	Incorrect	Adjacent	Incorrect	None of these	Incorrect

	and surface normal. For theta>90, light source is ___________ the object.								
MC	(CO3) The most basic transformation that are applied in three-dimensional planes are:	Translation	Incorrect	Scaling	Incorrect	Rotation	Incorrect	All of these	Correct
MC	(CO3) Rotation around front to back is called?	Roll	correct	Pitch	Incorrect	Yaw	Incorrect	None of these	Incorrect
MC	(CO3) Transformation of object to the origin is called?	Coordinate transformation	Incorrect	Geometric transformation	Correct	Both A and B	Incorrect	None of these	Incorrect
MC	(CO3) How many transformations are required in 3D if the object has to rotate about an axis that is parallel to any principle axis?	5	Incorrect	7	Incorrect	3	Correct	None of these	Incorrect
MC	(CO3) Transform the given position vector [3 2 1 1] by the following sequence of operations: i) Translate by (-1,-1,-1) in x, y, z respectively. Ii) Rotate by 30 degree about x-axis and 45 degree about y-axis. Find out	[1.768, 0.866,-1.061,0]	Incorrect	[1.768, 0.866,-1.061,1]	Correct	[0.768, 0.866,-1.061,1]	Incorrect	[0.768, 0.866,-1.061,0]	Incorrect

	the transformed coordinates.									