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Code: DC09 **Subject: COMPUTER GRAPH**
Time: 3 Hours **Max. Marks: 1**

DECEMBER 2010

NOTE: There are 9 Questions in all.

- **Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.**
- **The answer sheet for the Q.1 will be collected by the invigilator after half an hour of the commencement of the examination.**
- **Out of the remaining EIGHT Questions, answer any FIVE Questions. Each question carries 16 marks.**
- **Any required data not explicitly given, may be suitably assumed and stated.**

Q.1 Choose the correct or the best alternative in the following: **(2×10)**

a. JPEG stands for :-

(A) Joint photographic expert group.
(B) Joint pick image group.
(C) Joint picture interchange group.
(D) None of these.

b. The alternative name of Z - buffer is :-

(A) Depth buffer. **(B)** Ziga buffer.
(C) Zero - buffer. **(D)** Zip - buffer.

c. The rotation transformation equation about the origin of 2D transformation.

(A) $\begin{bmatrix} \cos\theta & -\sin\theta \\ \sin\theta & \cos\theta \end{bmatrix}$ **(B)** $\begin{bmatrix} -\cos\theta & \sin\theta \\ \sin\theta & \cos\theta \end{bmatrix}$

(C) $\begin{bmatrix} \cos\theta & -\sin\theta \\ -\sin 0 & \cos 0 \end{bmatrix}$ **(D)** $\begin{bmatrix} -\cos\theta & \sin\theta \\ \sin 0 & -\cos 0 \end{bmatrix}$

d. Translate the square ABCD whose co-ordinates of A(0,0), B(3,0), C(3,3) and D(0,3) by the two units in both direction, what are the new co-ordinates of the object.

(A) A'(2,2), B'(5,2), C'(5,5),D'(2,5)
(B) A'(2,3), B'(6,3), C'(4,4), D'(3,2)
(C) A'(3,5), B'(6,4), C'(6,2), D'(4,3)
(D) A'(3,3), B'(6,6), C'(2,4), D'(3,2)

e. The maximum number of points that can be displayed without overlap on a CRT is referred to as the _____.

(A) Aspect ratio. **(B)** Resolution.
(C) Scan line. **(D)** Stroke writing.

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f. The phong reflection model simplifies light-matter interactions into 4 vecto and a number of constants. Each piece of phong model uses different vectors and constants. Which portion does not include taking a dot product?

(A) Ambient. **(B)** Diffuse.
(C) Specular. **(D)** None of these.

g. Properties of Beizer curve is-

(A) Beizer curve always passes through the first and last control point that is the curve has same end points as the guiding polygon.
(B) Beizer curve only passes through last control points.
(C) The curve does not follow the shape of the defining polygon.
(D) The curve is not in variant under an affine transformation.

h. Concept of "hypertext markup language" is used for creating a _____

(A) Text file. **(B)** Document file.
(C) Web page file. **(D)** Database file.

i. Random scan display system is known as a _____

(A) Sequential scan display. **(B)** Vector scan display.
(C) Shadow masking. **(D)** None of these.

j. The combination of light reflections from various surfaces to produce a uniform illumination is called the _____.

(A) Back ground light. **(B)** Distributed light source.
(C) Diffuse Reflection. **(D)** Lambertian reflector.

Answer any FIVE Questions out of EIGHT Questions.
Each question carries 16 marks.

Q.2 a. Explain the applications of computer graphics & graphic tools. **(8)**

b. Differentiate between the following:
(i) Interlacing and non-interlacing.
(ii) Plasma panel and LCD. **(8)**

Q.3 a. Consider 3 different raster systems with resolution of 640 by 480, 1280 by 1024, and 2560 by 2048. What size frame buffer (in bytes) is needed for each of these systems to store 12 bites per pixels? **(8)**

b. Write short notes on the following:
(i) Image scanner.
(ii) Graphic tablet. **(8)**

Q.4 a. Show that the composition of two rotations is additive by concatenating the matrix representation for $R(\theta_1)$ and $R(\theta_2)$ to obtain $R(\theta_1).R(\theta_2) = R(\theta_1+\theta_2)$ **(8)**

b. Describe the composite transformations. **(3)**

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c. Explain the purpose of Rubber band methods.

d. What are the continuity conditions of beta-spline? **(3)**

Q.5 a. Implement the Cohen – Sutherland line-clipping algorithm. **(8)**

b. Describe the polygon filling. **(4)**

c. Explain the method of character generation. **(4)**

Q.6 a. Explain the series of transformations that makeup N_{par} for the parallel projections. **(3)**

b. Draw the model of 3D viewing process and explain vanishing point in perspective projection. **(7)**

c. Explain depth buffer algorithm. What are the advantages of depth buffer? **(6)**

Q.7 a. What is the meaning of CSG? Describe how to perform point classification in CSG. **(8)**

b. Explain all the shading modes for the polygons. **(8)**

Q.8 a. Explain how octree could be used to speedup 2D picking in a graphics package. **(8)**

b. Describe the difference in appearance you would expect between a phong illumination model that used $(\overline{N}.\overline{H})^n$ and the one that used $(\overline{R}.\overline{V})^n$. **(8)**

Q.9 a. Explain hardware components of multimedia. **(4)**

b. Differentiate between the hyper text and hyper media. **(3)**

c. Give the applications of multimedia, explain them. **(5)**

d. Describe the image format? And differentiate to image bit map. **(4)**

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