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VII SEMESTER
MID SEMESTER EXAMINATION

Roll No. 2K12/mc/888
B.TECH. [MC]
(September'2015)

MC-401 Computer Graphics

Time: 1:30 Hours

Max. Marks: 20

Note:	All questions are compulsory. Assume suitable missing data, if any.

Q1.   i) Consider two raster systems with the resolutions of 1280x1024, and 2560x2048. What size frame buffer (in bytes) is needed for each of these systems to store 12 bits/pixel? How much storage is required for each system if 24 bits per pixel are to be stored?   **2**

ii) If a screen has 513 scan lines and an aspect ratio of 3:4 and if each pixel contains 8 bits worth of intensity information. How many bits per second are displayed if 30 frames are displayed per second?   **2**

Q2.   i) Derive expressions for converting RGB colors to YIQ values.   **2x2**
ii) Find out the RGB coordinates of a color at (0.15, 0.75, 0) in the CMY space.

Q3.   Using mid point ellipse algorithm plot a ellipse whose $r_x = 8$ and $r_y = 6$.   **4**

Q4.   Differentiate between the following: **2x2**
  i)   DDA Line drawing and Bresenham line drawing
  ii)   Vector scan systems and raster scan systems

Q5.   Explain the following terms   **1x4**
  i)   Dithering
  ii)   Halftonnig
  iii)   Scan conversion
  iv)   Jaggies

VII Semester
Mid Term Examination
Paper Code: MC-403-1
Max Marks: 20

- NOTE: Answer all questions. Assume suitable missing data if any.

Q 1. Let $\tilde{A}=(-2,0,2)$ and $\tilde{B}=(2,4,6)$ be two triangular fuzzy numbers 0 and 4, respectively. Calculate $\tilde{A} \oplus \tilde{B}$, $\tilde{A} \ominus \tilde{B}$, $\tilde{A} \odot \tilde{B}$, $\tilde{A} \oslash \tilde{B}$. The symbols $\oplus$, $\ominus$, $\otimes$, $\oslash$ are addition, substraction, multiplication, and division respectively. (4)

Q 2. Define Transitive Closure of a fuzzy relation. (4)
Find the transitive closure $\tilde{R}_T(X, X)$ of the following fuzzy relation $\tilde{R}$ given as

$$R_{i+1} = R_i \cup (R_i \circ R_i)$$

$$\begin{bmatrix} 0.7 & 0.5 & 0 & 0 \\ 0 & 0 & 0 & 1 \\ 0 & 0.4 & 0 & 0 \\ 0 & 0 & 0.8 & 0 \end{bmatrix}$$

Q 3. (a) A fuzzy tolerance relation $\tilde{R}$, is reflexive and symmetric. Find the equivalence relation $\tilde{R}_e$, where $\tilde{R}$ is given as (3)

$$R \circ R \circ R$$

$$\begin{bmatrix} 1 & 0.8 & 0 & 0.2 & 0.1 \\ 0.8 & 1 & 0.9 & 0 & 0.4 \\ 0 & 0.9 & 1 & 0 & 0.3 \\ 0.2 & 0 & 0 & 1 & 0.5 \\ 0.1 & 0.4 & 0.3 & 0.5 & 1 \end{bmatrix}$$

(b) Using resolution form draw similarity tree . (2)

Q 4. Solve the fuzzy equation $(1, 2, 4, 5) \otimes \tilde{X} = (2, 3, 5, 6)$ and evaluate $\tilde{X}$. (3)

Q 5. Let $X = \{0, 1, 2, 3, \cdots, 10\}$ and $\tilde{A} = \{(x, \mu_A(x))| \ x \in X\}$ represents a fuzzy set of measures of performance of the students in a class in a particular subject graded on the scale 0 to 10. Suppose linguistic variables defining their performance are defined in terms of fuzzy sets as follows:

Excellent: $E = \{(8, 0.2), (9, 0.6), (10, 1)\}$
Good: $G = \{(6, 0.1), (7, 0.5), (8, 0.9), (9, 1), (10, 1)\}$
Fair: $F = \{(2, 0.3), (3, 0.6), (4, 0.9), (5, 1), (6, 0.9), (7, 0.5), (8, 0.1)\}$
Bad: $B = \{(1, 1), (2, 0.7), (3, 0.4), (4, 0.1)\}$
Construct the membership functions of the following compound sets: (i) Good but not- excellent, (ii) Not Bad, (iii) Good or excellent (iv) Good and fair. (4)

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MID SEMESTER EXAMINATION- 2015-16 (Odd Semester)

MC – 204.1: Econometrics

Time: 1.30 Hours

Max Marks: 20

Note: Answer all questions.
Assume suitable Missing data, if any

1.	What do you mean by, 'Econometrics'? Discuss its significance for Engineers.	5
2.	What type of 'Average' should be employed in each of the following cases? Give reasons.	5
a.	The size of shoes sold out in largest number from a shop.	
b.	The estimation of intelligence of students in a class.	
c.	Per capita income in several countries	
d.	Average rate of growth of population per decade.	
e.	Comparison of the state of health of a local population with a standard population.	
3.	Give your comments on each of the following:	4
a.	The correlation coefficient between the number of deaths in the country and the admission to commerce courses over the past few years is 0.89.	
b.	The correlation coefficient between the number of man hours of work and the number of units of a product produced in an industry is 0.70.	
c.	The cost per unit of producing an article and the number of units produced has a negative correlation.	
d.	50 companies sell both as retailers and wholesalers. An analysis revealed that the correlation coefficient between wholesale sales and gross sales was 0.9 and the correlation between wholesale sales and retail sales was approximately zero	
4.	What do you mean by Consumer Surplus? If the demand law is $P = 85 - 4x - x^2$ Calculate Consumer surplus for $X_0 = 5$	3
5.	Discuss relationship between Total, Average and Marginal Revenue Curves.	3

SEVENTH SEMESTER   **B.TECH (MC)**

MID SEMESTER EXAMINATION   **SEPTEMBER 2015**

MC-402 APPLIED GRAPH THEORY

Time: 1.30 Hours   **Maximum Marks: 20**

Note: Attempt All.

Q1. Define Graph Isomorphism. Let S be the set of all simple graphs. If $G \sim G'$ when G is isomorphic to G', then prove that $\sim$ is an equivalence relation on S.

Q2. (a) Define a connected graph. Prove that a graph G is disconnected iff its vertex set V can be partitioned into two non empty disjoint subsets V_1 and V_2 such that there exists no edge in G whose one vertex is in V_1 and the other is in V_2.

(b) Show that if G is a simple graph, either G or its complement G^c is connected.

Q3 (a) Define the following:

Walk, Path, Cycle, Circuit, Eulerian Circuit and Hamiltonion Circuit.

(b) If a graph G has more than two vertices of odd degree then prove that there can be no Euler path in G.