MCA - 403

MCA. IV Semester

Examination, June 2015

Computer Graphics And Multimedia

Time : Three Hours

Maximum Marks : 70

Note: i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.

ii) All parts of each question are to be attempted at one place.

iii) All questions carry equal marks, out of which part A and B (Max. 50 words) carry 2 marks, part C (Max. 100 words) carry 3 marks, part D (Max. 400 words) carry 7 marks.

iv) Except numericals, Derivation, Design and Drawing etc.

1. a) What is computer graphics?
   b) What is frame buffer?
   c) Discuss about non - CRT display device.
   d) What is DDA line drawing algorithm. Find out the successive points that will be plotted by drawing a line from (7,5) to (13,9)?

   OR

   Develop bresenham's circle drawing algorithm for drawing a circular arc of radius R centred at (0,0), starting from (R,0) and lying in the fourth quadrant between 0° and -45° degree.

2. a) What is boundary fill algorithm?
   b) What is uniform scaling.
   c) Discuss about composite transformation.
   d) Rotate a triangle A (0,0), B(2,2), C (4,2) about the origin and about p(-2,-2) by an angle of 45°.

   OR

   Determine the form of transformation matrix for a reflection about the line $y = 3x+10$.

3. a) Define window, viewport and screen coordinates.
   b) What is polygon clipping?
   c) What is shading?
   d) A window with vertices (3, 0), (5, 0), (5, 4) (3, 4) is to be mapped on to a viewport with vertices (0.5, 0.5) (1.0,0.5) (1.0,1.0) (0.5, 1.0) derive necessary viewing transformation.

   OR

   Explain various basic illustration models.

4. a) Write the 3-D homogeneous transformation matrix for scaling.
   b) What is perspective projection?
   c) Discuss the backface detection.
   d) Find the perspective projection on to the view plane $z = d$ where the centre of projection is the origin.

   OR

   Differentiate between bezier and B spline curves.

5. a) What is hypermedia?
   b) What is DVD?
   c) Describe the architecture of a multimedia system.
   d) Discuss the JPEG and MPEG file format standards.

   OR

   What do you understand by video compression. Why it is required.

Write functioning of the following instructions of 8086 microprocessor :

i) RIM

ii) SIM

iii) MOVA,M

iv) STA 2500 H

v) LDA 2600 H

vi) CMP

UNIT - II

2. a) Give the salient features of the 8254 programmable interval timer.

b) Explain the 8086 interrupts types in detail.

c) Design an interface between 8086 CPU and two chips of 16K × 8EPROM and RAM address must start at 00000H.

d) Explain the different commands of 8279 in detail.

OR

Discuss the following modes of DMA transfer.

i) Signal transfer mode

ii) Block transfer mode

iii) Demand transfer

iv) Memory to memory transfer

UNIT - III

3. a) Write salient features of intel 32 bit processor.

b) Describe different flags of MSW.

c) What do you mean by interrupt priorities? Show interrupt processing priorities of 80286.

d) What are the different addressing modes supported by 80286?

OR

What do you mean by a descriptor? Draw and discuss the structure of a general 80286 descriptor.

UNIT - IV

4. a) Write any two comparisons between 80386SX and 80386DX.

b) Explain physical address formation in real mode of 80386.

c) Explain utility of different descriptor tables used in 80386.

d) Explain and show the complete paging mechanism of 80386 with and without TLB.

OR

Draw and discuss internal architecture of 80386 in detail.

Write the criteria for the convergence of Newton - Raphson method and find the formula to find the reciprocal of a given number N and hence find the value of 1/19.

2. a) Find the missing term of the sequence.

x :	1	2	3	4	5	6	7
y :	2	4	8	–	32	64	128

b) From the following data, find θ at $x = 43$

x :	40	50	60	70	80	90
y :	184	204	226	250	276	304

c) Given the following table find y (35) by using strings's formula.

x :	20	30	40	50
y :	512	439	346	243

d) State and prove Newton cat's formula and find $\int_0^6 \frac{dx}{1+x^2}$ by using Simpson's 1/3 rule and $3/8^{th}$ rule and check the results by actual integration.

OR

Find the age corresponding to the annuity value 13.6 and 32 given from the table.

Age (x):	30	35	40	45	50
Annuity value:	15.9	14.9	14.1	13.3	12.5

3. a) Solve the system of equations by Gauss elimination method.

$x+2y+z = 3,\ 2x+3y+3z = 10,\ 3x-y+2z = 13$

b) Using Euler's method, solve numerically the equation.

$Y' = x+y,\ y(0) = 1$, for $x = 0.0\ (0.2)\ (1.0)$ check your answer with the exact solution.

c) Solve, by Gauss - Seidel method, the following system.
$28x+4y-z = 32,\ x+3y+10z = 24,\ 2x+17y+4z = 35$

d) Solve $\frac{dy}{dx} = x + y$ given $y(0) = 1$. Obtain the value of $y(0.1)$, $y(0.2)$ using Picard's method and check your answer with the exact solution.

OR

Compare $y(0.3)$ given $\frac{dy}{dx} + y + xy^2 = 0, y(0) = 1$ by taking $h = 0.1$ using R.K method of fourth order (correct to 4 decimals)

4. a) The overall percentage of failures in a certain examination is 20. If six candidates appear in the examination, what is the probability that at least five pass the examination.

b) If the variance of the poisson distribution is 2. Find the probability for r= 1,2,3,4 from the recurrence relation of the Poisson distribution. Also find $P(r \geq 4)$.

c) Ten individual are chosen at random from a population and their heights are found to be in inches 63, 63,64, 65, 66, 69 ,69 ,70 ,70 ,71. Discuss the suggestion that the mean height of universe is 65. For 9 degree of freedom t at 5% level of significance 2.262.

d) Fit a normal curve to the following data:

Length of line:	8.60	8.59	8.58	8.57	8.56
Frequency :	2	3	4	9	10
Length of line:	8.55	8.54	8.53	8.52	
Frequency :	8	4	1	1	

OR