(3rd year,1st Semester)

Time: Three hours   Full Marks 100

MULTIMEDIA CODING & COMMUNICATION
PART-I

1. <u>Attempt any three(3) questions</u>   (3*5=15)
   (a) Define colour Look-up tables(LUT) .
   (b) Describe about the video compression .
   (c) Explain about Graphics interchange format .
   (d) What do you mean by I-frame, B-frame, and P-frame in the context of video compression?

2. <u>Attempt all questions</u>:   (10*1=10)
   (a) An image scanner can be used for storing-
       (i) Text material   (ii) Engineering drawings
       (iii) Pictures   (iv) All of these
   (b) Which of the following are interactive ?
       (i) Radio broadcast   (ii) A talk shown on TV
       (ii) A Newspaper   (iv) A Computer game
   (c) MPEG stands for
       (i) Moving picture expert group
       (ii) Moving picture Engineers group
       (iii) Movie pictures Expert group
       (iv) Motion picture Expert group
   (d) Which of the following attributes of text box control allow to limit the maximum character?
       (i) Size   (ii) Len   (iii) Max length   (iv) All of these

   (e) A video sequence is usually captured by a video recorder at the rate of
        (i) 1frame/sec   (ii) 2frames/sec   (iii)25 frames/sec   (iv) None
   (f) The quality of the picture produced by a laser printer depends on
        (i) It's resolution   (ii) Size of the picture file
        (iii) The internal memory   (iv) The resolution of the monitor
   (g) The resolution of a typical monitor is about :
        (i) 10dpi   (ii) 60dpi   (iii) 200dpi   (iv)300dpi
   (h) To store good quality sound and audio signal in a multimedia PC is sampled at a rate of
        (i) 44.1HZ   (ii)4.41KHZ   (iii) 44.1KHZ   (iv) 4.41HZ
   (I) The format used for storing digital audio in the multimedia application is
        (i) JPEG   (ii) TIFF   (iii) WAV   (iv) BMP
   (J) To provide comfort to the computer user, the graphics screen is refreshed at the rate of
        (i) 5 frames per sec   (ii) 25 frames per sec
        (iii)60 frames per sec   (iv) 200 frames per sec

PART -II

Attempt any five(5) questions :   (5*15=75)

3. (i) Describe flowchart of Huffman coding compression with full explanation.
   (ii) Compare and contrast JPEG and MPEG.
   (iii) A series of messages is to be transferred between two computers. The message comprises the character A to E . Analysis has shown that the probability of each character is as follows:
   A = 0.35   B = 0.17   C = 0.17   D = 0.16   E = 0.15
   Using the Huffman coding derive the Huffman tree and also calculate the codeword set.

   5+5+5 =15

4. (i) Explain K-d tree with an example. How to add a new element to a K-d tree?
   (ii) Write the algorithm that how to insert and delete an element in case of R-tree.

   5+10 = 15

5. Write short notes on any three of the following
   (a) Encryption .
   (b) Hybrid coding .
   (c) JPEG Compression Standard .
   (d) Lossless data compression .

   5*3=15

6. (i) Write the Shannon Fano Algorithm, and explain it with the string as "Shannon Fano algo". What is Entropy value for this string.
   (ii) Write a brief description about Transmission mode of multimedia communication.
   (iii) Briefly describe the Multimedia Synchronization model.

   7+3+5= 15

7. (i) Write down Lempel-Ziv algorithm with flowchart .
   (ii) Solve:' AABABBBABABBABBBABBBABB', this string using Lempel-Ziv algorithm.
   (iii) What is the difference between Lempel-Ziv coding Vs Run length coding ?

   4+6+5 = 15

8. (i) Write a brief description about Discrete cosine Transform(DCT) .
   (ii) Write a short note about Arithmetic coding with an example.
   (iii) Describe stand alone Vs Network Architecture.

   5+5+5=15