Second Semester M.Tech. Degree Examination, Dec.2015/Jan.2016
Multimedia Communications

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions.*

1   a.   Explain briefly the entertainment applications of multimedia.   (06 Marks)
     b.   Explain the different operational modes of a communication channel with examples.
                                                                                           (06 Marks)
     c.   Explain multimedia networks that provides multiple services.   (08 Marks)

2   a.   Explain briefly three types of texts used to produce multimedia documents.   (06 Marks)
     b.   Define the term network QoS. Explain the network QoS associated with different types of
          network.   (10 Marks)
     c.   Determine the propagation delay associated with the following communication channels:
          i)   A connection through a private telephone network of 1 km.
          ii) A connection through a PSTN of 200 km.
          Assume that the velocity of propagation of a signal is 2×10^8 m/s.   (04 Marks)

3   a.   With neat schematic, explain different alternative methods for RGB signal generation.
                                                                                           (10 Marks)
     b.   Assuming the CD-DA standard is being used, derive:
          i)   The storage capacity of a CD-ROM to store a 60 minute multimedia title.
          ii) The time to transmit a 30 second portion of the title using a transmission channel of bit
               rate 1.5 Mbps.   (04 Marks)
     c.   Explain 4:2:2 digitization format of a digital video in detail.   (06 Marks)

4   a.   Message comprising seven different characters A through G are to be transmitted over a data
          link. Analysis has show that the relative frequency of occurrence of each character is
          A = 0.10, B = 0.25, C = 0.05, D = 0.32, E = 0.01, F = 0.07 and G = 0.2. Use static Huffman
          coding to obtain suitable set of code words. Also construct Huffman tree.   (08 Marks)
     b.   With a block diagram, explain a JPEG encoder.   (08 Marks)
     c.   Explain run length encoding method in detail.   (04 Marks)

5   a.   With respect to motion estimation and compensation, explain P frame and B frame encoding
          produce.   (10 Marks)
     b.   Explain H.261 encoding formats with implementation schematic.   (10 Marks)

6   a.   Explain the significance features of JPEG 2000.   (06 Marks)
     b.   Explain reference model of synchronization with neat diagram and explain each layer.
                                                                                           (08 Marks)
     c.   Differentiate: (i) inter object and intra object synchronization, (ii) live and synthetic
          synchronization.   (06 Marks)

7   a.   Explain briefly the salient features of RTP and RSVP multimedia transport protocols.
                                                                                           (10 Marks)
     b.   What is layered video coding? What are the different error resilient video coding
          techniques?   (10 Marks)

8   a.   Explain frequency masking and temporal masking.   (10 Marks)
     b.   Describe linear predictive coding with encoder block drag.   (10 Marks)

* * * * *