USN | | | | | | | | | | |

14ECS254

Second Semester M.Tech. Degree Examination, June/July 2016
Multimedia Communication

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions.***

1 a. Define multimedia. List different types of multimedia networks. Explain data network and broadband networks. **(10 Marks)**

b. Explain the network QoS associated with circuit switched and packet switched networks. **(10 Marks)**

2 a. A web page of 10 M bytes is being retrieved from a web server. Assuming negligible delays within the server and trunk network, quantify the time transfer the page over the following types of access circuit:
i) A PSTN modem operating at 28.8 kbps.
ii) A primary rate ISDN access line of 1.5 Mbps.
iii) A cable modem operating at 27 Mbps. **(06 Marks)**

b. Explain briefly the types of text that are used to produce pages of documents. **(06 Marks)**

c. Discuss PCM principles to digitize speech signal with signal encoding/decoding schematic. **(08 Marks)**

3 a. Derive the bit rate and the memory requirements to store each frame that result from the digitization of both 525-line and 625-line system assuming a 4:2:2 formats. Also find the total-memory requirement to store a 1.5 hour movie/video. **(10 Marks)**

b. Define compression. Explain principles of compression. **(10 Marks)**

4 a. Explain with an example of arithmetic coding for data compression. **(10 Marks)**

b. Explain with block diagram, various stages JPEG compression (encoder). **(10 Marks)**

5 a. Describe the principles of Linear Predictive Coding (LPC) with the schematic of encoder and decoder. **(10 Marks)**

b. A digitized video is to be compressed using MPEG-1 standard. Assuming a frame sequence of IBBPBBPBBPBBI... and average compression ratio of 10:1 (I), 20:1 (P) and 50:1 (B), derive the average bit rate that is generated by encoder for both the NTSC and PAL formats. **(10 Marks)**

6 a. Describe MPEG-4 video coding and decoding, with a block diagram. **(10 Marks)**

b. Explain the significant features of JPEG 2000. **(05 Marks)**

c. Explain briefly the resource and process management techniques. **(05 Marks)**

7 a. With a neat diagram, explain MPEG-7 architecture. **(10 Marks)**

b. Describe the delivery of multimedia application across IP networks with relevant diagrams. **(10 Marks)**

8 Write short notes on the following:

a. Error resilient video coding techniques.

b. Real-time Transport Control Protocol (RTCP).

c. H.263

d. Multimedia across mobile network. **(20 Marks)**

* * * * *