MMC QP's

Asst Prof

M.Tech. Degree Examination, December 2011
Multimedia Communication

Time: 3 hrs. Max. Marks:100

Note: *Answer any FIVE full questions.*

1 a. Define multimedia. Briefly explain the media types associated with multimedia. (06 Marks)

b. With the help of a diagram, describe the main components of PSTN and show how a high speed modem provides multiple services in addition to basic telephony. (10 Marks)

c. Briefly explain the following operational modes of a communication channel i) Simplex ii) Duplex iii) Broadcast iv) Multicast. (04 Marks)

2 a. With a neat diagram, explain the working of circuit switched and packet switched networks. (10 Marks)

b. Briefly explain the network QOS associated with the circuit switched and packet switched networks. (07 Marks)

c. Derive the maximum block size that should be used over a channel which has a mean BFR probability of 10^{-4}, if the probability of a block containing an error and hence being discarded is to be 10^{-1}. (03 Marks)

3 a. Explain briefly three texts that are used to produce pages of documents. (06 Marks)

b. With the aid of the diagram, explain the principle of operation of PCM speech codec. Explain also the compression and expander characteristics. (10 Marks)

c. Find out the time taken to transmit the following digitized images at both 64Kbps and 1.5Mbps : i) a 640 × 480 × 8 VGA compatible image . ii) a 1024 × 768 × 24 SVGA compatible image. (04 Marks)

4 a. A series of messages is to be transmitted between computers over a PSTN. The messages comprise the characters, A through H. The probability of each character is as follows : A and B = 0.25, C and D = 0.14, E, F, G and H = 0.055.

i) Use Shanon's formula to derive the minimum average number of bits / character.

ii) Use Haffman coding to derive the codeword and prove that this is the minimum set by constructing the corresponding Huffman code tree. (14 Marks)

b. With the aid of a diagram, identify the five main stages associated with the base line made of operation of JPEG. (06 Marks)

5 a. With the help of an encoder / decoder draw schematic diagram explain the principles of DPCM. (10 Marks)

b. With the help of example frame sequences, explain I, P, B, and D frames and the reasons for their use. (10 Marks)

6 a. With the help of a neat diagram, explain the MPEG – 4 system architecture. (10 Marks)

b. Discuss the significant features of JPEG – 2000. (05 Marks)

c. Write short note on MPEG – 7. (05 Marks)

7 a. Explain four layer synchronization reference model of an multimedia applications. (10 Marks)

b. With the aid of neat diagrams, explain the classification of logical data units. (10 Marks)

8 Write short notes on :

a. Multimedia operating system. b. Multimedia in mobile networks.

c. Resourse and process management technique. d. Error resilient coding. (20 Marks)