

USN

Seventh Semester B.E. Degree Examination, July/August 2021

Max. Marks: 80

Note: Answer any FIVE full questions.

- 1 a. With a neat diagram, explain the following multimedia networks in detail.
 - i) Telephone network

ii) Data network.

(08 Marks)

b. Discuss the QoS parameters used in both circuit switched and packet switched networks.

(08 Marks)

- 2 a. Explain the term 'multimedia'. Discuss the basic form of representation of text an image, audio and video. (04 Marks)
 - b. Derive the maximum block size that should be used over a channel which has mean BER probability of 10⁻⁴, if the probability of a block containing an error and hence being discarded is to be 10⁻¹. (04 Marks)
 - c. Explain the operation of circuit switched and packet switched networks. (08 Marks)
- 3 a. Explain the following:
 - i) Hyper text \
 - ii) Raster scanning.

(06 Marks)

b. With the help of diagram, explain the working of digital cameras.

(06 Marks)

- c. Derive the bit rate and the memory requirements to store each frame that result from the digitization of both 525 line and a 625 line system, assuming a 4:2:2 format. Also find the total memory required to store a 1.5 hour movie/video. (04 Marks)
- 4 a. With a neat sketch, explain the principle of operation of interlaced scanning. (06 Marks)
 - b. Derive the time to transmit the following digitized images at both 64kbps and 1.5Mbps $A\,640\times480\times8$ VGA compatible image

A $1024 \times 768 \times 24$ SVGA compatible image.

(04 Marks)

- c. Explain the following digital video formats:
 - i)4:2:2
- ii) 4:2:0,

(06 Marks)

- 5 a. With the help of block diagram, explain JPEG encoder. (08 Marks)
 - b. Encode the string 'wente', comprising characters with probabilities of e = 0.3, n = 0.3, t = 0.2, w = 0.1, v = 0.1 using arithmetic coding. (04 Marks)
 - c. What are the main features of DMS?

(04 Marks)

- 6 a. A series of messages is to be transferred between two computers over a PSTN. The messages comprise just the characters A through H. Analysis has shown that the probability (relative frequency of occurrence) of each character is as follows:
 - A and B = 0.25, C and D = 0.14, E, F, G and H = 0.055. Use Huffman coding to derive a codeword set and prove this is the minimum set by constructing the corresponding Huffman code tree. (06 Marks)
 - b. Write short notes on Lempel Ziv coding. (04 Marks)
 - c. With the help of diagram, explain the integrated management architecture for IP based networks. (06 Marks)
- 7 a. Discuss about the ADPCM subband encoder and decoder. (08 Marks)
 - b. With necessary schematic, explain MPEG-4 coding principles. (08 Marks)
- 8 a. With the help of diagram, explain the working of LPC signal encoder and decoder.

(08 Marks)

- b. Explain H-261 video compression standard with the help of macro block format frame format and GOB structure. (08 Marks)
- 9 a. Discuss about the NTI and CTI reconstruction schemes used in packet voice transmission.
 (08 Marks)
 - b. Explain the multiplexing techniques used in ATM networks. (08 Marks)
- 10 a. With the help of necessary diagram, explain the video streaming across the internet.

(08 Marks)

b. Discuss about the different Error-Resilient video coding techniques.

(08 Marks)

