

CBCS SCHEME

18EC743

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Seventh Semester B.E. Degree Examination, Dec.2023/Jan.2024 Multimedia Communication

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Define Multimedia. Explain:
(i) Telephone Network
(ii) Integrated Services Digital Network, in detail with neat figure. (10 Marks)
- b. Briefly explain the network QoS associated with circuit switched and packet switched networks. (06 Marks)
- c. 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 error and hence being discarded is to be 10^{-1} . (04 Marks)

OR

- 2 a. Explain Simplex, Duplex, Broadcast and Multicast operational modes of communication with diagram. (10 Marks)
- b. Explain the working principle of circuit mode and packet mode of operation in multimedia networks. List the salient features of each type. (10 Marks)

Module-2

- 3 a. With a neat block diagram, explain PCM signal encoding and decoding method. (10 Marks)
- b. Discuss the different types of text representation. (10 Marks)

OR

- 4 a. With neat diagrams, describe the following digitization formats:
(i) 4 : 2 : 2 (ii) QCIF (10 Marks)
- b. Explain the following:
(i) Aspect ratio (ii) Quantization Intervals (04 Marks)
- c. Derive the time to transmit the following digitized images at both 64 Kbps and 1.5 Mbps.
(i) A $640 \times 480 \times 8$ VGA compatible images. (06 Marks)
(ii) A $1024 \times 768 \times 24$ SVGA compatible images

Module-3

- 5 a. Explain in detail each stage of JPEG encoder with neat diagram. (10 Marks)
- b. Describe the function of multimedia operating system with respect to real time processing and QoS based resource management. (10 Marks)

OR

- 6 a. Explain Huffman coding procedure for encoding to the given data "AAAABBCD". (10 Marks)
- b. Define distributed multimedia system with neat block diagram, also highlight the salient features. (10 Marks)

Module-4

- 7 a. Explain H.261 video encoder principles with neat diagram. (10 Marks)
b. Explain the following terms:
(i) Motion estimation
(ii) Motion compensation
(iii) I frame, B and D frames
(iv) GOP
(v) Prediction span (10 Marks)

OR

- 8 a. Explain how better sound quality can be obtained using subband coding ADPCM with the help of block diagram and signal 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 average bit rate that is generated by encoder for both NTSC and PAL formats. (10 Marks)

Module-5

- 9 a. With an example, explain fragmentation and reassembly in internet. (10 Marks)
b. Explain datagram format of IPV6 with extension headers. (10 Marks)

OR

- 10 a. Discuss ARP/RARP message formats and transmission. (10 Marks)
b. Explain distance vector routing protocol with an example. (10 Marks)

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