CBCS SCHEME

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17EC741

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 Integrated Service Digital Network (ISDN) in detail with figures. **(06 Marks)**

b. Explain text-and-image Computer Supported Cooperative Working (CSCW). **(06 Marks)**

c. Explain centralized, decentralized and hybrid mode multipoint conferencing. **(08 Marks)**

OR

2 a. Explain the operational modes of communication channel with relevant diagram. **(06 Marks)**

b. What is network QoS? Discuss the QoS parameters for packet switched network. **(08 Marks)**

c. Determine the propagation delay associated with the following communication channels:
(i) A connection through private telephone network of 500 meters.
(ii) A connection through a PSTN of 100 km.
(iii) A connection over satellite channel of 25,000 km.
Assume velocity of signal in (i) and (ii) is 2×10^8 ms^{-1} and in (iii) 3×10^8 ms^{-1}. **(06 Marks)**

Module-2

3 a. Explain different types of text with neat diagram. **(08 Marks)**

b. Explain color principles. **(06 Marks)**

c. Derive the time to transmit the following digitized image at both 64 Kbps and 1.5 Mbps.
(i) A $640 \times 480 \times 8$ VGA compatible image.
(ii) A $1024 \times 768 \times 24$ SVGA comparable image. **(06 Marks)**

OR

4 a. Explain 4:2:2 and 4:2:0 digitization format with relevant diagram. **(08 Marks)**

b. Derive the scaling factors used for both U and V (as used in PAL) and I and Q (as used in NTSC) color difference signals in terms of R, G, B signals. **(06 Marks)**

c. Define:
(i) Aspect ratio (ii) Pixel depth
(iii) Frame refresh rate (iv) Progressive scanning **(06 Marks)**

Module-3

5 a. Explain transform coding with the relevant diagram. **(06 Marks)**

b. Use static Huffman coding to derive codewords for "AAAABBCD". **(06 Marks)**

c. Explain multimedia operating system. **(08 Marks)**

OR

6 a. Explain the principle of operation of JPEG encoder. **(10 Marks)**

b. Find the codeword range for the message ·went. , their probabilities are as follows:
e = 0.3, n = 0.3, t = 0.2, w = 0.1, · = 0.1 **(10 Marks)**

Module-4

7 a. Explain DPCM encoder/decoder schematic with encoder timing. **(10 Marks)**

b. Explain MPEG perceptual encoder/decoder implementation schematic with frame format example. **(10 Marks)**

OR

8 a. Explain H.261 macroblock format, frame/picture format and GOB structure. **(10 Marks)**

b. Explain linear predictive coding signal encoder and decoder with relevant diagram. **(10 Marks)**

Module-5

9 a. With neat block diagram, explain Scalable Rate Control (SRC). **(10 Marks)**

b. Explain multiplexing in ATM network. **(10 Marks)**

OR

10 a. Explain packet video in detail. **(10 Marks)**

b. Explain in brief errors and losses in ATM. **(10 Marks)**

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