CBCS SCHEME

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17EC741

Seventh Semester B.E. Degree Examination, July/August 2022
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. 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)**

b. Explain with a neat diagram, the interactive television application for both cable and satellite network. **(10 Marks)**

OR

2 a. Explain the working of CO packet switched network including routing table. **(10 Marks)**

b. Determine the propagation delay associated with the following communication channels:
i) A connection through a private telephone network of 1km.
ii) A connection through PSTN of 200km
iii) A communication over a satellite channel of 50,000km.
Assume that the velocity of propagation of a signal in the case of
i) 2×10^8m/s ii) 2×10^8m/s iii) 3×10^8m/s. **(10 Marks)**

Module-2

3 a. Explain the principle of operation of a PCM speech codec, with a block diagram also explain the compressor and expander. **(08 Marks)**

b. State the types of text that are used to produce pages of documents. Explain. **(12 Marks)**

OR

4 a. Derive the time to transmit the following digitized images at both 64Kbps and 1.5Mbps
i) $640 \times 480 \times 8$ VGA compatible image
ii) $1024 \times 768 \times 24$ SVGA compatible image **(10 Marks)**

b. What do you understand by the terms
i) Color gamut
ii) Additive color mixing
iii) Subtractive color mixing
Give application of both color mixing. **(10 Marks)**

Module-3

5 a. How the coding operation takes place in arithmetic coding, consider the transmission of a message comprising a string of charaters with probabilities e = 0.3, n = 0.3, t = 0.2, w = 0.1, • = 0.1. The word needed to be transmitted is Went. **(10 Marks)**

b. With the help of a block diagram, identify the stages associated JPEG encoder and explain. **(10 Marks)**

OR

6 a. Compress the following string using LZW algorithm. "ABABBABCABABBA". **(10 Marks)**

b. Discuss multimedia operating system with respect to CPU management, memory management, I/O management and file system management. **(10 Marks)**

Module-4

7 a. With the help of a schematic diagram, explain the operation of a basic DPCM signal encoder and decoder. **(10 Marks)**

b. Explain the principles on which LPC codes are based, hence with the aid of a schematic diagram of an LPC encoder and decoder. **(10 Marks)**

OR

8 a. Explain with neat diagram of video compression principle. **(08 Marks)**

b. Solve a digitized video to be compressed using the MPEG-1 standard assuming a frame sequence of: IBBPBBPBBPBBI… and average compression ratio of 10:1 → I frame, 20:1 → P frame 50:1 → B frame. Derive the average bit rate that is generated by the encoder for both the NTSC and PAL digitization formats. **(12 Marks)**

Module-5

9 a. Explain error resilient video coding. **(07 Marks)**

b. Explain packet video in detail. **(07 Marks)**

c. Explain video transport across generic network. **(06 Marks)**

OR

10 a. Explain packet audio and video in the network environment. **(07 Marks)**

b. Write a short note on analytic mode based approach. **(07 Marks)**

c. Write a short note on error losses ATM. **(06 Marks)**

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