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 $\rightarrow$ I frame, 20:1 $\rightarrow$ P frame 50:1 $\rightarrow$ 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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