CBCS SCHEME

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18EC743

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.***

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

Module-1

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

b. 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)**

OR

2 a. Define Network Quality of Service parameters. Explain Packet Switched Network parameters. **(08 Marks)**

b. Determine the propagation delay associated with the following communication channel :
i) Connection through private telephone network of 1km.
ii) Connection through a PSTN of 200km.
iii) Connection over a satellite channel 50000km. Assume velocity of propagation of a signal in case of (i) and (ii) 2×10^8 m/sec iii) 3×10^8 m/sec. **(12 Marks)**

Module-2

3 a. With the help of a diagram, explain how a digital image produced by a scanner or digital camera is captured and stored within the memory of a computer. **(10 Marks)**

b. Explain the principle of operation of a PCM speech codec, with a block diagram also explain the compressor and expander. **(10 Marks)**

OR

4 a. With the help of a diagram, explain the principles of Interlaced of scanning as used in most TV broadcast applications. **(10 Marks)**

b. Assuming the CD – DA standard is being used. Derive
i) The storage capacity of a CD – ROM to store 60 minutes of multimedia title.
ii) The time to transmit a 30sec portion of the title using a transmission channel of bit rate 64 kbps and 1.5 Mbps. **(10 Marks)**

Module-3

5 a. Explain the meaning of the following terms relating to text compression algorithms :
i) Static coding ii) Dynamic / Adaptive coding. **(08 Marks)**

b. How the coding operation takes place in arithmetic coding? Consider the transmission of a message comprising a string of characters with probabilities.
e = 0.3 , n = 0.3 , t = 0.2 , w = 0.1 , · = 0.1. The word needed to be transmitted is went. **(12 Marks)**

OR

6 a. Discuss Multimedia Operating System with respect to CPU Management, Memory Management , I/O Management and File System Management. **(08 Marks)**

b. Compress the following string using LZW algorithm. "ABABBABCABABBA". **(12 Marks)**

Module-4

7 a. Explain with the help of diagram for the signal encoder and decoder and explain how better sound quality for the same bit rate can be obtained using a sub – band coding ADPCM. **(10 Marks)**

b. With the help of example frame sequences. Explain the meaning of the following types of compressed frame and the reasons for their use :
i) I – frame ii) P – frame iii) B – frame. **(10 Marks)**

OR

8 a. Explain with diagram H.261, explain the role and operation of the quantization control block. **(10 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. **(10 Marks)**

Module-5

9 a. Explain the LAN protocols and Protocol frame work. **(10 Marks)**

b. Explain in detail with diagrams , the token ring configuration , frame formats , frame transmission and reception with priority operation. **(10 Marks)**

OR

10 a. Describe the operation of ARP and RARP. **(10 Marks)**

b. Explain Fragmentation and Reassembly in the internet in detail. **(10 Marks)**

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