18EC743

Seventh Semester B.E. Degree Examination, June/July 2023
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. Explain the selection of the network types connected to the internet with a neat diagram.
(10 Marks)

   b. What are different interactive applications used in the internet. Illustrate them. **(10 Marks)**

OR

2   a. A packet switched network with a worst case jitters of 8ms is used for a group of applications. All applications have constant bit rate information stream. Find out the minimum amount of memory required at the destination and a suitable packet size for each of the given input bit rates. Assume that the mean packet transfer rate of the network exceeds the equivalent input bit rate in each case :
   i) 64 kbps   ii) 256 kbps   iii) 128 kbps   **(08 Marks)**
   b. Explain briefly, communication modes.   **(06 Marks)**
   c. Discuss Movie/Video on demand.   **(06 Marks)**

Module-2

3   a. An analog signal has a dynamic range of 60dB. Determine the magnitude of the quantization noise relative to the minimum signal amplitude if the quantization uses :
   i) 8 bits
   ii) 12 bits.   **(08 Marks)**
   b. Explain raster scan operation associated with TV/ computer.   **(06 Marks)**
   c. Explain PCM principles.   **(06 Marks)**

OR

4   a. Assuming the bandwidth of a speech signal is from 50Hz through to 10KHz and that of a music signal from 15Hz through to 20KHz, derive the bit rate generated by the digitization operation in each case. Assume the Nyquist sampling rate used is 14 bits per sample for speech signal and 18 bits per sample for music signal. What is the memory required to store a 15 minutes passage of stereophonic music?   **(08 Marks)**
   b. Explain the terms :
   i)   Aspect ratio
   ii) Brightness
   iii) Hue
   iv) Saturation.   **(12 Marks)**

Module-3

5   a. Explain the static Huffman coding with an example.   **(10 Marks)**
   b. Describe image preparation/block preparation and forward DCT in baseline mode compression.   **(10 Marks)**

OR

6 a. Determine the encoded version of the following difference values, which relate to the encoded PC coefficients from consecutive DCT blocks.
12, 1, –2, 0, –1. **(06 Marks)**

   b. Describe Lempel_Ziv_Welsh (LZW) coding. **(14 Marks)**

Module-4

7 a. Explain with a neat diagram H·261 video encoder principles. **(10 Marks)**

   b. Explain with diagram MPEG – 4 coding principles. **(10 Marks)**

OR

8 a. Compare between Adaptive Predictive Coding and Linear Predictive Coding. Explain in brief pitch, period and loudness. **(10 Marks)**

   b. With a neat diagram, explain MPEG perceptual codes. [Perceptual codes]. **(10 Marks)**

Module-5

9 a. Assume a signal propagation delay in the fiber of 5µs per 1km, derive the latence of the following FDDI ring configuration in both time and bits assuming a usable bit rate of 100 Mbps.
   i)   2 km ring with 20 stations
   ii) 20 km ring with 200 stations
   iii) 100km ring with 500 stations. **(08 Marks)**

   b. Explain IP datagram packet format with diagram. **(06 Marks)**

   c. Explain link – state algorithm for shortest path – first routing. **(06 Marks)**

OR

10 a. Explain transparent bridge with example. **(10 Marks)**

    b. Explain Token Ring MAC sublayer transmission and reception. **(10 Marks)**

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