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10EC/TE841

Eighth Semester B.E. Degree Examination, Dec.2016/Jan.2017
Multimedia Communications

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions, selecting
atleast TWO questions from each part.**

PART – A

- 1 a. With neat diagrams, explain communication networks used to provide multi-media communication services. (10 Marks)
- b. Determine the propagation delay associated with the following communication channels :
i) a connection through a private telephone network of 1 km, ii) a connection through a PSTN of 200 km, iii) a connection over a satellite channel of 50,000 km. Assume that the velocity of propagation of a signal in the case of i) and ii) is $2 \times 10^8 \text{ ms}^{-1}$ and in the case of iii) $3 \times 10^8 \text{ ms}^{-1}$. (10 Marks)
- 2 a. List and explain types of text used to produce pages of documents. (06 Marks)
- b. With schematic diagram discuss audio/sound synthesizer. (08 Marks)
- c. Derive the time to transmit the following digitized images 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 – compatible image. (06 Marks)
- 3 a. Briefly discuss JPEG encoder and decoder. (14 Marks)
- b. A series of messages is to be transferred between two computers over a PSTN. The messages comprise just the characters A through H, Analysis has shown that the relative frequency of occurrence of each character is as follows : A and B = 0.25, C and D = 0.14, E, F, G and H = 0.055. Derive code word set using Huffman coding. (06 Marks)
- 4 a. Discuss ADPCM sub-band encoder and decoder. (12 Marks)
- b. With neat schematic, discuss MPEG-4 decoder. (08 Marks)

PART – B

- 5 a. With neat frame format, explain IEEE802.3 network characteristics. (08 Marks)
- b. Explain LAN protocol framework. (06 Marks)
- c. Assuming a signal propagation delay in the fiber of $5 \mu\text{s}$ per 1 km, derive the latency of the following FDDI ring configurations 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) 100 km ring with 500 stations. (06 Marks)
- 6 a. Discuss internet networking components and protocols. (10 Marks)
- b. Explain IPV6 header fields and format. (06 Marks)
- c. Determine the amount of padding required in a MAC frame when transmitting an ARP/RARP message over i) an Ethernet LAN and ii) an IEEE 802.3 LAN. (04 Marks)
- 7 a. With neat schematic diagram, explain ATM protocol architecture. (12 Marks)
- b. Discuss ATM cell formats. (08 Marks)
- 8 a. Explain TCP/IP protocol suite and inter layer address selectors. (12 Marks)
- b. Discuss real-time transport control protocol usage. (08 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification appears, scribbles and/or equations written on page 12, 18 - 50 will be treated as malpractice.