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Question Paper Code : 20438

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2022.

Sixth Semester

Electronics and Communication Engineering

EC 8002 — MULTIMEDIA COMPRESSION AND COMMUNICATION

(Regulations 2017)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Interpret the audio compression techniques.

2. Distinguish between LPC and CELP.

3. Infer the ways of errors detected in H.263 video compression standard.

4. Justify the need of dictionary based algorithm.

5. Why Arithmetic coding is better than Huffman coding?

6. Examine the expression for average codeword length L.

7. Outline the link scheduling discipline methods.

8. Illustrate the need of call admission in providing network service.

9. Show the performance Improvements of H.263 over H.261.

10. Enumerate the levels of multimedia Synchronization.

PART B — (5 × 13 = 65 marks)

11. (a) (i) Illustrate the code excited linear predictive coding.   (6)

        (ii) Examine the difference between LPC and CELP codec. Include in
             your explanation the meaning of waveform template and template
             codebook.   (7)

Or

(b) (i) Interpret the third order predictive DPCM signal encoder and decoder schematic.

(ii) Outline on the features of adaptive predictive coding.

12. (a) Explain the MPEG-2 DCT block derivation with I-fames in the field mode and frame mode.

Or

(b) Identify the salient features of over scanning and write about EOL code and its uses.

13. (a) Derive the Huffman code word of the given text "AAAAAAAAAABBBBBCCCSS" by using static Huffman tree. Calculate

(i) Entropy. (5)

(ii) Derive the average number of bits per character for code word. (5)

(iii) Code efficiency. (3)

Or

(b) Analyze the steps of Shannon-Fano Coding and calculate the coding efficiency for the symbols a1, a2, a3, a4, a5 with the probabilities 0.4, 0.19, 0.16, 0.15, 0.1. (13)

14. (a) (i) List the attributes of limitations of Best-effort service in the context of Internet phone applications. (7)

(ii) With necessary diagrams explain about FIFO queuing abstraction. (6)

Or

(b) Examine the following:

(i) Traffic classification and conditioning in Diffserv networks. (7)

(ii) Per- Hop behaviors in Diffserv architecture. (6)

15. (a) Compile the call establishment principles on Session Initiation Protocol with neat sketch. (13)

Or

(b) Examine the goal of streaming live audio/video and Real-Time Interactive Audio/Video. (13)

PART C — (1 × 15 = 15 marks)

16. (a) Compile the difference between the forward adaptive bit allocation mode as used with an MPEG perceptual coder and the fixed bit allocation mode as used with a Dolby AC-1 coder. (15)

Or

(b) Derive the expression for drop probability function in RED for the arrival of packets in a FIFO queue by considering the minimum and maximum threshold length of packets arriving at the router to avoid congestion in the multimedia networks. (15)

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20438