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Question Paper Code : 40412

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2021.

Sixth Semester

Electronics and Communication Engineering

EC 8002 – MULTIMEDIA COMPRESSION AND COMMUNICATION

(Regulations 2017)

Time : Three hours Maximum : 100 marks

Answer ALL the questions.

PART A — ($10 \times 2 = 20$ marks)

1. What is the need for compression?
2. Differentiate PCM and DPCM.
3. List the applications of GIF and TIFF image file formats.
4. Summarize the frame format for JPEG.
5. Outline the principle of Run length encoding.
6. Discuss the need of adaptive Huffman coding.
7. Discuss the method of leaky bucket policing mechanisms.
8. What is the need for per-hop behaviour of Diffserv network?
9. Draw RTP packet header format.
10. Write on Control Flow-based Specification.

PART B — ($5 \times 13 = 65$ marks)

11. (a) Explain the principles of perceptual coders. Mention how they differ from an LPC and CELP coder.

Or

(b) Discuss delta modulation system in detail with a neat block diagram and two forms of quantization errors.

12. (a) Examine the DC coefficient, horizontal and vertical spatial frequency coefficients relating to the DCT algorithm.

Or

(b) Formulate H.263 error tracking scheme, independent segment decoding and reference picture selection with independent of segment decoding.

13. (a) Messages comprising seven different characters, A through G are to be transmitted over a data link, analysis has shown that the relative frequency of occurrence of each character is A : 0.10, B : 0.25, C : 0.05, D : 0.32, E : 0.01, F : 0.07, G : 0.2.

(i) Derive the entropy of the messages. (3)

(ii) Use static Huffman coding to derive a suitable set of code words. (3)

(iii) Derive the average number of bits per code word for four code word set to transmit a message. (3)

(iv) Calculate efficiency and redundancy. (4)

Or

(b) Examine the procedure of LZW coding algorithm. How is it different from LZ algorithm?

14. (a) Explain in detail the principle and applications of RSVP.

Or

(b) Discuss in detail the various service architectures to QoS support for multimedia applications over the Internet with diagrams.

15. (a) (i) What is the transport protocol? How is it used by RTSP? (6)

(ii) Explain the working of RTSP with methods. (7)

Or

(b) Demonstrate the synchronization of multimedia objects with respect to four-level system.

PART C — (1 × 15 = 15 marks)

16. (a) (i) Create the MPEG-1 frame sequence and video bit stream structure. (7)

(ii) Formulate the compression technique, used for regenerative sound and digital TV broadcast. (8)

Or

(b) Evaluate the role of a SIP registrar. Explain how the role of an SIP registrar is different from that of a home agent in Mobile IP.

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