



CBCS SCHEME

15EC741

Seventh Semester B.E. Degree Examination, Jan./Feb. 2023 Multimedia Communication

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Explain the Entertainment applications of multimedia. (10 Marks)
b. Explain Integrated services digital networks. (06 Marks)

OR

- 2 a. With a neat diagram, explain multipoint conferencing modes of operation. (08 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 case of (iii) is $3 \times 10^8 \text{ ms}^{-1}$. (03 Marks)

- c. Briefly explain the different types of communication modes. (05 Marks)

Module-2

- 3 a. With a neat diagram, explain PCM signal encoding and decoding principles. (10 Marks)
b. 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)

OR

- 4 a. Explain audio/sound synthesizer with a neat schematic. (06 Marks)
b. Derive the bit rate and the memory requirements to store each frame that result from the digitization of both a 525-line and a 625-line system assuming a 4 : 2 : 2 format. Also find the total memory required to store a 1.5 hour movie / video. (10 Marks)

Module-3

- 5 a. Explain with a neat diagram JPEG Encoder. (10 Marks)
b. Differentiate between :
(i) Lossless and Lossy compression.
(ii) Entropy encoding and Source encoding. (06 Marks)

OR

- 6 a. With a neat diagram, explain the architecture of resource reservation protocol. (08 Marks)
b. Briefly explain multimedia operating systems. (08 Marks)

Module-4

- 7 a. Explain with a neat diagram, LPC encoder and decoder. (10 Marks)
b. Briefly explain temporal masking. (06 Marks)

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.

OR

- 8 a. With a neat schematic, explain MPEG-4 encoder and decoder. (10 Marks)
- b. A digitized video is to be compressed using the MPEG-1 standard. Assuming a frame sequence of ; IBBPBBPBBPBBI.... and average compression ratios of 10 : 1 (I), 20 : 1 (P) and 50 : 1 (B), derive the average bitrate that is generated by the encoder for both the NTSC and PAL digitization formats. (06 Marks)

Module-5

- 9 a. Explain transmitter and receiver subsystem of Integrated Packet networks with relevant diagrams. (10 Marks)
- b. With a neat diagram, briefly explain video communication system. (06 Marks)

OR

- 10 a. With a neat schematic, explain FGS encoder and decoder. (08 Marks)
- b. Explain protocol stacks for media streaming with a neat diagram. (08 Marks)

* * * * *