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**B TECH
(SEM-VIII) THEORY EXAMINATION 2017-18
MULTIMEDIA SYSTEM**

Time: 3 Hours

Total Marks: 100

- Note:** 1. Attempt all Sections.
2. Assume any missing data.

SECTION A

- 1. Attempt *all* questions in brief. 2 x 10 = 20**
- a. Explain the features of multimedia in brief?
 - b. What is meant by the terms static media and dynamic media? Give two examples of each type of media.
 - c. What is the difference between analog and digital video?
 - d. How is a basic MIDI message structured?
 - e. Write short note on dictionary based compression.
 - f. Why file or data compression is necessary for multimedia activities?
 - g. Discuss why lossy data compression is sometimes preferred over lossless.
 - h. Write a short note on characteristics of sound.
 - i. Write short note on Zig Zag Coding.
 - j. Compare JPEG and MPEG?

SECTION B

- 2. Attempt any *three* of the following: 10 x 3 = 30**
- a. Define a multimedia system. How might multimedia be used to improve the lives of its users? How might it influence users in negative ways?
 - b. What are the major factors to be taken into account when considering storage requirements for multimedia systems?
 - c. Explain: (i) Arithmetic encoding (ii) Run length encoding (iii) LZ and LZW
 - d. What do you mean by loss less compression of sound? Discuss any compression technique of loss less compression of sound.
 - e. What motion compensation is used for MPEG video compression? Explain in brief.

SECTION C

- 3. Attempt any one parts of the following: 10 x 1 = 10**
- a. What are three different technologies used to capture digital images? How are these three technologies different?
 - b. What are multimedia authoring tools? Explain any three in brief.
- 4. Attempt any one parts of the following: 10 x 1 = 10**
- a. What are the various audio files format used in multimedia? What are the various digital technique used in multimedia.
 - b. Describe MIDI. What are its benefits and how it is best used in a multimedia project?

5. Attempt any one parts of the following:

10 x 1 = 10

- a. With the help of an example discuss Huffman coding as text compression technique.
- b. Write down Shannon-Fano Algorithm. A DMS X has seven symbols with probabilities $P(x_1)=0.4$, $P(x_2)=0.2$, $P(x_3)=0.12$, $P(x_4)=0.08$, $P(x_5)=0.08$ & $P(x_6)=0.08$ & $P(x_7)=0.04$. Construct a Shannon-Fano code for X and calculate the code efficiency.

6. Attempt any one parts of the following:

10 x 1 = 10

- a. Discuss the following with suitable diagrams/examples in context to digital audio.
 - (i). Sampling rate
 - (ii). Sampling resolution
 - (iii). Bit rate
 - (iv). Quantization Error
- b. What do you mean by slice compression? With the help of the diagram explain the LPC Encoder and decoder process.

7. Attempt any one parts of the following:

10 x 1 = 10

- a. Briefly explain vector graphics and bitmap format. What are the merits of vector graphics format compared to the bitmap format?
- b. Derive the bit rate that results from the digitization of a 525-line and a 625-line system using the 4:2:0 digitization format and interlaced scanning. Hence derive the amount of memory required to store a 2-hour movie/video.