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## P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

**Sixth Semester, B.E. - Information Science and Engineering**

**Semester End Examination; June - 2017**

**Multimedia Computing**

*Time: 3 hrs*

*Max. Marks: 100*

*Note: Answer FIVE full questions, selecting ONE full question from each unit.*

### UNIT - I

- |   |    |   |   |
|---|----|---|---|
| 1 | a. | Define Multimedia. List data elements for multimedia system.                              | 6 |
|   | b. | Describe key properties of multimedia systems.  | 8 |
|   | c. | Illustrate with a neat diagram speech synthesis.  | 6 |
| 2 | a. | With neat diagram, explain multimedia system architecture.                                | 7 |
|   | b. | What is the use of MIDI? What are two components of MIDI interface? Explain MIDI Devices. | 7 |
|   | c. | Describe the following:   |   |
|   |    | (i) Strongly and weakly periodic data stream  | 6 |
|   |    | (ii) Strongly regular data and weekly regular data.                                       |   |

### UNIT - II

- |   |    |  |    |
|---|----|--|----|
| 3 | a. | List the three important properties used to classify the image. Briefly explain each one with necessary diagram. | 10 |
|   | b. | Explain RGB signal under color encoding. What is YUV and YIQ signals? How are they calculated?                   | 6  |
|   | c. | Mention the methods of controlling animation.  | 4  |
| 4 | a. | Illustrate with a neat diagram steps involved in image recognition.  | 8  |
|   | b. | Calculate the storage capacity performance for CGA, EGA, VGA and SVGA video formats.                             | 8  |
|   | c. | Write a note on virtual Reality modeling language.   | 4  |

### UNIT - III

- |   |    |  |    |
|---|----|--|----|
| 5 | a. | Calculate the storage space required in terms of KB following:   |    |
|   |    | (i) uncompressed speech of telephone quality is sampled at 8 kHz and quantized using 8 bit per sample, yielding a data stream of 64 kbps | 6  |
|   |    | (ii) An uncompressed stereo audio signal of CD quality is sampled at 44.1 kHz and quantized using 16 bits.                               |    |
|   | b. | Explain with a neat diagram lossy sequential DCT-Based coding Mode under JPEG compression technique.                                     | 12 |
|   | c. | What is fractal compression?   | 2  |

- 6 a. Mention the four types of image coding supported during image processing stage in MPEG. Explain their importance in video encoding. 10
- 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 probability (relative frequency of occurrence) of each character is as follows: 10
- A and B = 0.25          C and D = 0.14          E, F, G and H = 0.055
- Use a Huffman coding to derive a code word set and prove this is the minimum set by constructing the corresponding Huffman code tree.

#### UNIT - IV

- 7 a. Explain the following: 10
- (i) Frames                      (ii) Tracks
- (iii) Areas                      (iv) Blocks of a CD-DA.
- b. Illustrate with layouts CD-ROM mode 1 and CD-ROM mode 2. 10
- 8 a. Write short notes on : 10
- (i) DVD standards          (ii) DVD video; Decoder.
- b. Explain how information is represented in optical storage media with neat diagrams. 10

#### UNIT - V

- 9 a. With neat diagram, describe text recognition in OCR systems. 10
- b. Explain syntactic Audio indicators and semantic audio indicators. 10
- 10 a. Explain the following 10
- (i) Pixel based and Detection
- (ii) Likelihood Ratio
- (iii) Histogram comparison.
- b. Compare and contrast RIFF and TIFF file format. 10

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