C6-R4: MULTIMEDIA SYSTEMS

NOTE:

1. **Answer question 1 and any FOUR from questions 2 to 7.**
2. **Parts of the same question should be answered together and in the same sequence.**

Time: 3 Hours **Total Marks: 100**

1.

a) What is meant by the terms Multimedia and Hypermedia? Distinguish between these two concepts.
b) Briefly outline the MPEG-4 structured audio standard.
c) What issues of functionality need to be provided in order to effectively use a wide variety of media in Multimedia applications?
d) Briefly describe the four basic types of data redundancy that data compression algorithms can apply to audio, image and video signals.
e) Give a definition of a Multimedia Authoring System. What key features should such a system provide?
f) Explain how is the computer information coded?
g) What is the difference between augmented reality and virtual reality?

(7x4)

2.

a) GIF and JPEG are two commonly used image representations. What images are suitable to be represented as GIF and JPEG? Do they usually use lossless or lossy compression? Explain the reason by showing the major compression algorithm (for lossless) or the lossy steps of the algorithm (for lossy).
b) Explain Skeltonization and pruning used in Image Processing.
c) Which features of MIDI make it suitable for controlling software or hardware devices? Explain the two different components of MIDI interface.

(5+5+8)

3.

a) List three distinct models of color used in Multimedia. Explain why are there a number of different color models exploited in multimedia data formats.
b) Show how you would use Huffman coding to encode the following set of tokens: BABACACADADABBCBABEBEDDABEEEBB. How is this message transmitted when it is encoded?

(9+9)

4.

a) Draw the block diagram of Conceptual Model of a VRML Browser. Write the header syntax of a VRML file.
b) How the protocols RTP, RTCP and RTSP are different?

(9+9)

5.

a) Compare temporal vs Non-temporal media.
b) Give I, P and B-frames technique of MPEG video compression.
c) Virtual Reality is not only for entertainment. How can Virtual Reality helps in professional environments? Your answer may include current applications in this or address future avenues for this application of the technology.

(4+6+8)

6.

a) In MPEG-4 Audio an alternative synthesis-based approach may be adopted to achieve compression. Briefly discuss how are Musical Audio Signals, Spoken Word Audio compressed with MPEG-4. What are advantages and disadvantages of such approaches?

b) Describe the term QoS & its importance in multimedia.

c) Explain RAID storage Technology and its advantages for multimedia storage.

(4+6+8)

7.

a) Why is scene description information separate from audio-visual objects?

b) Explain Earliest Deadline First scheduling Algorithm used in Multimedia Operating system.

c) Where is virtual reality used? Explain with examples.

(5+5+8)