Code: AT65   **Subject: MULTIMEDIA SYSTEMS**

AMIETE – IT

Time: 3 Hours | **DECEMBER 2014** | **Max. Marks: 100**

PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.

NOTE: There are 9 Questions in all.

- **Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.**
- **The answer sheet for the Q.1 will be collected by the invigilator after 45 minutes of the commencement of the examination.**
- **Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.**
- **Any required data not explicitly given, may be suitably assumed and stated.**

Q.1   **Choose the correct or the best alternative in the following:**   **(2×10)**

   a. Videos stored in the QuickTime format have the extension ____.

   (A) .mp4   **(B)** .avi
   (C) .jpg   **(D)** .mov

   b. _____ facilitates a way to support (multi-layered) scalable coding.

   (A) VOL   **(B)** VS
   (C) VO   **(D)** GOV

   c. MPEG-7 data elements can be represented in ____format.

   (A) textual   **(B)** binary
   (C) Neither (A) nor (B)   **(D)** Both (A) and (B)

   d. CCIR stands for _____ Communications.

   (A) Consultative Committee for International Radio
   (B) Constructive Committee for International Radio
   (C) Consultative Committee for Internal Radio
   (D) None of these

   e. Sampling in the amplitude or voltage dimension is called

   (A) digitization   **(B)** quantization
   (C) animation   **(D)** superposing

   f. Which of the following is not one of the JPEG modes of operation?

   (A) Sequential mode   **(B)** Network mode
   (C) Progressive mode   **(D)** Hierarchical mode

g. _____ indicates how many times pixel values change across an image block.

   (A) Spatial frequency   **(B)** Image frequency
   (C) Change frequency   **(D)** Orthogonal frequency

h. NTSC video is a/an ____ signal with no fixed horizontal resolution.

   (A) Digital   **(B)** MPEG
   (C) Analog   **(D)** None of these

i. PAL uses ____ scan lines per frame, at 25 frames/second, with a 4:3 aspect ratio and interlaced fields.

   (A) 242   **(B)** 625
   (C) 525   **(D)** 320

j. _____ is an action that involves creating the frames to depict the action that happens between keyframes.

   (A) Morphing   **(B)** Tweening
   (C) Inverse kinematics   **(D)** Both **(A)** and **(B)**

Answer any FIVE Questions out of EIGHT Questions.
Each question carries 16 marks.

Q.2 a. Multimedia authoring tools are used for what purpose? Elaborate features of multimedia authoring tools. **(8)**

   b. What does PNG format and TIFF stand for? Write special features of these two file formats. **(8)**

Q.3 a. Explain RGB and CMY(K) color models in images. Is transformation from RGB to CMY(K) possible? Give conversion matrix. **(7)**

   b. What is Chroma Subsampling? Where it is used? Briefly describe various chroma subsampling schemes. **(6)**

   c. Define HDTV. **(3)**

Q.4 a. State and briefly explain Nyquist Theorem, Signal-to-Noise Ratio(SNR), Signal-to-Quantization-Noise Ratio(SQNR). **(6)**

   b. State Adaptive Huffman Principle. Explain Initialization, coding, decoding and updating the tree part of Adaptive Huffman algorithm using a suitable example. **(10)**

Q.5   a.   What is the rationale behind Transform coding? Write a note on DCT. Is DCT a linear transform. Explain.   **(8)**

     b.   What are design goals for JPEG2000 standard? Briefly highlight various problems this standard addresses.   **(8)**

Q.6   a.   Describe briefly four optional H.263 Coding Modes.   **(8)**

     b.   How does Motion Compensation (MC) based video encoding works in H.261? Explain MC-based B-frame coding idea of MPEG-1.   **(8)**

Q.7   a.   Give an overview of MPEG-4. Explain object-based visual coding in MPEG-4.

                                                                  (8)

     b.   What is Vocoder? For what purpose it is used? Explain LPC Vocoder.

                                                                  (8)

Q.8   a.   What do you understand by RTSP? Give its architecture and state its various properties.   **(8)**

     b.   Describe briefly Internet Telephony.   **(8)**

Q.9   a.   Define animation and list various principles of animation and describe how it can be used in multimedia?   **(8)**

     b.   What is a Magneto Optical (MO) drive and how does it work?   **(8)**