ROLL NO. _____

Code: AT65/AE132/AT116 **Subject: MULTIMEDIA SYSTEMS**

AMIETE – ET/IT (Current & New Scheme)

Time: 3 Hours **DECEMBER 2018** **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. _____ is an example of dynamic media.
(A) Text **(B)** Image
(C) Video **(D)** Bitmap

b. In a binary image each pixel is stored as
(A) 1 bit **(B)** 8 bits
(C) 24 bits **(D)** 32 bits

c. PAL stands for
(A) Phase Alternating Line **(B)** Pixel Alternating Line
(C) Phase Alternating Level **(D)** Pixel Alternating Level

d. Which of the following is a Fixed Length Encoding Technique?
(A) Arithmetic Coding **(B)** Lempel-Ziv
(C) Run Length Encoding **(D)** Huffman Encoding

e. I- frames are
(A) Reference Frames **(B)** Bidirectional Frames
(C) Prediction Frames **(D)** Interpolation frames

f. JPEG Compression uses
(A) DWT **(B)** DCT
(C) DFT **(D)** KLT

g. The maximum frame rate supported by H.261 Video coding algorithm is
(A) 15 fps **(B)** 30 fps
(C) 10 fps **(D)** 20 fps

h. MPEG4 has
(A) 26 parts **(B)** 27 parts
(C) 24 parts **(D)** 25 parts

i. RTSP stands for
(A) Real Time Streaming Protocol **(B)** Real Time Sensing Protocol
(C) Real Time Sampling Protocol **(D)** Real Time Signalling Protocol

j. MPEG Audio compression has ____ layers
(A) 2 **(B)** 3
(C) 4 **(D) 5**

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

Q.2 a. Elaborate on dithering and write the algorithm for ordered dithering. **(8)**

b. Discuss in detail about Lingo scripts in Macromedia Director. **(8)**

Q.3 a. Discuss briefly about Gamma Correction. **(8)**

b. Discuss about any two colour models supported by Videos. **(8)**

Q.4 a. A piece of music that lasts 3 minutes is to be transmitted over a network. The piece of music has 4 constituent instruments: Drums, Bass, Piano and Trumpet. The music has been recorded at CD quality (44.1 Khz, 16 bit, Stereo) and also as MIDI information, where on average the drums play 180 notes per minute, the Bass 140 notes per minute, the Piano 600 notes per minute and the trumpet 80 notes per minute. Estimate the number of bytes required for the storage of a full performance at CD quality audio and the number of bytes for the MIDI performance. You should assume that the general MIDI set of instruments is available for any performance of the recorded MIDI data. **(8)**

b. Given the following table of frequency counts, probabilities and probability ranges for the following characters: **(8)**

Char	Freq	Prob.	Range
A	2	0.5	[0.0,0.5]
B	1	0.25	[0.5,0.75]
C	1	0.25	[0.75,1.0]

What is the 4-character sequence for the arithmetic coding: 0.59375?

Q.5 a. Briefly outline, with the aid of suitable diagrams, the JPEG compression pipeline and list the constituent compression algorithms employed at each stage in the pipeline. **(8)**

b. Write detailed notes on DWT. **(8)**

Q.6 a. Given the following coding order of a group of frames in MPEG-2: **(8)**
I P B B B P B B B I B B B I P B P
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
What is display order of the frames?

b. Explain in detail about H.261 Encoder and Decoder. **(8)**

Q.7 a. Differentiate between VOP-Based Coding and Frame-Based Coding. **(8)**

b. Give a detailed overview on MPEG-7 Description Schemes. **(8)**

Q.8 a. Briefly describe, using a suitable diagram if necessary, the MPEG-1 audio compression algorithm, outlining how frequency masking and temporal masking are encoded. **(8)**

b. Write detailed notes on MPEG-2 AAC. **(8)**

Q.9 a. Explain in detail about RSVP protocol. **(8)**

b. Write a brief note on IP-Multicast. **(8)**