

**FOURTH SEMESTER B.TECH (PRINT AND MEDIA TECHNOLOGY)****END SEMESTER EXAMINATIONS, APR/MAY 2017****SUBJECT: AUDIO AND VIDEO SIGNALS [ECE 2231]**

Time: 3 Hours

MAX. MARKS: 50

**Instructions to Candidates:**

- ❖ Answer **ALL** the questions.
- ❖ Missing data may be suitably assumed.

- 1A.** Explain how simple stop and wait protocol can be used for reliable data transfer in multimedia applications. Also mention its drawbacks and methods to overcome these drawbacks.
- 1B.** Explain how data streams are classified based on the variation of consecutive packet amount.
- 1C.** Explain how parity bits can be used to detect errors in multimedia packets.

**[ 05 + 03 + 02 ]**

- 2A.** Explain the speech production mechanism by mentioning the role of each part. Also explain how pitch period can be calculated using the glottal waveform.
- 2B.** Explain the working of a moving coil type microphone.
- 2C.** i) Find the minimum sampling frequency required to sample the signal  
 $y(t) = 2 \cos(2\pi 1000t) \cos(4000\pi t) \cos(2\pi 5000t)$
- ii) If this signal is passed through a LPF with cut-off 5000Hz, what is the sampling frequency required to sample the resulting signal?

**[ 05 + 03 + 02 ]**

- 3A.** Explain the working principle of JPEG image compression.
- 3B.** i) Assume that a 3 page paper document with each page having size 20cm x 15cm is to be scanned by a colour scanner with resolution of 100dpi. The first page of the document has white back ground and a black colour image printed on it which covers 30% of the total area. Other two pages have black text printed on white background. Compute the size of scanned document.
- ii) What will be the file size if it is compressed in to grey scale image?
- 3C.** Write a note on CCITT Group 3 standard.

**[ 05 + 03 + 02 ]**

- 4A.** With a block diagram explain the MPEG video coding standard. Also give the MPEG-1 standard bit stream pattern.
- 4B.** Explain the concept of audio feedback. How to minimize it?
- 4C.** Find the file size of a standard CD quality stereo audio file with sampling frequency 44.1KHz and bit depth of 16bits/sample and duration 20 minutes.

**[ 05 + 03 + 02 ]**

- 5A.** What are the limitations of normal work station operating system? How new OS support for multimedia systems overcome these limitations?
- 5B.** Explain the concept of audio latency. Explain the factors that decide audio latency.
- 5C.** Briefly explain any one protocol for multimedia communication over internet.

**[ 05 + 03 + 02 ]**