

College of Engineering, Pune

Final Year B-Tech- E & TC

(ET-412)- (Audio Video Engineering)

Date: /11/13
Academic Year: 2013-14

Timing: 3 hrs
Max. Marks: 60

Autumn Semester- ESE

Instructions:

1. All questions are compulsory.
2. Draw figures where ever necessary.

- Q. 1 **Write the answers in one or two sentences.** **15**
- i. Why width is always more than height in aspect ratio parameter of television? 02
 - ii Write two reasons for not using (G-Y) signal in transmission of analog video signal. 02
 - iii State the reasons of encrypting few packets in video bit stream. 02
 - iv What is CIF format in video coding standards? 02
 - v Why the bandwidth allocated to Luma signal is more than Chroma signal in analog Television signals? 02
 - vi Why every video bit stream is encoded with combination of variable length coding and fixed length coding? 02
 - vii Write two differences in Vidicon and Image Orthicon picture tubes. 02
 - viii Analog television signal is horizontally polarized. **True/False** 01
- Q. 2 A. Explain color TV with the block diagram and with appropriate waveforms at input and output of each block. **05**

- B. With a randomly generated 8 X 8 matrix, find the compression ratio using a generic DCT based image compression. Use following Q matrix for compression **10**

$$\begin{bmatrix} 16 & 18 & 24 & 47 & 99 & 99 & 99 & 99 \\ 18 & 21 & 26 & 66 & 99 & 99 & 99 & 99 \\ 24 & 26 & 56 & 99 & 99 & 99 & 99 & 99 \\ 47 & 66 & 99 & 99 & 99 & 99 & 99 & 99 \\ 99 & 99 & 99 & 99 & 99 & 99 & 99 & 99 \\ 99 & 99 & 99 & 99 & 99 & 99 & 99 & 99 \\ 99 & 99 & 99 & 99 & 99 & 99 & 99 & 99 \\ 99 & 99 & 99 & 99 & 99 & 99 & 99 & 99 \end{bmatrix}$$

- Q.3 A. Explain the MUSE system used in HDTV. **05**
- B. Discuss the utility of wobuloscope as test equipment in communication. **05**
- C. Differentiate between picture types are defined by MPEG1 standard. **05**
With GOP = 16, show their interdependency.
- Q.4 A. Discuss the relation between psycho-visual model and Q matrix used in video compression. **05**
- B. What are different frame formats and their applications in video standards like MPEG1, MPEG2, MPEG4? **05**
- C. Explain frequency interleaving technique? **05**
