Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B. E. - SEMESTER – VI • EXAMINATION – WINTER 2012

Subject code: 161002 Date: 03/01/2013

Subject Name: Audio-Video Systems

Time: 02.30 pm - 05.00 pm Total Marks: 70

Instructions:

1. **Attempt any five questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	(I)	Explain following terms with reference to sound: (1) Timbre (2) Pitch (3) Threshold of hearing (4) Overtones (5) Inverse square law.	**07**
		(II)	If the velocity of sound at 0^0C is 332 m/s, calculate Velocity and wavelength of sound of 400 Hz at 20^0C.	
	(b)	(I)	Explain various classes of amplifier based on location of operating point.	**07**
		(II)	Distinguish between single ended power amplifier and push pull amplifier.	
Q.2	**(a)**		With the help of a neat sketch explain principle, construction and working of a Permanent Magnet Moving Coil loud speaker.	**07**
	(b)		Explain directivity of a microphone. Draw Omnidirectional, Bidirectional, Cardioid, Supercardiod and Hypercardiod pattern specify their applications.	**07**
			OR	
	(b)		Explain principle of working of a Ribbion microphone. With the help of a neat sketch explain its construction and functioning. Mention its applications.	**07**
Q.3	**(a)**		Why a single loudspeaker cannot have a flat response for the whole audio frequency range? How the problem is solved? Design two way crossover network to give 12 dB per octave woofer for a critical (cut-off) frequency of 500 Hz. Loudspeaker resistance is 8 Ohm.	**07**
	(b)		Draw block diagram of basic monochrome television and explain how it works.	**07**
			OR	
Q.3	**(a)**		State advantages and disadvantages of CDs	**07**
	(b)		What do you understand by scanning? Why is it needed? Explain interlaced scanning and state its advantage. Also discuss factors which determine number of scanning lines in a TV system.	**07**
Q.4	**(a)**		Sketch the details of horizontal blanking and sync pulses. Label on it (i) front porch, (ii) horizontal sync pulse	**07**

(iii) back porch and (iv) visible line (picture information) periods. Why is the front porch and back porch intervals provided before and after the horizontal sync pulse?

(b) Why AMVSB for video signal, AMSC for colour signal and FM for audio signal is chosen in TV system? **07**

OR

Q.4 **(a)** Explain how the horizontal and vertical sync pulses are separated and shaped at the receiver. **07**

Q.4 **(b)** Describe briefly co-channel interference adjacent channel interference and Ghost interference effects. . **07**

Q.5 **(a)** Show that a total channel bandwidth of 7 MHz is necessary for successful transmission of both picture and sound signals in the 625 line TV system. Sketch frequency distribution of the channel and mark the location of picture and sound signal carrier frequencies. Why is the sound carrier located 5.5 MHz away from the picture carrier? **07**

(b) Draw simplified block diagram of PAL colour encoder and explain in detail pal swinging burst. **07**

OR

Q.5 **(a)** Explain the terms: **07**

(1) Primary colours
(2) Complementary colours
(3) Additive colour mixing
(4) Hue
(5) Saturation
(6) Luminance
(7) Chrominance.

(b) What is Plasma TV? State advantages and disadvantages of Plasma TV. **07**

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