Seat No.: Enrollment No.	Seat No.:	Enrolment No.
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## **GUJARAT TECHNOLOGICAL UNIVERSITY**

M. E. - SEMESTER - III • EXAMINATION - WINTER • 2013

•	ubject code: 734103 Date: 28-11-201		2013
_		Name: Multimedia Signal Processing and Communication	~. <b>7</b> 0
		0.30 am – 01.00 pm Total Marks	s: /U
Instr		Attempt all questions.	
		Make suitable assumptions wherever necessary. Figures to the right indicate full marks.	
Q.1	(a)	Explain following terms with reference to signal encoder  (i) Band limiting filter  (ii) ADC  (iii) Sample and Hold  (iv)Quantizer	04
	(b)	Determine the rate of the sampler and the bandwidth of the band limiting filter in an encoder which is to be used for the digitization of an analog signal which has a bandwidth from 15Hz through to 10kHz. Assuming that the digitized signal  (i) is to be stored within the memory of a computer  (ii) is to be transmitted over a channel which has a bandwidth from 200Hz through to 3.4kHz	03
	(c)		07
Q.2	(a) (b)	· ·	07 07
		OR	
	<b>(b)</b>	Explain Lempel-Ziv-Welsh coding algorithm with suitable example.	07
Q.3	(a) (b)	Write short note on MMR coding scheme for image compression. Explain how the LZW coding algorithm can be applied to the compressed image data. Include in your explanation how compression is achieved and how receiver interprets the compressed information.	07 07
		OR	
Q.3	(a) (b)		07 07
Q.4	(a)		04

		Include in your explanation the meaning of the terms "Wave form template" and "template code book".	
	<b>(b)</b>	Explain how ADPCM scheme obtains improved performance over a DPCM scheme.	03
	<b>(c)</b>	Write short note on MPEG audio coders	07
		OR	
Q-4	(a)	Explain meaning of following terms with reference to speech coders  (i) Processing delay  (ii) Algorithmic delay  (iii) Lookahead  (iv) Coder delay	04
	<b>(b)</b>	With suitable diagram, show how the sensitivity of the human ear varies with frequency.	03
	<b>(c)</b>	Write short note on Dolby audio coders	07
Q.5	(a)	Explain the meaning of following terms with reference to video compression  (i) Moving pictures	03
		(ii) MJPEG	
		(iii)Motion estimation and compensation	
	<b>(b)</b>	With suitable example ,explain the meaning of the following types of compressed frame  (i) I-frames  (ii) P-frames  (iii)B-frames	04
	(c)	A digitized video is to be compressed using the MPEG-1 standard.  Assuming a frame sequence of:  IBBPBBPBBPBBI  and average compression ratio of 10:1(I) ,20:1(P), 50:1(B), derive the average bit rate that is generated by the encoder for both the NTSC and PAL digitization formats.  OR	07
Q.5	(a)	Write short note on MPEG -4 standard fro video compression and	07
V.2	(a)	state main application of this standard.	<i>01</i>
	<b>(b)</b>	Write short note on various standards related to interpersonal Multimedia data communications.	07

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