Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

A Constituent Institution of Manipal University

FIFTH SEMESTER B.TECH. (INSTRUMENTATION AND CONTROL ENGG.)

END SEMESTER EXAMINATIONS, DEC 2016/JAN 2017

SUBJECT: COMMUNICATION SYSTEM [ICE 3103]

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

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

1A.	Explain square law modulator and demodulator.	**5**
1B.	An AM transmitter has antenna current of 2 A with modulation index of 60 percent. What will be the total antenna current if one more identical antenna is connected in parallel with the previous one, keeping the transmitter output same? Will it affect modulation index?	**3**
1C.	The output voltage of a transmitter is given by 400 (1 + 0.4 sin 6280 t) sin$3.14*10^7$t. This voltage is fed to a load of 600 Ω. Determine (a) Carrier frequency (b) Modulating frequency (c) carrier power (d) Total power output	**2**
2A.	Describe Crosby direct FM transmitter with block diagram.	**5**
2B.	In an FM system, when the audio frequency is 500 Hz and modulating voltage 2.5V, the deviation produced is 5 kHz. If the modulating voltage is now increased to 7.5 V, calculate the new value of frequency deviation produced. If the audio frequency voltage is raised to 10 V while the modulating frequency is dropped to 250 Hz, what is the frequency deviation? Calculate the modulation index in each case.	**3**
2C.	Differentiate Heterodyne and Multiplication method for frequency up conversion.	**2**
3A.	Explain DPCM with block diagram (transmitter and receiver) and necessary equations.	**5**
3B.	Explain the working of balanced slope detector.	**3**
3C.	What is uniform quantization? Explain the types of uniform quantization with relevant figures.	**2**
4A.	What is M-ary encoding? Explain QPSK transmitter with necessary diagrams.	**5**
4B.	With a block diagram explain differential phase shift keying transmitter and determine the output for the following input sequence :00110011010101(Assume reference bit=1)	**3**

4C.	Explain clock recovery with necessary diagrams.	**2**
5A.	With regard to spread spectrum system, explain direct sequence spread coherent phase shift keying.	**5**
5B.	Compare time division multiple access and frequency division multiple access techniques	**3**
5C.	With the help of block diagram list the components of a cellular telephone system.	**2**

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