MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL
(A constituent unit of MAHE, Manipal)

FIFTH SEMESTER B.TECH. (INSTRUMENTATION AND CONTROL ENGG.)
END SEMESTER DEGREE EXAMINATIONS, DECEMBER - 2019

SUBJECT: COMMUNICATION SYSTEMS [ICE 3103]

TIME: 3 HOURS   MAX. MARKS: 50

Instructions to candidates : *Answer ALL questions and missing data may be suitably assumed.*

Include diagrams and equations wherever necessary

1A. Determine the appropriate multiplier values and oscillator frequency so as to provide an output FM signal having a carrier frequency of 106 MHz with a frequency deviation of 60 kHz. Assume the input signal to be an FM signal having a carrier frequency of 9 MHz and a frequency deviation of 10 kHz.

1B. The antenna current of an AM transmitter is 8A if only the carrier is sent, but it increases to 8.93A if the carrier is modulated by a single sinusoidal wave. Determine the percentage modulation. Also find the antenna current if the percentage modulation changes to 0.8.

1C. Describe low level and high level AM transmitters.

(2+3+5)

2A. Distinguish between pulse position modulation and pulse width modulation.

2B. Describe delta modulation technique.

2C. Explain indirect FM transmitter with block diagram and phasor diagram.

(2+3+5)

3A. Briefly explain On Off Keying.

3B. What is uniform quantization? Explain the types of uniform quantization.

3C. Describe pulse amplitude modulation.

(2+3+5)

4A. What is the purpose of a clock recovery circuit? Explain.

4B. Compare coherent and non-coherent FSK demodulator.

4C. Explain BPSK transmitter and receiver operation.

(2+3+5)

5A. What is mobility management? Describe types of handoff management in wireless communication.

5B. Explain the model of direct sequence spread binary PSK transmitter and receiver system.

5C. For a QPSK modulator with a carrier frequency of 60 MHz and an input bit rate of 20 Mbps, determine the maximum and minimum upper and lower side frequencies, draw the output spectrum, determine the minimum Nyquist bandwidth, and calculate the baud.

(2+4+4)

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