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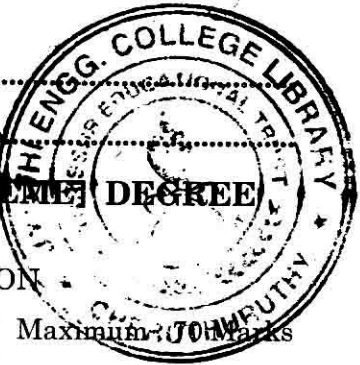
Name.....

Reg. No.....

**FOURTH SEMESTER B.TECH. (ENGINEERING) [09 SCHEME] DEGREE
EXAMINATION, APRIL 2015**

EC 09 404/PTEC 09 403—ANALOG COMMUNICATION

Time : Three Hours



Maximum : 100 Marks

Part A

Answer all questions.

1. Distinguish between discrete and continuous random variables.
2. Define modulation index and mention practical values in AM and FM radio broadcasting.
3. What are the merits and demerits of SSB over DSB ? Write them separately.
4. Write the differences between tuned radio receiver and super heterodyne receiver.
5. What is the effect of noise in AM and FM receivers ? Show its effect using modulated AM and FM envelopes.

(5 × 2 = 10 marks)

Part B

Answer any four questions.

1. Define the cumulative distribution function and list the important properties of CDF.
2. Explain the need of modulation of low frequency electrical signals based on radio broadcasting.
3. How a diode can work as basic AM modulator ? Based on mathematical equations, show that AM can produce using a simple diode circuit.
4. Explain the significance of IF frequency in superhet receivers and justify why IF is selected at 455 kHz in AM receivers.
5. Explain the basic block schematic of SSB transmitter using filter method.
6. How the volt equivalent of thermal noise is calculated ? Represent it with a suitable resistance connected as load.

(4 × 5 = 20 marks)

Turn over

Part C

Answer all questions.

1. Explain the classification of random process. (10 marks)

Or

2. Explain Gaussian distribution and its probability density function. (6 + 4 = 10 marks)

3. Obtain the mathematical expression of FM wave and how modulation index is calculated. (6 + 4 = 10 marks)

Or

4. Draw and explain the balanced ring modulator for generation of DSBSC. Show the waveforms of modulating signal and modulated signal.

(7 + 3 = 10 marks)

5. Explain the basic elements in a super heterodyne receiver showing detailed block diagram and appropriate waveforms.

(5 + 5 = 10 marks)

Or

6. Explain Foster Seeley Discriminator for FM demodulation and show the output phasor diagrams for different input frequencies.

(6 + 4 = 10 marks)

7. Explain how signal to noise ratio is evaluated in an amplifier circuit. Draw an equivalent circuit and develop an expression for S/N ratio.

(4 + 6 = 10 marks)

Or

8. What are thermal noise and transit time noise? Develop the volt equivalent for thermal noise in electronic circuits.

(4 + 6 = 10 marks)

[4 × 10 = 40 marks]