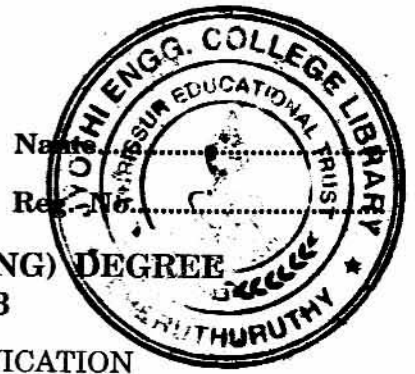


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(Pages 2)



**SEVENTH SEMESTER B.TECH. (ENGINEERING) DEGREE  
EXAMINATION, NOVEMBER 2013**

EE 09 702—ANALOG AND DIGITAL COMMUNICATION

Time : Three Hours

Maximum : 70 Marks

**Part A**

*Answer all the questions.  
Each question carries 2 marks.*

1. What are the improvements in Superhetrodyne receiver when compared with TRF receiver ?
2. State the relationship between the power spectral density of the output random process to that of input random process, when passed through a linear filter.
3. Write the principle of ASK.
4. What is meant by processing gain of a GDMA system ? What is its significance ?
5. What is a Power line network and what is its use ?

(5 × 2 = 10 marks)

**Part B**

*Answer any four questions.  
Each question carries 5 marks.*

6. What is pre-emphasis ? How it is done ? Explain.
7. With necessary equations, explain convolution theorem.
8. Briefly explain the salient features of Base band Pulse Transmission.
9. Write the principle of (i) PSK and (ii) FSK.
10. What is a line trap ? What are its components ? What is its function in a power line carrier communication system ?
11. What is the condition for exact reproduction of modulating signal from a amplitude modulated waveform ? Explain in detail, how the signal is restored.

(4 × 5 = 20 marks)

**Part C**

*Answer four full questions.  
Each question carries 10 marks.  
Missing data may suitably be assumed.*

12. (a) With a neat circuit diagram, explain the circuit operation of a Foster-Seeley Discriminator.

Turn over

- (b) What it is, required to modulate the signal before transmission ? What are the benefits of modulation ?

(6 + 4 = 10 marks)

*Or*

- (c) Explain the various blocks of an AM transmitter.  
(d) Compare AM and FM.

(6 + 4 = 10 marks)

13. (a) What is the difference between low level and high level modulation used in AM. With necessary diagrams explain high level modulation technique.

(10 marks)

*Or*

- (b) Explain the generation of FM signal using reactance modulator.  
(c) An AM transmitter has a carrier power of 40 W- If the percentage of modulation is 75%, calculate the total power and the power in one side band.

(7 + 3 = 10 marks)

14. (a) With neat waveforms, explain the basic signaling schemes in digital communications.

- (b) State the properties of matched filter receiver.

(6 + 4 = 10 marks)

*Or*

- (c) Explain two types of Digital Pulse modulation methods in detail. (10 marks)

15. (a) What is the need of coupling in a power line carrier communication system. Explain phase to ground coupling, phase to phase coupling, inter circuit coupling and intrabundle coupling with the help of suitable diagrams.

(10 marks)

*Or*

- (b) Draw the schematic arrangement of a Power line carrier communication system and explain the function of various components. What are the protective devices used for protecting the carrier equipments and operating personnel.

- (c) What are the applications of power line carrier communication ?

(7 + 3 = 10 marks)

[4 × 10 = 40 marks]