C 44433 (Pages : 2) Name.....

Reg. No.....

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

Electrical and Electronics Engineering

EE/PTEE 09 702 – ANALOG AND DIGITAL COMMUNICATION

(2009 Scheme – Supplementary)

Time : Three Hours Maximum : 70 Marks

Part A

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

1. What is the need of modulation in signal transmission?
2. State Shanon's sampling theorem.
3. What is meant by packet switching?
4. Explain the concept of white noise.
5. What is the idea behind power line carrier communication?

(5 × 2 = 10 marks)

Part B

Answer any **four (4)** *questions.*
Each question carries 5 *marks.*

6. What is meant by modulation index? What is the modulation index in a FM system? Explain.
7. Explain the process of sampling and signal reconstruction with the help of waveforms.
8. With necessary waveforms explain the concept of Pulse amplitude modulation.
9. What is the basic concept behind OSI?
10. What are the interface equipments used in power line carrier communication? Explain.
11. What are the properties of Gaussian random process? Explain.

(4 × 5 = 20 marks)

Part C

Answer any **four (4)** *full questions.*
Each question carries 10 *marks.*
Missing data may be suitably be assumed.

12. (a) Explain with necessary waveforms, the principle of Amplitude modulation. What are the building blocks of an AM communication system? Explain the function and working of each block.

(10 marks)

Or

Turn over

(b) Explain the principle of Frequency modulation with the help of mathematical expressions. Draw and explain the spectrum of FM signal.

(c) Compare FM and AM systems.

(7 + 3 = 10 marks)

13. (a) What is the concept of power spectral density? Write its properties.

(b) Sketch the power spectral density and Auto-correlation function of white noise.

(7 + 3 = 10 marks)

Or

(c) Define and explain the terms time Averages, ensemble averages and stationarity in connection with random process.

(d) What is a Guassian process? State one property of Gaussian process.

(6 + 4 = 10 marks)

14. (a) Explain the FDMA system with a neat diagram.

(b) What is the basic idea behind differential pulse code modulation? Write the expression for processing gain of differential quantification scheme.

(6 + 4 = 10 marks)

Or

(c) Briefly describe the digital modulation techniques and compare them.

(10 marks)

15. (a) What are the different types of coupling and interfacing equipments used in power line carrier communication? Explain the various equipment in detail.

(10 marks)

Or

(b) What are the applications of power line carrier communication system? What are the communication standards used?

(c) Explain the concept of broad band over power line in detail.

(6 + 4 = 10 marks)

[4 × 10 = 40 marks]