

C 40957

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Name:

Reg. No.



**FOURTH SEMESTER B.TECH. (ENGINEERING) DEGREE
EXAMINATION, APRIL 2013**

IT 09 404 – PRINCIPLES OF COMMUNICATION ENGINEERING

(Regular/Supplementary/Improvement)

(2009 Scheme)

Time : Three Hours

Maximum : 70 Marks

Part A

1. Define Modulation.
2. A carrier wave of 2.5 kW is amplitude modulated by a message signal of 1 kHz to a depth of 50%. What is the total power of the amplitude modulated wave?
3. The following signals are passed as an Input to the Product modulator :

$$V_1 = V_m \cos W_m t$$

$$V_2 = V_c \cos W_c t.$$

What is the output of the product modulator?

4. What is a quantization error?
5. What is heterodyning?

(5 × 2 = 10 marks)

Part B

Answer any four questions.

6. Give the frequency bands of electromagnetic spectrum and its applications.
7. What is the need for modulation?
8. Briefly explain the operation of a collector modulator.
9. What is a Ratio detector? Explain.
10. What is diversity reception? Name the various types of diversity reception techniques.
11. Compare low level and high level modulation systems.

(4 × 5 = 20 marks)

Turn over

Part C

12. Derive an expression for the AM wave and its power relations.

Or

13. Derive an expression for the FM wave. Prove that it has Infinite number of sidebands using Bessel's functions.

14. Explain the operation of a Square Law Modulator.

Or

15. Explain the generation of :

(a) PWM wave.

(b) PAM wave.

16. Explain the operation of a Foster-Seeley Discriminator.

Or

17. Explain the demodulation of :

(a) PAM Wave.

(b) PWM wave.

18. With block diagram, explain the AM transmitter.

Or

19. Explain the operation of a super heterodyne receiver.

(4 × 10 = 40 marks)