G 1552   (Pages : 2)   Reg. No.............................

Name.............................

B.TECH. DEGREE EXAMINATION, MAY 2015

Fourth Semester

Branch : Electronics and Communication Engineering

EC 010 405—ANALOG COMMUNICATION (EC)

(New Scheme—2010 Admission onwards)

[Regular/Improvement/Supplementary]

Time : Three Hours   Maximum : 100 Marks

Part A

Answer **all** *questions.*
Each question carries 3 marks.

1. What is the need for modulation ?

2. Define envelope detector.

3. List out the characteristics of radio receivers.

4. State Bayes theorem.

5. Define noise temperature.

(5 × 3 = 15 marks)

Part B

Answer **all** *questions.*
Each question carries 5 marks.

6. Define with relevant equations mean and moment of a random process X(t).

7. Explain how ring modulator can be used to generate DSB-SC modulation.

8. Briefly explain about the characteristics of receivers.

9. A random variable has PDF given by $f_x(x) = 2 \exp(-2x)$ for $x \geq 0$. Find the probability that it will take a value between 1 and 3 ?

10. Derive an expression for overall equivalent noise temperature of the cascaded stages.

(5 × 5 = 25 marks)

Part C

Answer **all** *questions.*
Each question carries 12 marks.

11. Give the comparison between AM, FM and PM in detail.

Or

12. Derive an expression for single tone sinusoidal FM wave. Find its spectrum.

Turn over

13. Explain the operation of super heterodyne receiver in detail.

Or

14. Explain about : (a) Filter method ; (b) phase shift method.

15. Explain high level and low level AM transmitters with neat diagrams.

Or

16. Explain FM stereo transmitter and receiver.

17. Define Gaussian distribution. Discuss the properties of Gaussian process.

Or

18. Write short notes on : (a) Statistical averages ; (b) Expectation probability models.

19. What is meant by signaling techniques ? Explain inter channel and common channel signaling techniques.

Or

20. Write short notes on ; (a) Shot noise ; (b) Resistor noise ; (c) White noise ; and (d) Additive noise.

$(5 \times 12 = 60 \text{ marks})$