Enrollment no:

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LDRP INSTITUTE OF TECHNOLOGY AND RESEARCH GANDHINAGAR
DEPARTMENT OF ELECTRONICS AND COMMUNICATION
B.E. 5TH SEMESTER
MID SEMESTER EXAMINATION AUGUST-2014

Subject Code: EC-504 | **Branch: EC**
Subject Name: Electronic Communication | **Total Marks: 30**
Date: 27/08/2014 | **Time: 12.00 PM to 1.30 PM**

Instructions:-All questions are compulsory.
-Figures to the right indicate full marks.
-Make suitable assumption, wherever necessary.

Que. 1 **Answer the Following.** **(6)**

1. A 60 Hz carrier is amplitude modulated by speech band of 300 to 3000 Hz. The range of upper side bands will be
   a) 60 to 59.7 kHz b) 57 to 59.7 kHz
   c) 56.7 to 56.3 kHz d) 60.3 to 63 kHz
2. What is the ratio of modulating power to total power at 100 percent modulation?
   a) 1:3 b) 1:2
   c) 2:3 d) None of the above
3. A carrier is simultaneously modulated by two sine waves with modulation indices of 0.3 & 0.4. if carrier power is 10kW, then total modulated power will be
   a) 12.5 kW b) 10 kW
   c) 10.125 kW d) 10.5 kW
4. A Superhetrodyne receiver with an IF of 450 kHz is tuned to a signal at 1200 kHz, the Image frequency is
   a) 750 kHz b) 900 kHz
   c) 1650 kHz d) 2100 kHz
5. FM is
   a) Infinite Bandwidth system b) Constant Bandwidth System
   c) Limited Bandwidth system d) None of the above
6. Pre- Emphasis is used
   a) To boost low Frequencies b) To boost high Frequencies
   c) Both a & b d) Neither a nor b

Que. 2 **Answer the Following questions.** **(12)**

A) Define Heterodyning and explain Super Heterodyne Receiver with Block Diagram. (6)

B) An AM broadcast receiver has an IF of 465 kHz and is tuned to 1 MHz the RF stage has one tuned circuit with a Q of 50. Find out a) Image Frequency b) Find Image Rejection in dB. (6)

OR

A) Prove that FM is sometimes referred as Constant Bandwidth system. (6)

B) Explain Indirect Method of FM generation. (6)

Que. 3 **Answer the Following questions.** **(12)**

A) Define Amplitude Modulation and derive the mathematical expressions for AM and draw the Frequency Spectrum for that. (5)

B) Write a Short note on Pilot Carrier System. (5)

C) A broadcast AM transmitter radiates 50 kW of carrier power. What will be the radiated power at 85 percent modulation? (2)

OR

A) Define Modulation Index & Derive the Power relations for AM. (5)

B) Explain Phase Shift method of SSB Generation. (5)

C) The Antenna current of an AM transmitter is 8A when only carrier is sent, but it increases to 8.93A when carrier is modulated by a sine wave. Find the percentage modulation. Determine the antenna current when percent modulation changes to 0.8. (2)

ALL THE BEST