

3236

BOARD DIPLOMA EXAMINATION, (C-09)

OCT/NOV—2013

DECE—THIRD SEMESTER EXAMINATION

COMMUNICATION ENGINEERING

Time : 3 hours ]

[ Total Marks : 80

**PART—A**

- Instructions :** (1) Answer **all** questions.  
(2) Each question carries **three** marks.  
(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. State the need for modulation in communication systems.
2. What is distortion? List the types of distortion.
3. Mention the application of AM in communication system.
4. Define modulation index of FM.
5. Briefly explain frequency deviation of FM signal.
6. Write the basic functions of a radio receiver.
7. Mention the advantages of superheterodyne receiver.

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8. Mention any three merits and demerits of low-level AM transmitter.
9. Define skip distance and virtual height of ionosphere.
10. Define the primary constants of transmission lines.

**PART—B**

**Instructions :** (1) Answer *any five* questions.  
(2) Each question carries **ten** marks.  
(3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. (a) Derive an expression for noise voltage for the thermal noise resistor. 5  
(b) An amplifier operating over the frequency range of 455 kHz to 460 kHz has a 200 k ohm input resistor. Find the r.m.s. noise voltage at the input of the amplifier if the ambient temperature is 17 °C. 5
12. (a) Define noise figure, signal to noise ratio and noise temperature. 5  
(b) The signal power at the input to an amplifier is 200 W and noise power is 2 W. At the output, the signal power is 2 W and noise power is 60 MW, calculate the amplifier noise figure. 5
13. (a) Define amplitude modulation and derive an expression for AM wave in time domain. 6  
(b) A 200 W carrier is modulated to a depth of 65%, calculate the power in AM modulated wave. 4

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- 14.** (a) Define pre-emphasis and de-emphasis and state their benefits. 5  
(b) Mention the advantages and disadvantages of FM over AM. 5
- 15.** (a) Define sensitivity, selectivity and fidelity of a receiver. 5  
(b) Define AVC and name the different types of AVC. 5
- 16.** (a) Draw the circuit diagram of an AM detector and explain how the original signal is recovered from AM signal. 5  
(b) Draw the block diagram of a low-level AM transmitter and write the function of each block. 5
- 17.** (a) Explain about single-stub matching method. 5  
(b) Explain in brief about ground wave propagation. 5
- 18.** (a) Define critical frequency and maximum usable frequency. 5  
(b) Explain in brief about space wave propagation. 5

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