

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V (OLD) EXAMINATION – WINTER 2018****Subject Code: 151004****Date: 11/12/2018****Subject Name: Electronic Communication****Time: 10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) What is noise? Explain thermal noise. **07**
 (b) Explain Communication system with the help of block diagram **07**

- Q.2** (a) What is modulation? Explain the need of modulation. **07**
 (b) Two resistors of 20 K and 50 K are at room temperature of 15 degree Celsius. for a given bandwidth of 10MHz, determine the thermal noise voltage generated by
 a) two resistors in series
 b) two resistors in parallel

OR

- (b) A mixer circuit has a noise figure of 12 dB. It is preceded by an amplifier that has an equivalent noise temperature of 200K and a power gain of 30 dB. Calculate the equivalent noise temperature of combination referred to amplifier input. **07**

- Q.3** (a) Explain the Superhetrodyne receiver with block diagram. **07**
 (b) Explain envelop detector for AM demodulation. **07**

OR

- Q.3** (a) What is AGC? Explain simple AGC and delayed AGC with proper graph. **07**
 (b) Explain Adjacent channel selectivity and image frequency rejection. **07**

- Q.4** (a) Compare AM, FM and PM **07**
 List all the properties of Fourier transform. State and prove time Shifting property. **07**
 (b) property.

OR

- Q.4** (a) Find the Fourier transform of the signal: **07**
 $x(t) = e^{-at} \sin \omega_0 t$
Q.4 (b) Define Amplitude Modulation. Derive the expression for AM modulated wave. **07**

- Q.5** (a) Give difference between SSB and VSB. Explain filter method with necessary block diagram. **07**
 (b) Explain parallel tuned circuit and derive equation for resonant frequency and Q-factor. **07**

OR

- Q.5** (a) Explain Series tuned circuit and derive equation for resonant frequency and Q-factor. **07**
 (b) Explain phase shift method of SSB generation with necessary block diagram. **07**