

GUJARAT TECHNOLOGICAL UNIVERSITY
B.E SEM-V Examination-Nov/Dec.-2011

Subject code: 151004**Date: 29/11/2011****Subject Name: Electronic Communication****Time: 02.30 am-05.00 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) Explain channel effect in detail with their resources. Also explain nyquist information rate and channel capacity in detail **07**
- (b) Give classification of electronics communication system by every aspects and explain them in short. **07**

- Q.2** (a) Draw and explain parallel tuned circuits in detail. Also derived equation for Resonance frequency and Q-factor for the parallel tuned circuits. **07**
- (b) A coil has a series resistance of 5Ω , a self capacitance of 7 pF , and an inductance of $1\mu\text{H}$. Determine the effective inductance and effective Q-factor when coil forms part of series tuned circuits resonant at 25 MHz . **07**

OR

- (b) The equivalent noise resistance of an amplifier is 300Ω and equivalent shot noise current is $5\mu\text{A}$. The amplifier is fed from 150Ω and $10\mu\text{V}$ rms sinusoidal signal source. Calculate the individual noise voltage at the input and the input Signal to Noise ratio in decibels. The noise bandwidth is 10 MHz . **07**

- Q.3** (a) What is Signal to Noise ratio ? Derived equation for Signal to noise ratio for amplifier. **07**
- (b) What is Noise temperature and Noise factor ? Also derived the equation for Noise factor of amplifier in the cascading stages **07**

OR

- Q.3** (a) Draw the block diagram of a double conversion receiver and explain each blocks in detail. Also list the additional circuits used to improve performance of communication receiver. **07**
- (b) List the standard continuous time and discrete time signal and explain them with neat sketches. **07**

- Q.4** (a) List the properties of Fourier transform and prove any two of them in detail **07**

- (b) A carrier current is 8 A but it is increase to 8.93 A when it is modulated Find, **07**
- (A) percentage modulation Index
- (B) Antenna current when modulation index changes To 0.8

OR

- Q.4 (a)** Explain Amplitude Modulation with required waveforms. Also give mathematical representation of Amplitude modulated Wave. **07**
- (b)** A FM voltage is represented by $v=12\sin(6 \times 10^8 t + 5\cos 1250t)$ **07**
Find
Carrier Frequency, Modulating Frequency, Modulation Index, Maximum Deviation, Power dissipation across 10Ω .
- Q.5 (a)** List different types of Amplitude Modulated Signal and explain them in detail. **07**
- (b)** What are the complexity remains in SSB ? List the methods of generation of SSB signal and explain any two of them. **07**
- OR**
- Q.5 (a)** What is FM ? Give relation between FM and PM. Also give difference between AM and PM. **07**
- (b)** List all the basic FM demodulators, Draw and explain Foster seeley discriminator in detail. **07**
