Code No: RR220401 **RR** **Set No. 2**

**II B.Tech II Semester Examinations,December 2010**
**COMMUNICATION THEORY**
**Electronics And Communication Engineering**

**Time: 3 hours** **Max Marks: 80**

**Answer any FIVE Questions**
**All Questions carry equal marks**

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1. (a) If $v(t) = \cos\omega_c t + 0.2\cos\omega_m t \sin\omega_c t$.
   i. Show that v(t) is a combination AM-FM signal.
   ii. Sketch the phasor diagram at t=0.
   (b) Give the phasor comparison of narrow band FM and AM waves for sinusoidal modulation and write the conclusions from the comparison. [8+8]
2. Explain the comparison of all analog modulation systems in detail with respect noise. [16]
3. (a) Explain different distortions in "diode detectors" with suitable examples.
   (b) Explain the operation of the square law demodulator with the help of waveforms. [8+8]
4. (a) Why VSB system is widely used for TV broadcasting- Explain?
   (b) Show that the figure of merit of an SSB system using coherent detection is 1. [8+8]
5. (a) Explain the filter method for generation of SSB wave.
   (b) Draw the block diagram of phase shift method of generation of VSB wave. [8+8]
6. (a) Draw the block diagram of a balanced FM demodulator and explain the importance of each block.
   (b) How does ratio detector differ from foster seeley detector? [8+8]
7. (a) Suppose that the modulating signal $m(t) = A_m\cos(2\pi\ f_m t)$, $f_m << f_c$, determine the DSB-SC signal and its upper and lower sidebands. Draw the spectrum.
   (b) A 1 MHz carrier with amplitude of 1 V peak is modulated by a 1 kHz signal with modulation index of 0.5. Sketch the voltage spectrum (i.e., frequency vs voltage levels).
   (c) What is the necessity of the modulation ? Explain. [6+6+4]
8. Draw the complete block diagram of Armstrong frequency modulation system, explain the functions of mixer, multiplier and balanced modulator. In what circumstances can we dispense with the mixer? [16]

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Code No: RR220401 **RR** **Set No. 4**

**II B.Tech II Semester Examinations,December 2010**
**COMMUNICATION THEORY**
**Electronics And Communication Engineering**

**Time: 3 hours** **Max Marks: 80**

**Answer any FIVE Questions**
**All Questions carry equal marks**

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1. Draw the complete block diagram of Armstrong frequency modulation system, explain the functions of mixer, multiplier and balanced modulator. In what circumstances can we dispense with the mixer? [16]
2. Explain the comparison of all analog modulation systems in detail with respect noise. [16]
3. (a) Explain the filter method for generation of SSB wave.
   (b) Draw the block diagram of phase shift method of generation of VSB wave. [8+8]
4. (a) Explain different distortions in "diode detectors" with suitable examples.
   (b) Explain the operation of the square law demodulator with the help of waveforms. [8+8]
5. (a) Draw the block diagram of a balanced FM demodulator and explain the importance of each block.
   (b) How does ratio detector differ from foster seeley detector? [8+8]
6. (a) If $v(t) = \cos\omega_c t + 0.2\cos\omega_m t \sin\omega_c t$.
      i. Show that v(t) is a combination AM-FM signal.
      ii. Sketch the phasor diagram at t=0.
   (b) Give the phasor comparison of narrow band FM and AM waves for sinusoidal modulation and write the conclusions from the comparison. [8+8]
7. (a) Why VSB system is widely used for TV broadcasting- Explain?
   (b) Show that the figure of merit of an SSB system using coherent detection is 1. [8+8]
8. (a) Suppose that the modulating signal $m(t) = A_m\cos(2\pi\ f_m t)$, $f_m << f_c$, determine the DSB-SC signal and its upper and lower sidebands. Draw the spectrum.
   (b) A 1 MHz carrier with amplitude of 1 V peak is modulated by a 1 kHz signal with modulation index of 0.5. Sketch the voltage spectrum (i.e., frequency vs voltage levels).
   (c) What is the necessity of the modulation ? Explain. [6+6+4]

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Code No: RR220401 **RR** **Set No. 1**

**II B.Tech II Semester Examinations,December 2010**
**COMMUNICATION THEORY**
**Electronics And Communication Engineering**

**Time: 3 hours** **Max Marks: 80**

**Answer any FIVE Questions**
**All Questions carry equal marks**

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1. (a) Suppose that the modulating signal $m(t) = A_m\cos(2\pi\ f_m t)$, $f_m << f_c$, determine the DSB-SC signal and its upper and lower sidebands. Draw the spectrum.
   (b) A 1 MHz carrier with amplitude of 1 V peak is modulated by a 1 kHz signal with modulation index of 0.5. Sketch the voltage spectrum (i.e., frequency vs voltage levels).
   (c) What is the necessity of the modulation ? Explain. [6+6+4]
2. (a) Why VSB system is widely used for TV broadcasting- Explain?
   (b) Show that the figure of merit of an SSB system using coherent detection is 1. [8+8]
3. (a) Explain different distortions in "diode detectors" with suitable examples.
   (b) Explain the operation of the square law demodulator with the help of waveforms. [8+8]
4. (a) Draw the block diagram of a balanced FM demodulator and explain the importance of each block.
   (b) How does ratio detector differ from foster seeley detector? [8+8]
5. (a) Explain the filter method for generation of SSB wave.
   (b) Draw the block diagram of phase shift method of generation of VSB wave. [8+8]
6. Explain the comparison of all analog modulation systems in detail with respect noise. [16]
7. Draw the complete block diagram of Armstrong frequency modulation system, explain the functions of mixer, multiplier and balanced modulator. In what circumstances can we dispense with the mixer? [16]
8. (a) If $v(t) = \cos\omega_c t + 0.2\cos\omega_m t \sin\omega_c t$.
      i. Show that v(t) is a combination AM-FM signal.
      ii. Sketch the phasor diagram at t=0.
   (b) Give the phasor comparison of narrow band FM and AM waves for sinusoidal modulation and write the conclusions from the comparison. [8+8]

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Code No: RR220401 **RR** **Set No. 3**

**II B.Tech II Semester Examinations,December 2010**
**COMMUNICATION THEORY**
**Electronics And Communication Engineering**

**Time: 3 hours** **Max Marks: 80**

**Answer any FIVE Questions**
**All Questions carry equal marks**

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1. (a) Draw the block diagram of a balanced FM demodulator and explain the importance of each block.
   (b) How does ratio detector differ from foster seeley detector? [8+8]
2. Draw the complete block diagram of Armstrong frequency modulation system, explain the functions of mixer, multiplier and balanced modulator. In what circumstances can we dispense with the mixer? [16]
3. (a) Why VSB system is widely used for TV broadcasting- Explain?
   (b) Show that the figure of merit of an SSB system using coherent detection is 1. [8+8]
4. (a) If $v(t) = \cos\omega_c t + 0.2\cos\omega_m t \sin\omega_c t$.
      i. Show that v(t) is a combination AM-FM signal.
      ii. Sketch the phasor diagram at t=0.
   (b) Give the phasor comparison of narrow band FM and AM waves for sinusoidal modulation and write the conclusions from the comparison. [8+8]
5. (a) Explain different distortions in "diode detectors" with suitable examples.
   (b) Explain the operation of the square law demodulator with the help of waveforms. [8+8]
6. (a) Suppose that the modulating signal $m(t) = A_m\cos(2\pi\ f_m t)$, $f_m << f_c$, determine the DSB-SC signal and its upper and lower sidebands. Draw the spectrum.
   (b) A 1 MHz carrier with amplitude of 1 V peak is modulated by a 1 kHz signal with modulation index of 0.5. Sketch the voltage spectrum (i.e., frequency vs voltage levels).
   (c) What is the necessity of the modulation ? Explain. [6+6+4]
7. Explain the comparison of all analog modulation systems in detail with respect noise. [16]
8. (a) Explain the filter method for generation of SSB wave.
   (b) Draw the block diagram of phase shift method of generation of VSB wave. [8+8]

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