Roll No. | | | | | | | | | | | | |

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(Electronics Engg.) (2012 Onwards) /
(ECE)/(ETE) (2011 Onwards) (Sem.–4)

ANALOG COMMUNICATION SYSTEMS

Subject Code : BTEC-401
M.Code : 57593

Time : 3 Hrs. Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

Q1. Answer briefly :

a) Define modulation. Why is modulation required in communication system?

b) The carrier swing of a frequency-modulated signal is 70 KHz and the modulating signal is a 7 KHz sine wave. Determine the modulation index of the FM signal.

c) Justify that AM is a linear modulation system.

d) Draw the phasor diagram of narrowband frequency modulation.

e) What is white noise?

f) Explain why PM is not used for Broadcasting.

g) Write the role of Limiter in FM system.

h) What do you mean by synchronization in PAM system?

i) Draw only the circuit diagram of Phase shift method of SSB generation.

j) A bandwidth of 20 MHz is to be considered for the transmission of AM signals. If the highest audio frequencies used to modulate the carriers are not to exceed 3kHz, how many stations could broadcast within this band simultaneously without interfering with one another?

SECTION-B

2. A SSB transmission contains 10kW. This transmission is to be replaced by a standard amplitude modulated signal with the same power content. Determine the power content of the carrier and each of the sidebands, when the percent modulation is 80%.

3. Explain the Principle involved in generating AM-DSB-SC signal using Ring modulator.

4. Justify that the Angle modulation is a Non-linear modulation method and why don't broadcast stations transmit at audio frequencies?

5. Explain the Armstrong method for the generation of Wideband FM system.

6. Give comparison of PAM, PPM and PWM pulse Analog modulation methods.

SECTION-C

7. Write a note on following :

   a) Tracking and Alignment

   b) FM stereo transmission and reception

8. a) Give comparison of SSB transmission system to conventional AM system.

   b) A 107.6 MHz carrier is frequency modulated by a 7-kHz sine wave. The resultant FM signal has a frequency deviation of 50kHz.

      i. Find the carrier swing of FM signal.

      ii. Determine the highest and lowest frequencies attained by the modulated signal.

      iii. What is the modulation index of FM wave?

9. a) Give comparison of AM &FM system.

   b) Explain pre-emphasis and De-emphasis circuit of FM system.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.