(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 2720   Roll No.

B.Tech.

(SEM. VII) ODD SEMESTER THEORY
EXAMINATION 2012-13

TELEMETRY AND DATA TRANSMISSION

Time : 3 Hours   *Total Marks : 100*

Note :– (1)   Attempt **all** questions.

(2)   All questions carry equal marks.

1.   Attempt any **four** parts of the following :   (5×4=20)

(a)   Draw the block diagram of a telemetry system, identifying different part in it.

(b)   Sketch a frequency transmitter circuit as used in frequency telemetering system and explain its operation.

(c)   Explain the term FSK, PSK and DPSK.

(d)   Describe delta modulation systems. What are its limitations ?

(e)   Explain line coding. What are the properties of line coding ?

(f)   Given that the bit sequence given below is to be transmitted. bit sequence = 1 0 1 1 0 0 1 0. Draw the resulting waveform, if the sequence is transmitted using (i) Unpolar RZ (ii) Polar RZ.

2. Attempt any **four** parts of the following : (5×4=20)

   (a) Draw the block diagram of a signal conditioners scheme.

   (b) Draw the block schematic diagram of TDM/PCM/FM system of telemetering and make appropriate labels, both on the transmitting and receiving sides.

   (c) Write a short note on RS-232 interface.

   (d) 8 channels each bandlimited to 5 KHz, are to be time division multiplexed. Each sample is coded into a 6 bit word. Find the output rate in bits/sec and the required bandwidth.

   (e) The spectral range of a bandpass signal extends from 10.0 MHz to 10.04 MHz. Find the minimum sampling rate.

   (f) Explain synchronous and asynchronous time division multiplexing of PCM signals.

3. Attempt any **two** parts of the following : (10×2=20)

   (a) Draw the scheme of a phase modulation circuit. Discuss how can FM be obtained via phase modulation.

   (b) Describe, data transmission and reception processes as carried out by modems in a complete telemetry system.

   (c) Explain the Phase Locked Loop (PLL) with the help of neat sketches.

4. Attempt any **two** parts of the following : (10×2=20)

   (a) Define Remote control system and discuss its applications areas.

EEC046/DLT-44606   2

(b) Enlist the communication based processing control systems and illustrates the basic features of the automatic pipelines.

(c) Sketch the block diagram of tone based command system. Explain how Doppler shift profile is results in earth rotation for a distance space craft.

5. Attempt any **two** parts of the following :   (10×2=20)

(a) Sketch and explain the specific units of the Programming Controllers and specify its functional areas.

(b) Enlist the Multiplexing techniques in tele-control and illustrates the basic features of Industrial Tele-control installations.

(c) Discuss the different aspects of reliability in telecontrol installations.