

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

PAPER ID : 2720

Roll No.

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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)**
- Draw the block diagram of a telemetry system, identifying different part in it.
 - Sketch a frequency transmitter circuit as used in frequency telemetering system and explain its operation.
 - Explain the term FSK, PSK and DPSK.
 - Describe delta modulation systems. What are its limitations ?
 - Explain line coding. What are the properties of line coding ?
 - 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.

- (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.