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

PAPER ID : 2720   Roll No. ☐☐☐☐☐☐☐☐☐☐☐

B.Tech.

(SEM. VII) THEORY EXAMINATION 2011–12

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)   State and prove Shannon Theorem. What is sampling function ?

(b)   Explain aliasing effect. How it can be removed ?

(c)   Sketch a block diagram of differential pulse code modulation (DPCM) system and explain its operation.

(d)   Explain why quadrature phase shift keying (QPSK) is adopted in digital data transmission system.

(e)   Distinguish between Equalizing and Matched filter.

(f)   Write short note on error correction codes. How are they used in data transmission system ?

2. Attempt any **four** parts of the following : (5×4=20)
   (a) Differentiate between Simplex, Half-duplex and Full-duplex Communication system.
   (b) Explain low level and high level multiplexing techniques.
   (c) What type of sensors is used in earth remote sensing ? Discuss in brief.
   (d) Describe RS 232 interface and explain its electrical specification value for data transmission.
   (e) Why Modems are needed for telephone communication ? Explain their working with example.
   (f) Describe the working principle of Multiplier and data concentrator used for Telemetry purpose.

3. Attempt any **two** parts of the following : (10×2=20)
   (a) Draw and explain the circuit diagram of a bit synchronizer. Enlist the various types of synchronizer codes.
   (b) Explain the phase locked loop (PLL) with the help of neat sketches.
   (c) What types of display systems are used in Telemetry application ? Discuss two display systems at the receiver.

4. Attempt any **two** parts of the following : (10×2=20)
   (a) What specific units are to be there to form a remote control system ? How is it different from a telemetry system ? Explain the operation of generalized remote control system.

(b) Discuss the general rules for installation of programmable controllers for factory automation.

(c) Write short notes on the following with suitable examples of industrial process :

    (i)   Tone command system

    (ii) Data command system.

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

(a) What type of signals are formed and how they are converted in a Aerospace telemetry ? Enumerate at least five applications of Aerospace telemetry system.

(b) Discuss the various multiplexing techniques used for digital signaling in telecontrol system.

(c) What is the purpose of industrial telecontrol ? Discuss the different parameters affecting the reliability in telecontrol installation ? Explain in brief.