

Dronacharya Group of Institutions, Greater Noida
Department of Electrical and Electronics Engineering
Question Bank

Sub:-Telemetry and Data Transmission (EEC-046),

Branch:- EEE-VII

- 1) Define telemetry and give important components of a telemetry system.
- 2) Why we require radio frequency modulation methods?
- 3) Compare different multiple access techniques used in satellite communication.
- 4) Give the block diagram of optical telemetry system
- 5) Comment on the need for telecontrol.
- 6) Name and explain all the common communication channels used in telemetering.
- 7) give the advantages of digital transmission techniques used in satellite telemetry.
- 8) Discuss about the noises in telemetry channels.
- 9) Derive an expression for Numerical aperture of step- index fiber.
- 10) Explain the role of remote control on guidance systems.
- 11) Write short notes on
 - a) Force balance type current transmitter
 - b) Position telemetry
- 12) a) Give basic block diagram of telemetry system and explain each component
b) What are the different types of classification of telemetry system. Explain.
Give reasons for the classification
- 13) With a neat block diagram explain FM/FM data transmission and PAM/AM data transmission.
- 14) a) What are the telemetry standards for baseband communication given by IRIG.
b) Give short notes on receivers in RF telemetry. .
- 15) Explain the functioning of TT&C subsystems of a satellite communication system. Give necessary sketch.
- 16) Discuss the hardware used in a typical telemetry system and give its applications
- 17) What are the different types of sources used in optical telemetry and give its advantages and disadvantages.
- 18) A) Write briefly about losses in optical fibers.
b) Write short notes on LASER detectors.
- 19) Explain the analog and digital techniques used in telecontrol.
- 20) Explain the steps for installation of telecontrol systems.
21. What is the need of sampling in communication systems? State and prove the condition on sampling frequency so that a band pass signal can be received successfully at receiver

22. The signal $g(t) = 10 \cos(60\pi t)$ is sampled at the rate 400 samples per second. Determine the range of permissible cutoff frequency for ideal reconstruction filter that may be used to recover $g(t)$ from its sampled version.
23. Define ASK, FSK, PSK and QPSK and draw the waveform for binary data 10111001 for all the modulation techniques.
24. Explain DPCM communication system with suitable block diagrams.
25. Explain error detection and correction techniques.
26. Explain the trade-off while improving the quality of PCM digital signal.
27. Differentiate between DPCM and DM mode digital communication.
28. What is the need of other signaling techniques like ASK, PSK or FSK over PCM? Describe various forms of ASK digital signals brief.
29. Describe about Equalizing filter and matched filter. Are they same kind of filter? Justify your answer.
30. what are the different line codes and error correction codes used in Digital Transmission.
31. Discuss the Data Transmission over telephone lines.
32. Write a short notes on comparison of probability of error for ASK, FSK, PSK Digital modulation techniques.
33. Define ASK, FSK, PSK and draw the block diagram of QPSK receiver.
34. Define ARQ and FEC. Explain any two types of error correction codes.
35. Draw a different line code data formats for binary sequence [1,011 01 00].
36. Describe low level and high level multiplexing techniques. Explain the principle of time division multiplexing.
37. Explain the working of data loggers.
38. A measurement of temperature using a sensor that output 6.5 mV/°C must measure up to 100°C. A 6-bit ADC with 10 V reference is used
 - (i) Develop a circuit to interface the sensor and the ADC
 - (ii) Find the temperature resolution.
39. Explain the following:
 - (i) RS 423 and RS 232 C
 - (ii) Multiplexer and Concentrator
- 40 Differentiate between simplex, half-duplex and full-duplex communication.
41. why are modems need for telephone communications? Name some popular DTE-DCE standards.
42. Differentiate between bit rate and baud rate. Give an example where both are the same. Give an example where they are different.
43. What does the electrical specification of EIA-232 AND RS-422 describe?
44. Describe the working principle of Multiplier and Data Concentrator used for Telemetry purposes.
45. What type of sensors are used in Earth Remote sensing? Explain in brief the working of any one sensor.
46. Draw a Generalized Data Acquisition System explain the Digital Data Handling system.
47. Give the classification of coherent and non-coherent digital modulation Technique for Digital Transmission and draw a block diagram of QPSK Receiver and Transmitter.
48. Write a short notes on RS- 232 interface serial communication.
- 49 Explain any two transducers used for telemetry application.
50. explain with block diagram. Dual slope integrator type A/D converter.

51. Explain the working of a modem. What is the maximum data rate achievable if a binary signal is sent over a 3 kHz channel whose S/N ratio is 40 dB.
52. Describe bit and frame synchronization. Give suitable examples.
53. Discuss the interconnection required for data sets when they are connected to telephone company circuits. What is significance of radio frequency signals in telemetry systems.
54. Write notes on the following:
 - (i) PLL
 - (ii) Display systems
55. What is Bit Acquisition and Bit Slip? What is the use of bit Synchronizer?
56. What do mean by major frame and minor frame? Explain the working of phase Locked Loop.
57. What type of display systems are used in Telemetry application? Explain them with few examples.
58. draw a modern Functional block diagram gives the classification of Data Modems.
59. draw a binary Tree diagram for successive Approximation Method for A/D conversion.
60. Define remote control system. Explain automatic pipe lines for communication based processing control system.
61. Explain asynchronous data transmission .Draw a bit synchronizer functional diagram and PCM data format used for frame synchronizer.
- 62 Explain communication based processing control system that employs remote control.
63. Explain the following:
 - (i) Power system control
 - (ii) Programmable controller for factory automation.
64. Describe ON/OFF command and data command. What are operational security components? Explain in brief.
65. Give a list of at least five different industrial applications where Telemetry Remote Control schemes are applicable. Describe any one of them with suitable diagrams highlighting necessary supporting devices.
66. Give an overview of one scenario where programmable controllers are used to automate and secure power distribution system.
67. Explain Tone Digital command system and Data Command system with suitable examples of Industrial processes.
68. Draw a block diagram of tone based command and explain it.
69. Draw a block diagram of sub frame synchronizer and explain the following terms:
 - (i) PCM data Format
 - (ii) Synchronizer code
- 70 Define the various tone command usage in space craft. Explain with block diagram of tone based command system.
71. Write short notes on the following:
 - (i) Power system control.
 - (ii) Multiplexing techniques in control.
- 72 How many types of multiplexing are there in analog satellite communication? Which type of multiplexing is mostly used and why?
73. What is the purpose of industrial telecontrol? Describe telecontrol installation methods used in industries.
74. Write notes on the following:
 - (i) Aerospace telecontrol system
 - (ii) Reliability in telecontrol installations.
- 75 Explain the working principle of GPS (Global Positioning System). Enumerate few applications where it is used more effectively.
76. Enumerate at least five applications of Aerospace Telemetry system. Describe the working of any one of them.

77. What are the parameters affecting the reliability in telecontrol installations? Explain in brief.
78. Define the terms telemetry, Telecontrol and Telecommunication.
79. What are the different multiplexing techniques used in Aerospace Telemetry? Describe their limitations.
80. Discuss the four types of orbits for satellite communication.
81. Discuss the structural principle of telecontrol installation.
82. (i) Explain TDM and T1 frame channel synchronization in TDM.
(ii) Draw the structural principle of a telecontrol installation.
- 83 Write short notes on the following:
(i) Reliability of telecontrol installations. (ii) Signal formation and conversion.
- 84 Explain communication based processing control system that employs remote control.
- 85 What specific units are to be there to form a remote control system? How it is different from telemetry system? Explain the operation of generalized remote control system.
- 86 Explain the following:
- (i) Power system control
 - (ii) Programmable controller for factory automation.
- 87 Describe ON/OFF command and data command. What are operational security components? Explain in brief.
- 88 Explain the following with suitable examples of Industrial processes.
- (i) Tone command system
 - (ii) Data Command system
- 89 What are pipelines? How they are associated with remote control systems?
- 90 Sketch the block diagram of Tone digital command system. Explain how Doppler shift profile is results in earth rotation for a distance space craft.
- 91 Write short notes on the following:
- (i) Power system control.
 - (ii) Operational security
- 92 What is PLC? How it is useful in factory automation? What are the advantages of PLC?
- 93 What are general rules for installation of programmable controllers for factory automation?
- 94 Explain in Details Voltage telemetry
- 95 Multiplexing techniques in control
- 96 Explain in details Pipeline control
- 97 Explain in details Aerospace Telemetry
- 98 Explain Signal formation and conversion
- 99 Explain Industrial Tele-control installations
- 100 Explain reliability in telecontrol installations.