



11. (a) Explain the construction and principle of working of a LVDT. Explain how the magnitude and direction of the displacement of core of an LVDT detected. (16)

Or

- (b) Describe how quartz resonators are used as stress sensors? On what factors does the resonance frequency of a resonator depend? (16)
12. (a) How can switching magnetic sensors be used for stress measurement? Can they be made with any ferromagnetic material? What other factors are important in the design of such sensor? (16)

Or

- (b) (i) What are the commonly known ionizing radiations? What are the detectors used for their measurement? (8)
- (ii) What is a Geiger — Muller counter? Discuss the variations in its design to suit different purposes. (8)
13. (a) Describe briefly the four micromachining techniques and compare their advantages and uses. (16)

Or

- (b) (i) How are environmental hazards spread? Draw block diagram to explain the same. (8)
- (ii) How are acoustic systems used in machine diagnostic systems? What variations are used in the sensors for the purpose? (8)
14. (a) (i) Describe in details the dual slope method of analog to digital conversion. (8)
- (ii) Discuss in detail about low level and high level multiplexing. (8)

Or

- (b) (i) Explain the operation of sample — Hold circuits. (8)
- (ii) Describe any one method of digital to analog conversion. (8)
15. (a) (i) Explain how data conversion is done in Bipolar signals. (8)
- (ii) Write short notes on digital transmission system. (8)

Or

- (b) (i) Explain the working principle of multi channel data acquisition system using single A/D converter. (8)
- (ii) Describe in detail about data loggers. (8)