

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain the working, construction and specification of the following: MPX sensor, Hall effect sensor, Thermocouples and photodiodes. (10)
(ii) Discuss microprocessor based controllers with example. (6)

Or

- (b) (i) Explain the principle of the following : Bonded strain gauge, acceleration sensor, RTD, and microsensors. (10)
(ii) Define all the dynamic characteristics of sensors. (6)
12. (a) Explain the pneumatic power supply system and discuss on rotary actuators.

Or

- (b) With neat sketches explain various types of stepper motors with their control.
13. (a) (i) Explain the PID controller with an example of DC motor speed control. (10)
(ii) Discuss on building blocks of electrical system. (6)

Or

- (b) (i) Explain the building blocks of fluid system with suitable examples. (10)
(ii) Discuss on rotational systems. (6)
14. (a) (i) With a neat sketch discuss about the internal structure of a PLC. (10)
(ii) Discuss on selection of PLC. (6)

Or

- (b) (i) Discuss in detail about data handling. (8)
(ii) Explain about mnemonics with examples. (8)
15. (a) Design Automatic Tool Changer (ATC) of a CNC machine.

Or

- (b) Discuss in detail about mechatronic design of Automated Teller Machine (ATM).