M.E/M.TECH Degree Examination, December 2020

Third Semester

MS18012 – Industrial Automation for Mechatronics

(Regulation 2018)

Time: Three hours Maximum : 80 Marks

Answer **ALL** questions

PART A - (8 X 2 = 16 marks)

1. Laser range finder is a type of
   (a) Tactile Sensor
   (b) Proximity Sensor
   (c) Vision Sensor
   (d) Optical Sensor
2. PLC can perform arithmetic and logic functions, State True OR False.
3. A fiber cable consists of uniform refractive index in known as
   (a) Step Index
   (b) Graded Index
   (c) Homogeneous index
   (d) Ideal Index
4. HAZOP stand for
   (a) Haze and operational system
   (b) Hazard and operational system
   (c) Haze and operability study
   (d) Hazard and operability study
5. Identify and list the manufacturing support systems
6. Justify PLC is more suitable controller than microcontroller in industrial applications
7. Describe the term “broadband” in communication
8. Suggest a layout that supports higher production quantity

PART B - (4 X16 = 64 marks)

09. (a) (i) Choose a sensor to measure rotational speed and explain its working principle with a neat sketch **(8)**

    (ii) Explain the construction of a temperature sensor to measure the temperature between -200° to 2500° C **(8)**

(OR)

(b) (i) Design a system for differential pressure measurement **(8)**

(ii) Explain the primary elements of process control system in detail **(8)**

10. (a) (i) Explain the input and output processing method which has faster execution capability. **(8)**

(ii) Discuss the communication process in PLC in detail **(8)**

(OR)

(b) With an industrial application, explain the working of timers and counters in PLC **(16)**

11. (a) (i) Classify the communication media used in industrial applications **(8)**

(ii) List and explain the types of networks in communication systems **(8)**

(OR)

(b) Identify an open protocol used in serial communication and explain its working in detail **(16)**

12. (a) Discuss an industrial case study on automated manufacturing unit with sketches **(16)**

(OR)

(b) Discuss an industrial case study on PLC based automated system with sketches **(16)**