Register Number [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]   **Code: 20EC53IT**

V Semester Diploma Make-Up Examination, July 2024

AUTOMATION & ROBOTICS

TIME: **3 HOURS**   MAX MARKS: **100**

Instructions: Answer **one** full question from each Section.

SECTION -I

1.a) A semi-manual Mangalore tile manufacturing plant is decided to adopt automation for enhancing the productivity. Justify the importance of adopting automation and its benefits.   10

 b) List the various sensors used in package industry. Describe any five.   10

2.a) Robots have revolutionised the role of Industries. Justify your answer.   10

 b) Differentiate between the permanent & programmable automation system in industry.   10

SECTION -II

3.a) What technology is used in driverless car? Identify & explain the different types of sensors used in such cars.   10

 b) Explain how to control temperature and pressure in the boiler system with the help of PLC based system.   10

4.a) In a milk processing industry, automation is implemented in milk storage & milk packaging system.Identify & explain the communication protocols used in it.
                                                        10

 b) Describe the installation, commissioning and troubleshooting procedures facility in car manufacturing industry using PLC.   10

SECTION-III

5.a) Discuss the importance of HMI and SCADA in any industry.   10

 b) Compare i) PLC with Microcontroller ii) PLC with PAC.   10

6.a) Illustrate a system to automate the pumping and distribution of water supply in your department/ institution.   10

 b) Illustrate the case of a PLC based automatic robotic car washing system and report the test results.   10

SECTION-IV

7.a) Robots are becoming a part of human lifestyle. Explain the various parts and functions of a robot .   10

b) Illustrate what type of Robot is used to transport raw materials from stock yard to production line in the manufacturing industry.   10

8.a) Material handling was executed manually in a Warehouse for picking & placing the objects. Identify and explain suitable Robot used to do the above task to improve efficiency and accuracy.   10

  b) What are the five different types of robots that are used in any automation industry. Mention its purpose.   10

SECTION-V

9.a) Discuss how Maze Solving Robot can be used in industrial applications and mention its advantages.   10

  b) Write a brief note on ROS and explain ROS communication tools.   10

10.a) Analyse Robot path planning for AGV.   10

  b) Discuss significance and advantages of Artificial Intelligence in Robotics. 10