

- Q.22 Create a neat sketch of an Industrial IoT architecture and explain its key components, including sensors, gateways, and cloud services? (CO4)

### SECTION-D

**Note:** Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

- Q.23 List various industry standard communication protocols? Explain any one in details using suitable diagram? (CO4)
- Q.24 Explain the process of web-based data handling using Raspberry Pi? Write a program or flowchart to illustrate send data to a web page? (CO5)
- Q.25 Define troubleshooting? Describe the troubleshooting process for common Arduino issues and provide possible cause and solutions for such issues? (CO5)

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### 5th Sem / Branch : Automation & Robotics Sub.: Industrial IOT

Time : 3Hrs.

M.M. : 60

### SECTION-A

**Note:** Multiple choice questions. All questions are compulsory (6x1=6)

- Q.1 MQTT is primarily oriented towards which aspect of communication in IoT? (CO2)
- a) Message                      b) Connection  
c) Data                          d) Terminal
- Q.2 Which of the following sensors is NOT primarily used for temperature measurement? (CO3)
- a) LM35                          b) DHT-11  
c) DS18B20                      d) MQ2
- Q.3 Which of the following sensors is commonly used for detecting gas leakage? (CO3)
- a) Ultrasonic sensor      b) MQ2 sensor  
c) IR sensor                  d) Temperature sensor
- Q.4 OPC UA is an industry standard communication technology primarily used for: (CO4)
- a) Home automation

- b) Industrial automation and data exchange
  - c) Wireless networking
  - d) GPS tracking
- Q.5 What is the term for the process of retrieving data from a web page? (CO5)
- a) Web scraping                      b) Data mining
  - c) Cloud computing                  d) Fog computing
- Q.6 In IoT, what does M2M stand for? (CO1)
- a) Mobile to Mobile                  b) Man to Man
  - c) Machine to Machine              d) Monitor to Monitor

### SECTION-B

**Note:** Objective/Completion type questions. All questions are compulsory. (6x1=6)

- Q.7 Expand NFC. (CO2)
- Q.8 Name any one humidity sensor? (CO3)
- Q.9 A post request can be used to interact with a HTTP based webpage. (True/False) (CO2)
- Q.10 Give an example of electro mechanical switch? (CO3)
- Q.11 What is OPC UA? (CO4)
- Q.12 Z wave is a mesh-based network. (True/ False) (CO4)

### SECTION-C

**Note:** Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

- Q.13 Compare Bluetooth and BLE (Bluetooth Low Energy) in terms of power consumption, range and applications. Provide examples of scenarios where each is more suitable? (CO3)
- Q.14 Write a note on IoT interactions? (CO2)
- Q.15 Elaborate on the working principle of an IR sensor and provide a real-world scenario where it is commonly used in Industrial IoT applications? (CO3)
- Q.16 Write a note on cloud computing? (CO1)
- Q.17 Define edge device? Compare traditional / Common & intelligent edge devices? (CO3)
- Q.18 Illustrate the concept of fog computing using a suitable diagram. Explain the key components and their functions in fog computing? (CO1)
- Q.19 Compare LoRAWAN and NFC in terms of their merits and demerits for IoT applications? (CO4)
- Q.20 Data collected using IoT in an enterprise enhance productivity. Explain with example? (CO4)
- Q.21 Compare closed loop & open loop control system? (Co5)