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Question Paper Code: U4E05

B.E. / B.Tech. DEGREE EXAMINATION, APRIL/ MAY 2025

Fourth Semester

Artificial Intelligence and Data Science

21UAD405 –INTERNET OF THINGS AND SENSORS

(Regulations 2021)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. Which of the following devices is used to measure the gases or liquid? CO1-U
(a) Optical Sensor (b) Gas Sensor
(c) Smoke Sensor (d) Pressure sensor
2. Which of the following is a layer in IoT architecture? CO1-U
(a) Perception Layer (b) Network Layer
(c) Application Layer (d) All the above
3. What protocol would you recommend for lightweight IoT devices to securely exchange data? CO1-U
(a) FTP (b) MQTT with TLS (c) SMTP (d) POP3
4. What software is commonly used to program Arduino boards? CO1-U
(a) PyCharm (b) Arduino IDE
(c) Visual Studio (d) Eclipse
5. Which sensor is most suitable for measuring angular velocity in IoT applications? CO1-U
(a) Gyroscope (b) Accelerometer
(c) Ultrasonic sensor (d) Magnetometer

PART – B (5 x 3= 15 Marks)

6. Differentiate between Physical design of IoT and Logical design of IOT? CO1-U

7. A logistics company wants to improve real-time tracking of its delivery trucks. Should they implement an IoT-based or M2M-based solution? Justify your answer by comparing their features and benefits. CO2-App
8. A company is designing a low-power wireless sensor network for monitoring environmental conditions in a smart greenhouse. Would IEEE 802.15.4 be a suitable choice for this application? Justify your answer based on its characteristics and advantages CO2-App
9. Name any four services offered by Raspberry Pi. CO1-U
10. List the Industrial IoT applications. CO1-U

PART – C (5 x 16= 80 Marks)

11. (a) Explain in detail about IOT and its Characteristics. CO1-U (16)
Or
(b) Explain in detail about communication API in IoT environment CO1-U (16)
12. (a) Draw the IETF Architecture diagram for any real time CO2-App (16) applications.
Or
(b) Construct IoT Communication model for any real time CO2-App (16) applications.
13. (a) Briefly explain about Components of Embedded Systems. CO1-U (16)
Or
(b) Explain in detail about IEEE 802.15.4 with real time applications. CO1-U (16)
14. (a) Discuss in detail about Arduino with neat sketch CO1-U (16)
Or
(b) Explain in detail about Python program with Raspberry PI with CO1-U (16) focus on interfacing external gadgets.
15. (a) Show how the Arduino board can be used to collect data from CO3-Ana (16) sensors and send it to an IoT platform for analysis?
Or
(b) Demonstrate the Working principle of Serial Peripheral CO3-Ana (16) Communication using Aruduino