

ELET.H. IOT-TE sem VI Reg. C'scheme Summer 2025
ECS

Duration: 3Hrs

Marks: 80

N. B : (1) Q1 is compulsory

(2) From Q2 to Q6 solve any three questions

(3) All questions carry equal marks

(4) Assume suitable data, if required, and state it clearly

Q1 Answer all four of the following

A. Define the Internet of Things (IoT) and Explain current trends in IoT. [05]

B. Draw a simplified IoT architecture and describe the Perception, Network and Application layers. [05]

C. List the layers of the OSI model and State one IoT-related protocol mapped to each layer. [05]

D. Explain any two wired sensor communication protocols: UART and SPI. [05]

Q2. Answer the following questions

A. Draw and explain the mapping of the OSI model to the IoT/M2M protocol stack. [10]

B. Explain Lightweight M2M protocol with its message structure and advantages. [10]

Q3. Answer the following questions

A. Explain Constrained Application Protocol (CoAP) with its request/response model and message format. [10]

B. Describe the publish/subscribe architecture of MQTT. Explain the role of topics and Quality of Service (QoS) levels. [10]

Q4 Answer the following questions

A. Explain the CAN protocol frame format with a neat diagram. State two advantages of CAN over UART. [10]

B. List the steps to interface an I2C temperature sensor with a Raspberry Pi and display the output on the terminal. [10]

Q5 Answer the following questions

A. List and explain five important factors for selecting an embedded platform for IoT prototyping. [10]

B. Explain the need for amplification and signal conditioning in interfacing analog sensors with microcontrollers. [10]

Q6. Write short note [Solve Any Two Questions]

A. IoT applications in precision agriculture [10]

B. Data logging using Raspberry Pi. [10]

C. IoT-enabled home automation system. [10]
