

Model Question Paper Seventh Semester BE Degree Examination IoT Architecture and Platforms

Time: 3 Hours

Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M: Marks, L: RBT (Revised Bloom's Taxonomy) level, C: Course outcomes.

		Modue-1	M	B	C
Q1	a	Explain the six levels of IoT deployment (Level 1 to Level 6) with a neat diagram and suitable examples for each level.	6	L2	CO1
	b	Explain the IoT domain-specific applications of Home Automation and Smart Cities with suitable examples and neat diagrams.	8	L3	CO1
	c	Explain the need for IoT systems management and the working of Simple Network Management Protocol (SNMP).	6	L2	CO1
OR					
Q2	a	Explain the network operator requirements for IoT systems management and the limitations of SNMP that motivated the development of NETCONF.	6	L2	CO1
	b	Explain the NETCONF protocol, its layered architecture, and the role of the YANG data modeling language in IoT systems management.	8	L3	CO1
	c	Explain, with a neat diagram, how IoT systems management is achieved using NETCONF-YANG.	6	L2	CO1
Module– 2					
Q3	a	Explain the ETSI M2M high-level architecture with a neat diagram.	6	L2	CO2
	b	Explain the ETSI M2M service capabilities and resource management with suitable diagrams.	8	L3	CO2
	c	Explain the IETF architecture fragments used in IoT and identify the protocols associated with each layer.	6	L2	CO2
OR					
Q4	a	Explain the Open Geospatial Consortium (OGC) architecture for IoT with a neat diagram.	6	L2	CO2
	b	Explain the IoT Reference Model and the Reference Architecture derived from it.	8	L3	CO2
	c	Explain the IoT Domain Model with a neat diagram, including its key entities and their relationships.	6	L2	CO2
Module – 3					
Q5	a	Explain the Functional Model of the IoT Reference Model with a neat diagram.	6	L2	CO2
	b	Explain the Communication Model and the Information Model of the IoT Reference Model.	6	L2	CO2

	c	Apply the Safety, Privacy, Trust and Security Model of the IoT Reference Architecture to suitable IoT examples, and justify the importance of security in IoT deployments.	8	L3	CO2
OR					
Q6	a	Explain the Functional View of the IoT Reference Architecture with a neat diagram.	6	L2	CO2
	b	Explain the Information View and the Deployment and Operational View of the IoT Reference Architecture.	6	L2	CO2
	c	Design the Deployment and Operational View for a Smart Home IoT deployment scenario, identifying the key operational considerations.	8	L3	CO2
Module – 4					
Q7	a	Apply the steps of the IoT Design Methodology to a suitable IoT application and represent them with a neat diagram.	7	L3	CO3
	b	Apply the IoT Design Methodology to a Weather Monitoring IoT system, specifying the Purpose & Requirements, Process Specification, Domain Model, and Information Model.	7	L3	CO3
	c	Explain the motivation for using Python in IoT and identify any four Python packages of interest for IoT with their uses.	6	L2	CO3
OR					
Q8	a	Apply the IoT Design Methodology to a Home Intrusion Detection system using a PIR sensor and Raspberry Pi, specifying the Purpose & Requirements and Process Specification.	7	L3	CO3
	b	Develop a Python program to interface a PIR sensor with Raspberry Pi for home intrusion detection and explain the GPIO configuration used.	7	L3	CO3
	c	Explain the Functional View and physical design considerations of an Air Pollution Monitoring system using a gas sensor and Raspberry Pi.	6	L3	CO3
Module – 5					
Q9	a	Explain the design of a Smart Lighting system for Home Automation with a neat block diagram.	6	L2	CO4
	b	Design a Smart Parking detection system using an ultrasonic sensor and Raspberry Pi, including the sensor interfacing logic.	8	L3	CO4
	c	Explain the Weather Monitoring System and Weather Reporting Bot applications of IoT with a neat diagram.	6	L2	CO4
OR					
Q10	a	Explain the design of a Forest Fire Detection system using IoT with a neat diagram.	6	L2	CO4
	b	Design a Smart Irrigation system for the Agriculture domain, specifying the sensors, control logic, and Python-based automation.	8	L3	CO4
	c	Explain the design of an IoT-based Printer Control System (IoT Printer) as a productivity application.	6	L2	CO4
