CODE No.:20BT61241 **SVEC-20**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B. Tech I Semester (SVEC-20) Regular Examinations

IoT Architecture and Protocols

(Professional Elective -5)

(Cyber Security)

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I						
1.	a)	Explain in detail problem and solution domain partitioning in different levels of abstraction	7 Marks	L2	CO1	PO1
	b)	Illustrate overall IoT architecture objectives	7 Marks	L4	CO1	PO2
(OR)						
2.	a)	Explain the basic IoT architecture	7 Marks	L1	CO1	PO1
	b)	Justify how device management provides efficient means to perform management tasks for devices.	7 Marks	L4	CO1	PO2
UNIT-II						
3.	a)	With a neat sketch explain IoT reference model	7 Marks	L3	CO2	PO2
	b)	With an example, illustrate how information handling happens in IoT system	7 Marks	L4	CO2	PO2
(OR)						
4.	a)	Consider Parking lot scenario and map IoT concepts to develop deployment view of the system	7 Marks	L4	CO2	PO2
	b)	Explain the devices and networks required for developing and implementing IoT solutions in the real world	7 Marks	L2	CO2	PO2
UNIT-III						
5.	a)	Illustrate Zigbee protocol for smart energy in IoT	7 Marks	L4	CO3	PO1
	b)	Compare and Contrast 6LoWPAN, 6TiSCH and 6Lo	7 Marks	L4	CO3	PO2
(OR)						
6.	a)	Sketch the MAC frame structure of IEEE 802.15.4 and illustrate in detail.	7 Marks	L2	CO3	PO1
	b)	Explain about RPL	7 Marks	L2	CO3	PO1
UNIT-IV						
7.	a)	Illustrate the roles and functionality of MQTT protocol with a neat diagram	7 Marks	L4	CO4	PO1
	b)	Explain about SCADA protocol translation	7 Marks	L2	CO4	PO1
(OR)						
8.	a)	Explain about CoAP	7 Marks	L2	CO4	PO1
	b)	Explain in detail about generic we based protocols	7 Marks	L1	CO4	PO2
UNIT-V						
9.	a)	Explain security consideration in MAC 802.15.4	7 Marks	L2	CO5	PO1
	b)	Illustrate the IoT architecture for Smart City	7 Marks	L4	CO5	PO2
(OR)						
10.	a)	Explain about security challenges in IoT	7 Marks	L2	CO5	PO3
	b)	Illustrate the IoT architecture for Smart House	7 Marks	L4	CO5	PO2

CODE No.:20BT61241 **SVEC-20**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B. Tech I Semester (SVEC-20) Regular Examinations

IoT Architecture and Protocols

(Professional Elective -5)

(Cyber Security)

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I						
1.	a)	Explain design principles and needed capabilities of IoT	7 Marks	L2	CO1	PO1
	b)	Compare the characteristics of M2M and IoT	7 Marks	L2	CO1	PO1
(OR)						
2.	a)	With a neat sketch, explain in detail Functional layers and capabilities of an IoT solution.	7 Marks	L3	CO1	PO2
	b)	Explain The landscape of M2M and IoT standardization	7 Marks	L2	CO1	PO1
UNIT-II						
3.	a)	Explain ETSI M2M High-Level Architecture.	7 Marks	L2	CO2	PO1
	b)	Explain M2M Service Capabilities, M2M Nodes and Open Interfaces	7 Marks	L2	CO2	PO1
(OR)						
4.	a)	Explain ETSI M2M service capabilities	7 Marks	L2	CO2	PO1
	b)	Explain OGC functional architecture and interactions	7 Marks	L2	CO2	PO1
UNIT-III						
5.	a)	Explain protocol stack utilizing IEEE 802.15.4	7 Marks	L4	CO3	PO2
	b)	Illustrate ZigBee protocol stack	7 Marks	L4	CO3	PO2
(OR)						
6.	a)	Illustrate ZigBee IP protocol stack	7 Marks	L4	CO3	PO2
	b)	Sketch and explain IEEE 802.15.4 PHY Format	7 Marks	L3	CO3	PO2
UNIT-IV						
7.	a)	Explain protocol stack for transporting serial DNP3 SCADA over IP	7 Marks	L2	CO4	PO1
	b)	Explain a scenario of DNP3 protocol over 6LoWPAN networks with MAP-T	7 Marks	L2	CO4	PO1
(OR)						
8.	a)	Explain in detail generic web-based protocols	7 Marks	L2	CO4	PO1
	b)	Explain about CoAP message format and message fields	7 Marks	L2	CO4	PO2
UNIT-V						
9.	a)	Explain Security Considerations for IEEE 802.15.4 Networks	7 Marks	L2	CO5	PO3
	b)	Explain in detail security feature of 6LoWPAN	7 Marks	L2	CO5	PO3
(OR)						
10.	a)	Illustrate security functions of RPL	7 Marks	L4	CO5	PO3
	b)	Explain in detail about IoT Challenges	7 Marks	L1	CO5	PO3

CODE No.:20BT61241 **SVEC-20**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B. Tech I Semester (SVEC-20) Regular Examinations

IoT Architecture and Protocols

(Professional Elective -5)

(Cyber Security)

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Categorize functional groups across the different layers of IoT and explain in detail	7 Marks	L4	CO1	PO2
	b)	Explain the several properties used for device characterizations	7 Marks	L2	CO1	PO1
		(OR)				
2.	a)	Explain the following i. Basic devices ii. Advanced devices	7 Marks	L2	CO1	PO1
	b)	Illustrate with an example how device management provides efficient means to perform many of the management tasks for devices	7 Marks	L4	CO1	PO2
		UNIT-II				
3.	a)	Categorize three kinds of devices in IoT Domain Model and explain in detail.	7 Marks	L4	CO2	PO2
	b)	Explain about classification of IoT services according to their level of abstraction	7 Marks	L2	CO2	PO1
		(OR)				
4.	a)	With a neat sketch explain the IoT Information Model for Parking lot	7 Marks	L3	CO2	PO2
	b)	Explain about necessary aspects of a trust model according to IoT	7 Marks	L1	CO2	PO1
		UNIT-III				
5.	a)	Sketch and explain IEEE 802.15.4 MAC Format	7 Marks	L3	CO3	PO2
	b)	Explain about DASH7	7 Marks	L2	CO3	PO1
		(OR)				
6.	a)	Illustrate purpose of IEEE 802.11 AH	7 Marks	L4	CO3	PO2
	b)	Explain 802.11ah MAC layer	7 Marks	L2	CO3	PO1
		UNIT-IV				
7.	a)	Justify whether CoAP run over IPv4 or IPv6	7 Marks	L4	CO4	PO2
	b)	With a neat diagram explain CoAP communications in IoT infrastructure	7 Marks	L2	CO4	PO1
		(OR)				
8.	a)	Explain MQTT publish/subscribe framework	7 Marks	L2	CO4	PO1
	b)	Explain categories of MQTT message types	7 Marks	L2	CO4	PO1
		UNIT-V				
9.	a)	Explain with a neat sketch smart city layered architecture	7 Marks	L3	CO5	PO2
	b)	Analyse the devices and sensors required for smart city IoT infrastructure	7 Marks	L4	CO5	PO2

		(OR)				
10.	a)	Explain the role of cloud for smart city applications	7 Marks	L2	CO5	PO3
	b)	Explain about security architecture in different layers for smart city IoT infrastructure	7 Marks	L2	CO5	PO1

CODE No.:20BT61241 **SVEC-20**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B. Tech I Semester (SVEC-20) Regular Examinations

IoT Architecture and Protocols

(Professional Elective -5)

(Cyber Security)

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I						
1.	a)	With neat sketch, explain ETSI M2M Functional Architecture	7 Marks	L3	CO1	PO2
	b)	Explain two or three communications technologies used in distributed M2M applications and the IoT	7 Marks	L2	CO1	PO1
(OR)						
2.	a)	Explain in detail of the following i. Bluetooth Low Energy ii. 6LoWPANiii. RPL	7 Marks	L1	CO1	PO1
	b)	Illustrate the key characteristics of M2M data management	7 Marks	L4	CO1	PO2
UNIT-II						
3.	a)	Illustrate how Security Functional Group ensures the security and privacy of an IoT system	7 Marks	L4	CO2	PO2
	b)	With an example, explain the how information handling is carried in an IoT system	7 Marks	L4	CO2	PO2
(OR)						
4.	a)	Apply deployment and operational view features, explain the functioning of parking lot application	7 Marks	L3	CO2	PO2
	b)	Explain about nonfunctional requirements that need to be satisfied for every application	7 Marks	L2	CO2	PO1
UNIT-III						
5.	a)	Illustrate LoRaWAN layers	7 Marks	L4	CO3	PO2
	b)	Explain in detail about LoRaWAN MAC frame format	7 Marks	L2	CO3	PO1
(OR)						
6.	a)	With a neat sketch explain functioning of LoRaWAN architecture	7 Marks	L3	CO3	PO2
	b)	Explain security measures in LoRaWAN	7 Marks	L2	CO3	PO1
UNIT-IV						
7.	a)	Explain MQTT publish/subscribe framework	7 Marks	L2	CO4	PO1
	b)	Explain categories of MQTT message types	7 Marks	L2	CO4	PO1
(OR)						
8.	a)	Explain MQTT QoS flows	7 Marks	L1	CO4	PO1
	b)	Compare CoAP and MQTT	7 Marks	L2	CO4	PO1
UNIT-V						
9.	a)	With a neat sketch, explain the infrastructure delivering metering data for billing purposes in smart metering	7 Marks	L3	CO5	PO2
	b)	With a neat diagram, explain energy management system in smart house application	7 Marks	L3	CO5	PO2
(OR)						

10.	a)	Explain about functioning of Smart House integration with enterprise services	7 Marks	L2	CO5	PO2
	b)	Explain IEEE 802.15.4 Networks security considerations	7 Marks	L2	CO5	PO3

CODE No.:20BT61241 **SVEC-20**

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

IV B. Tech I Semester (SVEC-20) Regular Examinations

IoT Architecture and Protocols

(Professional Elective -5)

(Cyber Security)

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

		UNIT-I				
1.	a)	Explain about Distributed Business Processes in IoT	7 Marks	L2	CO1	PO1
	b)	Explain about Knowledge Reference Architecture for M2M and IoT.	7 Marks	L1	CO1	PO1
		(OR)				
2.	a)	Explain the following i. Staged Data ii. Strong Type Data iii. Weak Type Data	7 Marks	L1	CO1	PO1
	b)	Explain the several properties used for device characterizations	7 Marks	L2	CO1	PO1
		UNIT-II				
3.	a)	Illustrate how information flow utilizes the IoT Service Resolution FC	7 Marks	L4	CO2	PO2
	b)	Explain the following i. End-to-End Communication ii. Network Communication iii. Hop-by-Hop communication	7 Marks	L1	CO2	PO1
		(OR)				
4.	a)	Explain about IoT-A Functional Model	7 Marks	L2	CO2	PO1
	b)	Explain in detail about IoT Reference Model.	7 Marks	L2	CO2	PO1
		UNIT-III				
5.	a)	" 6LoWPAN standards enable the efficient use of IPv6 over low-power wireless networks on simple embedded devices" – Justify the statement	7 Marks	L4	CO3	PO2
	b)	Compare and Contrast 6LoWPAN, 6TiSCH and 6Lo	7 Marks	L2	CO3	PO1
		(OR)				
6.	a)	Compare and contrast IoT protocol stack utilizing 6LoWPAN and IP Protocol stack	7 Marks	L2	CO3	PO1
	b)	Write short notes on ZigBee smart energy	7 Marks	L1	CO3	PO1
		UNIT-IV				
7.	a)	Explain in detail about XMPP	7 Marks	L1	CO4	PO1
	b)	With a neat sketch explain MQTT message format	7 Marks	L3	CO4	PO2
		(OR)				
8.	a)	Illustrate three levels of MQTT QoS	7 Marks	L4	CO4	PO2
	b)	List the benefits of Data Distribution Service (DDS) and explain	7 Marks	L2	CO4	PO1
		UNIT-V				
9.	a)	Illustrate security functions of RPL	7 Marks	L4	CO5	PO3
	b)	Analyze the role of cloud architecture for smart metering applications	7 Marks	L4	CO5	PO2
		(OR)				

10.	a)	Explain in detail about IoT Challenges	7 Marks	L2	CO5	PO3
	b)	Illustrate the functioning of Smart House integration with enterprise services	7 Marks	L4	CO5	PO2