RV Educational Institutions
RV College of Engineering

Autonomous Institution Affiliated to Visvesvaraya Technological University, Belagavi

Approved by AICTE, New Delhi

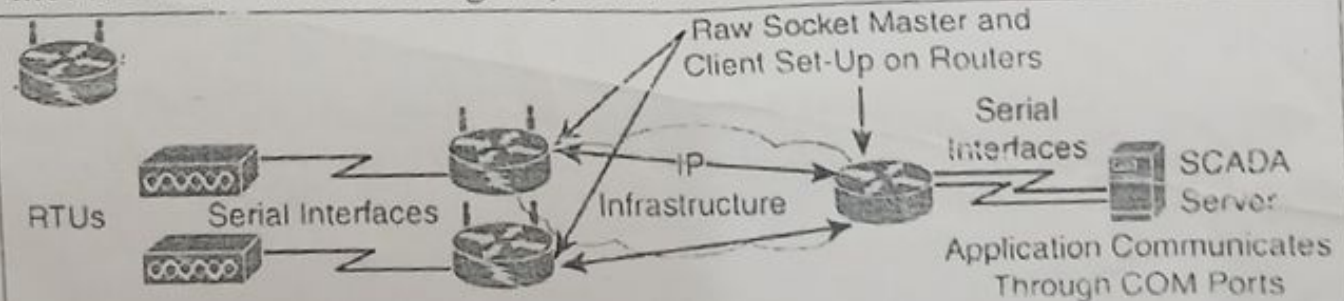
Go, change the world

Academic year 2022-2023 (Odd Sem)

DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

Date	28/4/2023	Maximum Marks	10 + 50
Course Code	22MIT1B3T	Duration	120 Mins
Sem	I	CIE - II	
IoT & APPLICATIONS			

SL No.	Quiz Questions	M	BT	CO
1	Name any 2 medium range communication standards.	2	L1	CO1
2	Draw the high level Zigbee protocol stack.	2	L2	CO2
3	Show the LoRaWAN layers model.	2	L1	CO1
4	List any 2 reasons for necessity of optimization of network.	2	L2	CO3
5	When deployed over _____ subnetworks that are IPv6 only, a transition mechanism, such as _____, needs to be implemented.	2	L2	CO3

SL No.	Test Questions	M	BT	CO
1	Illustrate with listing all the key advantages of IP for IoT with relevant examples.	10	L2	CO1
2	Show how an adaptation layer like 6LoWPAN can be inserted in a TCP-IP model for IoT with neat diagram, features and purpose.	10	L2	CO2
3	 **Scenario A: Raw Socket between Routers – no change on SCADA server** Consider the scenario of tunneling legacy SCADA over IP Networks as shown above and one router at the top left corner is not connected to any node/interface. How to connect the router left out to the serial interfaces? By installing the IP/serial redirector on SCADA server, analyse the changes in the network. With a raw socket between server and router examine the communication effects with a neat diagram.	10	L3	CO2
4	Differentiate between CoAP and MQTT protocols with neat diagrams.	10	L2	CO
5	Design an Edge analytics processing unit for roadway sensors combined with GPS installed for processing of raw input streams and storing the result in Hadoop.	10	L4	CO

RV College of Engineering®
Mysore Road, RV Vidyaniketan Post,
Bengaluru - 560059, Karnataka, India

Go, change the world

Department of Information Science and Engineering

Academic Year: 2023 - 24

MTech in Information Technology & MTech in Software Engineering

Date: 20/3/24	**Course Code: MIT208B3**	**Maximum marks: 50**
Sem: 1st	**Course: IoT & Applications**	**Duration: 120 mnts**

Sl. No.	Quiz Questions	M	BT	CO
1.1	Show the evolutionary phases of Internet.	2	L2	CO1
1.2	Justify why sensors are constrained devices in IoT.	2	L2	CO2
1.3	Smart grid and smart metering applications uses _____ architecture and with _____ layers.	2	L1	CO1
1.4	Differentiate between fog and cloud computing.	2	L2	CO3
1.5	Name any 2 bio sensors.	2	L2	CO3

Sl. No.	Questions	M	BT	CO
1	Differtiate between Operational and Information Technology with examples.	10	L2	CO1
2	Explain 7 layers of IoT Reference model with neat diagram.	10	L2	CO2
3	Write short notes on Edge and Fog computing.	10	L2	CO2
4	List and describe with examples any 10 sensors used in IoT.	10	L2	CO3
5	Highlight the communication criteria for IoT with Range and Frequency bands.	10	L2	CO3

BT-Blooms Taxonomy, CO-Course Outcomes, M-Marks

CO1	:	Compare and contrast the deployment of smart objects and the technologies to connect them to network.
CO2	:	Appraise the role of IoT protocols for efficient network communication.
CO3	:	Elaborate the need for Data Analytics and Security in IoT.
CO4	:	Illustrate different sensor technologies for sensing real world entities and identify the applications of IoT in Industry.

-	Particulars		CO1	CO2	CO3	CO4	L1	L2	L3	L4	L5	L6
	Test	Max Marks	14	22	24	-	2	58	-	-	-	-

RV College of Engineering®
Mysore Road, RV Vidyaniketan Post,
Bengaluru - 560059, Karnataka, India

Go, change the world

Department of Information Science and Engineering

Academic Year: 2023 - 24

MTech in Information Technology & MTech in Software Engineering

CIE-II

Date: 2/5/24	**Course Code: MIT208B3**	**Maximum marks: 50**
Sem: 1st	**Course: IoT & Applications**	**Duration: 110 mnts**

Sl. No.	Quiz Questions	M	BT	CO
1.1	List any 2 reasons for necessity of optimization of network.	2	L2	CO3
1.2	For _____ subnetworks that are IPv6 only, a transition mechanism, such as _____ needs to be implemented.	2	L2	CO3
1.3	Draw the high level IoT protocol stack for COAP & MQTT	2	L2	CO4
1.4	There are ____ number of ground pins and ____ number of voltage pins in *Raspberry pi IoT* board.	2	L2	CO3
1.5	Name any 2 sensors for smart agricultural applications.	2	L1	CO4

Sl. No.	Questions	M	BT	CO
1	Illustrate in detail any 5 key advantages of Internet Protocol to suit the business case for IP.	10	L2	CO2
2	Analyse with neat diagrams how 6LoWPAN to 6Lo optimization is considered with 3 reasons as header compression, fragmentation and mesh addressing.	10	L4	CO2
3	Explain MQTT protocol in detail with neat diagrams.	10	L1	CO4
4	Design and write the python code with diagram for identification of light sensitivity using LDR sensor and actuators with raspberry Pi board experiment steps.	10	L6	CO4
5	Design and write the python code with diagram for object identification using PIR sensor and actuators with raspberry Pi board experiment steps.	10	L6	CO4

BT-Blooms Taxonomy, CO-Course Outcomes, M-Marks

CO1	Compare and contrast the deployment of smart objects and the technologies to connect them to network.
CO2	Appraise the role of IoT protocols for efficient network communication.
CO3	Elaborate the need for Data Analytics and Security in IoT.
CO4	Illustrate different sensor technologies for sensing real world entities and identify the applications of IoT in Industry.

Particulars		CO1	CO2	CO3	CO4	L1	L2	L3	L4	L5	L6
Test	Max	-	20	6	32	12	18	-	10	-	20

RV Educational Institutions
RV College of Engineering

Autonomous Institution Affiliated to Visvesvaraya Technological University, Belagavi

Approved by AICTE, New Delhi

Go, change the world

Academic year 2022-2023 (Odd Sem)

DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

Date	30/5/2023	Maximum Marks	10 + 50
Course Code	22MIT1B3T	Duration	120 Mins
Sem	I	CIE - III	
IoT & APPLICATIONS			

III

SL No.	Quiz Questions	M	BT	CO
1	Network analytics is concerned with _____ in the communication flows from a _____ perspective.	2	L1	CO2
2	Two of the major challenges in securing industrial environments have been _____ and _____.	2	L2	CO3
3	Draw the OCTAVE Allegro Steps and Phases.	2	L1	CO3
4	Name any 2 IoT physical device enablers. Microcontrollers (Sensors and Actuators	2	L2	CO4
5	Name any 2 sustainable development IoT examples. Energy efficiency Environmental monitoring & manage	2	L2	CO4

SL No.	Test Questions	M	BT	CO
1	Draw a neat Flexible Netflow Architecrure and explain the functioning of the same.	10	L2	CO3
2	Illustrate any 2 common industrial protocols and their respective security concerns in detail with figures.	10	L2	CO2
3	Demonstrate the steps for installing Arduino and Raspbeerry softwares with any 5 differences between the two.	15	L3	CO4
4	Devise a designs and codes for the following using Raspberry pi board for object and light detection separately.	15	L4	CO3

BT-Blooms Taxonomy, CO-Course Outcomes, M-Marks

Marks Distribution	Particulars		CO1	CO2	CO3	CO4	L1	L2	L3	L4	L5	L6
	Quiz	10	-	2	4	4	4	6	2	-	-	-
Percentage Distribution	Test & Quiz	10+50	-	20%	48.3%	31.6%	40%	43.3%	28.3%	30%	-	-

Marks Distribution	Particulars		CO1	CO2	CO3	CO4	L1	L2	L3	L4	L5	L6
	Test	Max Marks	-	10	25	15	-	20	15	15	-	-

****

June-2023 PG Examination

USN | 1 | R | V | 2 | 2 | S | 1 | T | 1 | 7 |

22MIT1B3T

RV COLLEGE OF ENGINEERING®

(An Autonomous Institution affiliated to VTU, Belagavi)

I Semester Master of Technology (Common to MSE & MIT)

IOT AND APPLICATIONS (ELECTIVE)

Time: 03 Hours *Maximum Marks: 100*

Instructions to candidates:

1. Each unit consists of two questions of 20 marks each.
2. Answer FIVE full questions selecting one from each unit.

UNIT-1

1	a	Highlight the differences between convergence of Operational and Information technology with examples.	10
	b	Illustrate the IoT architectural drivers in detail applied for a real time supply management and logistics system.	10
		OR	
2	a	Explain the simplified IoT architecture with expanded view in detail.	10
	b	Examine to realize how Cisco Jasper is useful in data analytics and control applications.	10

UNIT-2

3	a	Differentiate between sensors and actuators with example and applications.	10
	b	Describe in detail the characteristics and trends of smart objects.	10
		OR	
4	a	State the Protocol Stacks Utilizing 802.15.4 with common types of deployment.	10
	b	Write the short notes on LoRaWAN technology. Discuss the features of LoRaWAN technology.	10

UNIT-3

5	a	Show how an adaptation layer like 6loWPAN can be inserted in a $TCP-IP$ model for IoT with a neat diagram, features and purpose.	10
	b	Differentiate between CoAP ad *MQTT* protocols with neat diagrams.	10
		OR	
6	a	Listing all the key advantages, explain *IP* for IoT with relevant examples.	10
	b	State the process of adopting *SCADA* for *IP* in detail.	10

UNIT-4

7	a	Design an edge analytics processing unit for roadway sensors combined with *GPS* installed for processing of raw input streams and storing the result in Hadoop.	10
	b	Write short notes on *NoSQL* databases and Apache kafka.	10

		OR	
8	a	Illustrate any two common industrial protocols and their respective security concerns in detail with the help of neat diagrams.	10
	b	Explain formal risk analysis structure *OCTAVE* in detail.	10

UNIT-5

9	a	List and explain the steps for installing Arduino and Raspberry softwares with any two differences between them.	10
	b	Design and code using Raspberry pi board for object and light detection separately.	10
		OR	
10		Write short notes on the following: a) Smart agriculture. b) Smart cities. c) Smart Grid d) Smart office.	20

June-2024 PG Examinations

USN | 1 | R | V | 2 | 3 | 5 | 1 | 7 | A | 1 |

MIT208B3

RV COLLEGE OF ENGINEERING®

(An Autonomous Institution affiliated to VTU, Belagavi)

I Semester Master of Technology (Information Technology)

IOT AND APPLICATIONS

Time: 03 Hours *Maximum Marks: 100*

Instructions to candidates:

1. Each unit consists of two questions of 20 marks each.
2. Answer FIVE full questions selecting one from each unit.

UNIT-1

			M	BT	CO
1	a	With the definition of *IOT*, show the evolutionary phase of *IOT*.	10	1	1
	b	Apply and map to illustrate the *IoT* architectural drivers in detail for real time Google's Self-Driving Car.	10	3	3
		OR			
2	a	With the help of examples compare Operational Technology (*OT*) and Information Technology (*IT*).	10	2	1
	b	Analyze to realize how Cisco Jasper is useful in data analytics and control applications.	10	4	4

UNIT-2

3	a	List and explain any 10 sensors categories and types with examples.	10	1	1
	b	Write the Characteristics of a Smart Object with the help of neat diagram.	10	2	1
		OR			
4	a	Illustrate the deployment types of *IEEE* 802.15.4 along with the protocol stack.	10	2	2
	b	Explain the *IEEE* 802.15.4 *MAC* Format with the neat diagram.	10	1	2

UNIT-3

5	a	Illustrate with listing all the key advantages of *IP* for IoT with relevant examples.	10	2	2
	b	Show how an adaption layer helps in Optimizing *IP* for IoT.	10	2	2
		OR			
6	a	Illustrate the use of Raw Socket *TCP* or *UDP* Scenarios for Legacy Industrial Serial Protocols.	10	2	2
	b	Explain with the help of neat diagram *DNP3* Protocol over *6LoWPAN* Network with $MAP-T$.	10	1	2

UNIT-4

7	a	Illustrate the data analysis types in *IOT* with the help of an example.	10	2	3
	b	Design and illustrate how data blocks are distributed across the cluster.	10	2	3

		OR			
8	a	Write short notes on Edge Streaming Analytics with a neat diagram.	10	2	3
	b	Justify how a formal risk analysis structures *OCTAVE & FAIR* helps in IoT data analytics.	10	2	3

UNIT-5

9	a	Name any two IoT boards and list the applications built using them with listing out the differences between the both.	10	2	4
	b	Design an smart lighting application using raspberry *pi* board and explain the working model for smart home application.	10	3	4
		OR			
10	a	Justify how smart agriculture will make a difference from the traditional method of agriculture with listing the benefits of the first.	10	2	4
	b	Mention any two use cases for smart city application and how it is going to change the city environment for the betterment.	10	1	1