SREENIVASA INSTITUTE OF TECHNOGY AND MANAGEMENT STUDIES
(AUTONOMOUS)
Murukambattu, Chittoor

MCA DEPARTMENT

QUESTION BANK

INTERNET OF THINGS (20MCA221)

Regulation – 2020

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Prepared by

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SUBJECT NAME : INTERNET OF THINGS   **SUBJECT CODE : 20MCA221**
YEAR & SEM : II-II   **Academic Year : 2022-23**

UNIT - 1: INTRODUCTION TO INTERNET OF THINGS

Introduction, Definition and characteristics of IoT - Physical Design of IoT-Things in IoT, IoT protocols-Logical design of IoT- IoT Functional blocks, IoT Communication Models, IoT Communication APIs- IoT Enabling Technologies- Wireless Sensor Networks, Cloud Computing, Big Data Analytics, Communication protocols, Embedded Systems-IoT Levels and Deployment Templates-Iot Level-1,IoT Level-2, IoT Level-3, IoT Level-4, IoT Level-5, IoT Level-6.
Domain Specific IoTs-Introduction-Home Automation-Smart lighting, Smart Appliances, Intrusion Detection, Smoke/Gas Detectors-Cities-Smart Parking, Smart Lighting, Smart Roads, Structural Health Monitoring, Surveillance, Emergency Response-Environment-Weather Monitoring, Air Pollution Monitoring, Noise Pollution Monitoring, Forest fire detection, River Floods Detection-Energy- Smart Grids, Renewable Energy Systems, Prognostics-Retail-Inventory Management, Smart Payments, Smart Vending Machines-Logistics-Route Generation and Scheduling, Fleet Tracking, Shipment Monitoring ,Remote Vehicle Diagnostics.

Agriculture-Smart Irrigation, Green House Control. Industry-Machine Diagnosis and Prognosis, Indoor Air Quality Monitoring. Health and Lifestyle- Health and fitness Monitoring, Wearable Electronics.

Q. No.	Questions	Blooms Taxonomy Level	POs
	PART -A		
1	Define IOT.	Remembering	PO1
2	What are the characteristics of IOT	Remembering	PO1
3	Describe things in the IOT	Understanding	PO1
4	Write short note on Sensors & Actuators	Remembering	PO1,PO2
5	List out the Applications of IOT	Remembering	PO1
6	What are the various IOT Protocols used?	Remembering	PO1,PO2
7	List out different Communication Models.	Remembering	PO1,PO2
8	Demonstrate various domains where IOT applications developed.	Apply	PO1,PO2
9	Write short notes on Smart Home	Remembering	PO1
10	Write short notes on Smart Cities	Remembering	PO1
11	Write short note on IOT application in the Health care industry.	Remembering	PO1
	PART –B		
1	Illustrate various IOT Protocols briefly	Apply	PO1,PO2
2	Explain various communication models with suitable diagrams.	Understanding	PO1
3	Demonstrate IOT Communication APIs in detail.	Apply	PO1,PO2
4	Explain in detail about Logical design of IOT.	Understanding	PO1,PO2
5	Discuss various IOT enabling Technologies.	Understanding	PO1,PO2
6	Summaries IOT Levels and Deployment Templates	Understanding	PO1
7	Discuss in detail about Domain Specific IOT.	Understanding	PO1,PO2

UNIT - 2 : IOT AND M2M

Introduction-M2M - Difference between IoT and M2M-SDN and NFV for IoT- Software Defined Networking, Network Function Virtualization- IoT system Management with NETCONF-YANG.
Need for IoT Systems Management- Simple Network Management Protocol(SNMP)- Limitations of SNMP-Network Operator Requirements- NETCONF-YANG- IoT Systems Management with NETCONF-YANG-Netopeer.

	PART -A		
1	Demonstrate on M2M.	Apply	PO1,
2	Compare IOT and M2M	Evaluating	PO1,PO2
3	Define SDN.	Remembering	PO1,PO2
5	Describe NFV.	Remembering	PO1

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6	What are the key elements in SDN	Remembering	PO1,PO2
7	What is the need for IOT system Management?	Remembering	PO1,PO2
8	Define SNMP.		
9	Write short note on NETCONF-YANG model	Remembering	PO1,PO2
10	What are the steps for IOT device management with NETCONF -YANG	Remembering	PO1
11	Illustrate briefly about NETOPEER.	Analyzing	PO1
PART -B			
1	Differentiate between IOT and M2M	Understanding	PO1
2	Explain SDN architecture with a neat diagram	Evaluating	PO1
3	Explain NFV architecture with a neat diagram.	Understanding	PO1,PO2
4	Describe SNMP. Paraphrase limitations of SNMP Network.	Understanding	PO1
4	Discuss IOT Systems Management with NETCONF-YANG	Understanding	PO1
5	Illustrate NETOPEER as a open source NETCONF tool.	Analysing	PO1,PO2

UNIT - 3 : DEVELOPING INTERNET OF THINGS

IoT platforms Design Methodology: Introduction-IoT design Methodology-Step 1:Purpose and Requirements specification, Step 2:Process specification, step 3:Domain model Specification, step 4:Information Model Specification ,step 5:Service Specifications, step 6:IoT Level Specification, Step 7:Functional view specification, step 8:Operational view specification, step 9:Device and Component Integration, Step 10:Application Development-Case study on IoT system for weather Monitoring-Motivation for using Python- IoT systems-Logical Design using Python-Introduction- Installing Python-Python data Types & Data Structures- Numbers, Strings, Lists, Tuples, Dictionaries, Type Conversions- Control Flow-if,for,while,range,break/continue,pass-Functions-Modules-Packages-File Handling-Date/Time Operations-Classes-Python Packages of interest for IoT- JSON, XML, HTTP Lib & URL Lib ,SMTP Lib.

PART – A			
1	What are the steps involved in IOT platform design methodology?	Remembering	PO1
2	Write short notes on domain model specification	Understanding	PO1
3	Determine how the information model specification is done	Apply	PO1,PO2
4	Write short note on functional view specification.	Remembering	PO1
5	Write short note on operational view specification	Remembering	PO1,PO2
6	Describe Python data types	Understanding	PO1,PO2
7	Explain python packages	Understanding	PO1
8	Describe python modules	Understanding	PO1,PO2
	List out python packages of interest for IOT.	Remembering	
PART –B			
1	Illustrate IOT platform design methodology	Understanding	PO1
2	Explain operational and functional view specification of Design methodology	Understanding	PO1
3	Illustrate IOT system for weather monitoring	Apply	PO!,PO2
4	Describe python data types in detail	Understanding	PO1
5	Explain python packages and methods.	Understanding	PO1
6	Explain python packages of interest to IOT	Understanding	PO1

UNIT - 4 :INTEGRATED BILLING SOLUTIONS IN THE INTERNET OF THINGS

Integrated Billing Solutions in the Internet of Things - Cost of RFID and the Internet of Things, Benefits of RFID and the Internet of Things, Cost Benefit Sharing, A Technical Framework for Integrating Billing Capabilities into

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the EPC global Network- Business Models for the Internet of Things-Business Models and Business Model Innovation- Value Creation in the Internet of Things -Exemplary Business Model Scenarios for the Internet of Things - Product as a Service (PaaS), Information Service Provider, End- user Involvement, Right-time Business Analysis and Decision making.

	PART – A		
1	Illustrate the different cost level for IOT	Analyze	PO1
2	Assess the benefits of RFID in IOT	Evaluate	PO1
3	Demonstrate Cost benefits of RFID	Remembering	PO1,PO2
4	Outline the Law of Information	Analyze	PO1
5	Examine what is the infrastructure component of business level?	Apply	PO1,PO2
6	What is value proposition?	Remembering	PO1,PO2
7	What is EPCIS?	Remembering	PO1
8	Define value creation in IOT	Remembering	PO1
9	Define Business model	Remembering	PO1,PO2
	PART –B		
1	Discuss in detail about how cost of RFID it's impact on IOT?	Understanding	PO1
2	Summarize any five benefits of RFID in IOT	Understanding	PO1
3	With neat diagram, Summarize the fact incorporated in business model Frameworks.	Understanding	PO1,PO2
4	Consolidate the opportunities for new business and printing models for IOT with Law of Information.	Evaluate	PO1
	Discuss about Technical Framework for Integrating Billing Capabilities into the EPC global Network.	Understanding	PO1,PO2
5	Describe any two scenario about Exemplary business model scenario for IOT	Understanding	PO1
	UNIT - 5 : WEB OF THINGS		

From the internet of things to the web of things-Designing RESTful smart things-Modeling Functionality as Linked Resources-Representing Resources, Servicing Through a Uniform Interface, Syndicate Things, things calling back: web hooks web enabling Constrained Devices-Physical Mashups: Recomposing the Physical World-Energy Aware Mashup: Energies Visible, Business Intelligence Mashup: RESTful EPICS,A Mashup editor for the Smart Home-Future of Web of things-Real time web of things, Finding and Describing Smart Things, Sharing Smart Things-Discussing the future Web of things-Conclusion- Semantic Web-Semantic web services, Semantic web services processes and Lifecycle-Ontology-Ontology Engineering Methodologies, Application of Ontology Engineering in the Internet of Things, Ontology and the Organizational Perspective, Ontology and the I-T system Perspective, Ontology and the Data Perspective, Ontologies in Multi-agent Systems, The Role of a Top-Level Ontology.

	PART – A		
1	Differentiate IOT with WOT	Remembering	PO1
2	What are the resource representation formats?	Remembering	PO1
3	Define Smart Gateway.	Remembering	PO1,PO2
4	Write short notes on physical mashups	Remembering	PO1
5	What is Energy Aware Mashup?	Understanding	PO1,PO2
6	Write short note on Business Intelligence Mashup	Understanding	PO1
7	Explain RESTful EPICS	Understanding	PO1
8	Justify how Finding and Describing Smart Things be done?	Evaluate	PO1
9	Define Semantic web	Remembering	PO1,PO2
10	Define Ontology	Remembering	PO1
11	What is the role of top level ontology?	Remembering	PO1,PO2

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	PART –B		
1	Summarize web of things, compare IOT with WOT	Understanding	PO1
2	Illustrate designing of RESTfull smart thing.	Apply	PO1
3	Explain web enabled constraint devices	Understanding	PO1,PO2
4	Paraphrase finding and describing smart things	Understanding	PO1
5	Summarize the Semantic web service process and life cycle	Understanding	PO1
6	How Ontology is accustomed with different perspective? Explain in detail	Applying	PO1
7	Explain about Ontology on multi agent system	Understanding	PO1
8	Explain about role of top level systems of Ontology	Understanding	PO1,PO2