SRM VALLIAMMAI ENGINEERING COLLEGE

SRM Nagar, Kattankulathur – 603 203

DEPARTMENT OF

COMPUTER SCIENCE AND ENGINEERING

QUESTION BANK

VII SEMESTER

1904708-INTERNET OF THINGS

Regulation - 2019

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Prepared by

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SUBJECT : 1904708 –INTERNET OF THINGS

SEM / YEAR : VII - Final year

UNIT I INTRODUCTION			
Introduction to IoT concept, Objective, IoT History , Introduction to IoT communication, Why IoT, IoT Architecture, Telemetry Vs IoT, IoT Technologies behind smart & Intelligence devices, IoT Application: Home Automation, Health monitoring system, Smart Transportation and Smart Shopping.			
PART A			
Q.NO	**QUESTIONS**	**COMPETENCE**	**LEVEL**
1.	**Define** IoT.	Remember	BTL-1
2.	**Give** the basic objectives of IoT.	Understand	BTL-2
3.	**Pointout** the challenges faced by Internet of Things.	Analyze	BTL-4
4.	**Summarize** the characteristics of IoT.	Evaluate	BTL-5
5.	**List** the applications of IoT.	Remember	BTL-1
6.	**Examine** IoT Reference model.	Apply	BTL-3
7.	**Define** three communication technologies IOT uses.	Remember	BTL-1
8.	**Examine** the role of wireless communication in IOT.	Remember	BTL-1
9.	**Summarize** the advantages of using IOT.	Evaluate	BTL-5
10.	**Quote** the protocols used in IOT Data Protocols.	Remember	BTL-1
11.	**Differentiate** IoT and Artificial Intelligence.	Understand	BTL-2
12.	**Give** the different wireless protocols smart devices use.	Understand	BTL-2
13.	**Classify** the IOT communication model.	Apply	BTL-3

14.	**Generalize** the term "things" in IoT.	Create	BTL-6
15.	**Compare** IOT and Telemetry.	Analyze	BTL-4
16.	**Analyze** the purpose of IOT and its applications.	Analyze	BTL-4
17.	**List** the four layers of IoT.	Remember	BTL-1
18.	**Summarize** the characteristics of IIOT.	Understand	BTL-2
19.	**Classify** the four different components of IOT architecture.	Apply	BTL-3
20.	**Formulate** the disadvantages involved in developing IOT.	Create	BTL-6
21.	**Express** the term "smart city" in IOT.	Understand	BTL-2
22.	**Show** how sensors can be used to develop IOT.	Apply	BTL-3
23.	**Pointout** the role of Gateway in IOT.	Analyze	BTL-4
24.	**Assess** the use of sensor in an IOT device.	Evaluate	BTL-5
	PART B		
1.	**Describe** the IOT architecture in detail. (13)	Understand	BTL-2
2.	**Illustrate** the history of IOT. (13)	Apply	BTL-3
3.	**Analyze** in detail IOT Digitization. (13)	Analyze	BTL-4
4.	**(i) List** the evolutionary phases of the Internet. Explain them briefly. (7) **(ii) Describe** the process of connecting Smart Objects. (6)	Remember	BTL-1
5.	**Compare** in detail the IOT and IIOT. (13)	Analyze	BTL-4
6.	**Summarize** in detail IoT data management: the benefits, challenges and strategies. (13)	understand	BTL-2
7.	**Discuss** the technology behind using IOT. (13)	Understand	BTL-2
8.	**Describe** in detail IOT implementation challenges. (13)	Remember	BTL-1
9.	**(i) Evaluate** the IOT data management and compute stack. (7) **(ii) Explain the** convergence of IT and OT. (6)	Evaluate	BTL-5
10.	**(i) Tabulate** the elements of M2M IOT architecture. (7) **(ii) Describe** the simplified IoT Architecture. (6)	Remember	BTL-1
11.	(i) **Analyze** in detail about relationship between WSN and IOT. (7) (ii) **Pointout** the Communication criteria and Access Technologies for connecting smart Objects. (6)	Analyze	BTL-4
12.	**Describe** the seven layers of IoT Reference model designed by IoTWF. (13)	Remember	BTL-1

13.	**Demonstrate** the Simplified IoT Architecture and Core IoT Functional Stack with neat diagram. (13)	Apply	BTL-3
14.	**(i) Generalize** the various enabling technologies of IoT. (7) **(ii) Formulate** the evolutionary trend of IoT with necessary illustration. (6)	Create	BTL-6
15.	**Discuss** how 5G cellular networks could impact IOT. (13)	Understand	BTL-2
16.	**Examine** in detail the role of IOT in the healthcare industry. (13)	Apply	BTL-3
17.	**Explain** some of the use cases for IOT data Analytics. (13)	Evaluate	BTL-5
	PART C		
1.	**Summarize** the challenges and requirements faced by the IoT systems, which paved way to network architecture and compare the two best known architecture supported by OneM2M and IoTWF. (15)	Evaluate	BTL-5
2.	**Prepare** a detailed analysis of smart objects and their architecture thereby elaborating the design limitations and role within IoT Networks. (15)	Create	BTL-6
3.	**Develop** a narration on IoT Access technologies that plays a major role in market. Give suitable examples explaining the technologies. (15)	Create	BTL-6
4.	**Measure** the extent of benefits that can be provided by IOT for Home Automation, Health monitoring system, Smart Transportation and Smart Shopping. (15)	Evaluate	BTL-5
5.	**Explain** how edge computing benefit can benefit IOT. (15)	Evaluate	BTL-5
	UNIT II INTRODUCTION IOT HARDWARE/DEVICES		
	Basics Of Microcontroller, Microprocessor Vs Microcontroller, Types of Sensor, actuators and their application, Programming Fundamentals(C Programming), Introduction to Arduino microcontroller, hands on Arduino, Arduino board layout and LED Blinking temperature sensor application.		
	PART A		
1.	**Define** Microcontrollers.	Remember	BTL-1
2.	**Where t**he criteria used to classify Actuators.	Remember	BTL-1
3.	**Analyze** the purpose of Sensors, Actuators and Smart Objects.	Analyze	BTL-4
4.	**Examine** the use of four building blocks of IOT Device Hardware.	Remember	BTL-1
5.	**Illustrate** the microcontroller in IOT.	Apply	BTL-3
6.	**Give** the features of Arduino microcontroller.	Understand	BTL-2
7.	**Compare** IOT and Arduino.	Analyze	BTL-4

8.	**Analyze** the challenges faced by IOT industry applications.	Analyze	BTL-4
9.	**Demonstrate** the use of sensor nodes.	Apply	BTL-3
10.	**Express** the differences between Microprocessor and Microcontrollers.	Understand	BTL-2
11.	**Examine** the role of programming in IOT.	Apply	BTL-3
12.	**Generalize** the analog pins are used in Arduino Mega board.	Create	BTL-6
13.	**Distinguish** whether an Arduino code an Object-Oriented programming language or a Procedural programming language.	Understand	BTL-2
14.	**Define** softwares used in IOT.	Remember	BTL-1
15.	**Evaluate** the hardware providers for IOT.	Evaluate	BTL-5
16.	**Formulate** how Raspberry Pi products is different from Arduino microcontroller .	Create	BTL-6
17.	**Differentiate** between temperature sensor and proximity sensor.	Understand	BTL-2
18.	**Conclude** on the various chips on embedded system.	Evaluate	BTL-5
19.	**Define** Acoustic sensors.	Remember	BTL-1
20.	**List** the linux version on Raspberry Pi.	Remember	BTL-1
21.	**Distinguish** between Arduino and Raspberry Pi.	Understand	BTL-2
22.	**Examine** how actuators are used to make a mechanical movement.	Apply	BTL-3
23.	**Pointout** the differences between Arduino and IOT.	Analyze	BTL-4
24.	**Assess** the processors used in IOT devices.	Evaluate	BTL-5
	PART B		
1.	(i)**Tabulate** the key steps involved in IoT Design methodology. (8) (ii) **Describe** hardwares included in IOT. (5)	Remember	BTL-1
2.	**Analyze** in detail use of IOT as software and Hardware. (13)	Analyze	BTL-4
3.	**Compare** and contrast the physical and MAC layers of IoT Access technologies with suitable illustrations.	Evaluate	BTL-5
4.	**Discuss** the following: (i) About embedded computing. (7) (ii) Microcontroller and chips involved in embedded devices. (6)	Understand	BTL-2
5.	**Examine** the following with neat illustration: (i) Raspberry Pi. (7) (ii) Arduino board details. (6)	Remember	BTL-1
6.	**Demonstrate** in detail about the arduino board details and explain the steps for installing the board. (13)	Apply	BTL-3

7.	**Summarize** the the building blocks of IoT and its functionalities with suitable illustration. (13)	Understand	BTL-2
8.	**Describe** about the following: (i) Arduino design board. (7) (ii) The building blocks of IoT (6)	Remember	BTL-1
9.	**Tabulate** the steps for designing IoT system with neat diagram. (13)	Remember	BTL-1
10.	**Discuss** in detail about IoT device and give a detailed narration of IoT device example in real world applications. (13)	Understand	BTL-2
11.	**Analyze** in detail Interfacing LED and switch with Raspberry Pi as an example. Give the procedure. (13)	Analyze	BTL-4
12.	**Demonstrate** the software and hardware features of Arduino board and explain the procedure to install IDE. (13)	Apply	BTL-3
13.	**Generalize** in detail about: (i) Optimizing IP for IoT. (7) (ii) 6LoWPAN to 6Lo. (6)	Create	BTL-6
14.	**Analyze** the embedded computing logic and use of microcontroller in embedded system with neat diagram. (13)	Analyze	BTL-4
15.	**Summarize** the statement "Raspberry Pi: The next revolution in the internet of things"	Understand	BTL-2
16.	**Illustrate** how Arduino is the future of IOT. (13)	Apply	BTL-3
17.	**Explain** LED Blinking temperature sensor application. (13)	Evaluate	BTL-5
	PART C		
1.	**Assess** in detail the IoT device and give a detailed narration of IoT device example in real world applications. (15)	Evaluate	BTL-5
2.	**Prepare** some examples that define IoT devices and explain in brief the basic building block and layers in IoT system with diagram. (15)	Create	BTL-6
3.	**Generalize** in detail in detail Programming Raspberry Pi with python by giving suitable example. Also elaborate on Raspberry Pi interfaces. (15)	Create	BTL-6
4.	**Explain** in detail basic arduino board and explain the procedure for installing and setting up of IDE. (15)	Evaluate	BTL-5
5.	**Generalize** how microcontrollers play a role for enabling IOT. (15)	Create	BTL-6
	UNIT III BASICS OF NETWORK/COMMUNICATION PROTOCOL		
Types of IoT Network and topology, Communication protocol-MQTT, Introduction to cloud services-Blynk. Introduction to IoT security.			
	PART A		
1.	**List** the types of IOT Networks.	Remember	BTL-1
2.	**Give** the characteristics of IOT topology.	Remember	BTL-1
3.	**Name** the communication protocols used in IOT.	Remember	BTL-1

4.	**Give** the differences between IT and OT.	Analyze	BTL-4
5.	**Differentiate** mesh and star topology in IOT.	Understand	BTL-2
6.	**Examine** the integration of device and component in IoT design methodology.	Apply	BTL-3
7.	**Compare** MQTT and HTTP.	Analyze	BTL-4
8.	**Examine** the use and purpose of IOT protocols.	Remember	BTL-1
9.	**Name** the MQTT Qos levels.	Remember	BTL-1
10.	**Summarize** on security of MQTT protocols.	Evaluate	BTL-5
11.	**Discuss** about cloud computing.	Understand	BTL-2
12.	**Illustrate** the cloud services used for IOT.	Apply	BTL-3
13.	**Discuss** the benefits of IOT Cloud.	Understand	BTL-2
14.	**Analyze** the role of cloud computing using IOT.	Analyze	BTL-4
15.	**Pointout** the need of computing power, reliability, connectivity in revolutionizing IOT.	Analyze	BTL-2
16.	**Generalize** the steps required for connecting Blynk to IOT.	Create	BTL-6
17.	**Illustrate** the use of Blynk server.	Apply	BTL-3
18.	**Summarize** the security issues in IOT.	Evaluate	BTL-5
19.	**Generalize** the Microsoft Azure IOT features.	Create	BTL-6
20.	**List** the cloud platforms used in IOT.	Remember	BTL-1
21.	**Differentiate** between IOT data and network protocols.	Understand	BTL-2
22.	**Examine** why is cloud desirable for IOT.	Apply	BTL-3
23.	**Pointout** the measures to improve IOT Security.	Analyze	BTL-4
24.	**Assess** the standard port number of a secure MQTT.	Evaluate	BTL-5
	PART B		
1.	**Demonstrate** the role of topologies in building IOT. (13)	Apply	BTL-3
2.	(i) **Summarize** the roles of IPv6, Zigbee , Bluetooth , RFID in IOT. (7) (ii) **Explain** the key differences between Zigbee and DigiMesh. (6)	Evaluate	BTL-5
3.	**Formulate** on the role of MQTT in IOT. (13)	Create	BTL-6

4.	**Discuss** in detail the use of communication protocols in the design of IoT systems. (13)	Understand	BTL-2
5.	(i) **Analyze** in detail about IOT Networks. (7) (ii) **Explain** in detail how MQTT works. (6)	Analyze	BTL-4
6.	**Illustrate** in detail the general architecture of MQTT . (13)	Apply	BTL-3
7.	**Discuss** in detail about MQTT Message format, MQTT packet structure, fixed header, flag bits. (13)	Understand	BTL-2
8.	**(i) List** the MQTT message types and mention their roles. (7) **(ii) Examine** the real world applications of MQTT. (6)	Remember	BTL-1
9.	**Describe** the steps for designing IoT system with neat diagram.	Remember	BTL-1
10.	(i) **Examine** the limitations of MQTT protocols. (7) (ii) **Describe** the publish-subscribe architecture of MQTT. (6)	Remember	BTL-1
11.	**Define IoT** cloud platforms with suitable examples. (13)	Remember	BTL-1
12.	**Discuss** in detail the reasons why HTTP is not used for IOT applications. (13)	Understand	BTL-2
13.	**Analyze** in detail the key features of IOT cloud platform. (13)	Analyze	BTL-4
14.	**Analyze** in detail about IOT Security. (13)	Analyze	BTL-4
15.	**Express** in detail the threats that can affect the overall working of IOT devices. (13)	Understand	BTL-2
16.	**Discover** the challenges the IOT may face after its overall implementation. (13)	Apply	BTL-3
17.	**Evaluate** in detail about the implementation of Blynk IOT in cloud platform. (13)	Evaluate	BTL-5
	PART C		
1.	**Explain** in detail the specific strategies to secure the IOT . (15)	Evaluate	BTL-5
2.	**Pointout** some security issues in IOT and ways in which they can be dealt with. (15)	Evaluate	BTL-5
3.	**Formulate** how to build a Blynk cloud platform. (15)	Create	BTL-6
4.	**Design** star toplogy and explain it by comparing it with mesh topology in IOT platform. (15)	Create	BTL-6
5.	**Explain** the meaning of the term "Integrating Cloud Computing and IOT" with suitable examples. (15)	Evaluate	BTL-5

UNIT IV DATA ANALYTICS AND SUPPORTING SERVICES

Structured Vs Unstructured Data and Data in Motion Vs Data in Rest – Role of Machine Learning – No SQL Databases – Hadoop Ecosystem – Apache Kafka, Apache Spark – Edge Streaming Analytics and Network Analytics – Xively Cloud for IoT, Python Web Application Framework – Django – AWS for IoT – System Management with NETCONF-YANG.

PART A			
1.	**Define** Machine Learning.	Remember	BTL-1
2.	**Generalize** the use of AWS in IoT.	Create	BTL-6
3.	**Compare** Data in motion vs Data at Rest.	Evaluate	BTL-5
4.	**Define** Neural networks.	Remember	BTL-1
5.	**Compare** the two categories of machine learning.	Analyze	BTL-4
6.	**Analyze** the use of NoSQL Database.	Analyze	BTL-4
7.	**Summarize** on Hadoop.	Analyze	BTL-4
8.	**Differentiate** Structured vs Unstructured Data.	Understand	BTL-2
9.	**Discuss** on Hadoop ecosystem.	Understand	BTL-2
10.	**Give** the benefits of flow analytics.	Understand	BTL-2
11.	**Summarize** on Edge streaming analytics.	Evaluate	BTL-5
12.	**Define** YARN.	Remember	BTL-1
13.	**Name** the core functions of Edge Analytics.	Remember	BTL-1
14.	**Demonstrate** the use of Xively cloud for IoT.	Apply	BTL-3
15.	**Examine** the role of Python Web application framework – Django.	Apply	BTL-3
16.	**Discuss** on Apache spark.	Understand	BTL-2
17.	**Formulate** on Apache Kafka.	Create	BTL-6
18.	**Compare** BigData and Edge Analytics.	Apply	BTL-3
19.	**Define** Amazon S3 and Amazon RDS.	Remember	BTL-1
20.	**Identify** the role of various components of NETCONF-YANG.	Remember	BTL-1
21.	**Give** the role of machine learning in IOT.	Understand	BTL-2
22.	**Show** the requirements for network analytics.	Apply	BTL-3
23.	**Pointout** key IOT Analytics Requirements.	Analyze	BTL-4

24.	**Assess** the main components of Hadoop ecosystem.	BTL-5	Evaluate
	PART B		
1.	**Explain** in detail the need of Data Analytics for IoT and brief the challenges faced by IoT Data Analytics. (13)	Analyze	BTL-4
2.	**Discuss** in detail about (i) Role of Machine Learning in IoT. (7) (ii) NoSQL Databases. (6)	Understand	BTL-2
3.	**Describe** in detail about Hadoop ecosystem and the two key components with suitable illustration. (13)	Remember	BTL-1
4.	**Compare** in detail about (i) Structured Vs Unstruct ured Data. (7) (ii) Data in Motion Vs Data in Rest. (6)	Apply	BTL-3
5.	**Evaluate** the necessity of Apache Kafka and Apache Spark with diagram. (13)	Evaluate	BTL-5
6.	**Express** in detail Edge streaming analytics and compare it with data analytics. Also give the functions of Edge analytics. (13)	Understand	BTL-2
7.	**Examine** the need for Network Analytics and discuss on flexible Netflow Architecture. (13)	Remember	BTL-1
8.	**Discuss** in detail about Xively cloud for IT and Illustrate Xively dashboard device details. (13)	Understand	BTL-2
9.	**Examine** the Python Web Application framework – Django architecture and steps to develop a django project. (13)	Apply	BTL-3
10.	**Generalize** the purpose of Amazon Web service for IoT. (13)	Create	BTL-6
11.	**Analyze** the role of various components of NETCONF-YANG and steps for IoT device Management with NETCONF-YANG. (13)	Analyze	BTL-4
12.	**Discuss** the key components of hadoop ecosystem : HDFS and Mapreduce.	Remember	BTL-1
13.	**Analyze** the use of (i) Python Web Application Framework – Django. (7) (ii) AWS for IoT. (6)	Analyze	BTL-4
14.	**Discuss** on Edge streaming analytics and Data analytics of IoT. (13)	Remember	BTL-1
15.	**Predict** the database that is recommended for unstructured data for IOT application. (13)	Understand	BTL-2
16.	**Illustrate** the following key products of amazon web services: (i) Analytical Services . (7) (ii) Connectivity and Control Services (6)	Apply	BTL-3
17.	**Explain** Xively cloud Services in detail. (13)	Evaluate	BTL-5
	PART C		
1.	**Generalize** in detail about Apache spark and Apache kafka with data flow diagram. (15)	Create	BTL-6
2.	**Formulate** in detail about Data Analytics in IoT and the role of Machine Learning with suitable illustration. (15)	Create	BTL-6
3.	**Evaluate** the working of Xively Cloud dashboard device for IoT by giving suitable necessary explanation. (15)	Evaluate	BTL-5

4.	**Explain** the purpose of Python Web Application Framework – Django and Amazon Web service for IoT. (15)	Evaluate	BTL-5
5.	**Formulate** the role of Edge streaming Analytics for developing IOT. (15)	Create	BTL-6

UNIT V CASE STUDIES/INDUSTRIAL APPLICATIONS

Cisco IoT system - IBM Watson IoT platform – Manufacturing - Converged Plantwide Ethernet Model (CPwE) – Power Utility Industry – GridBlocks Reference Model - Smart and Connected Cities: Layered architecture, Smart Lighting, Smart Parking Architecture and Smart Traffic Control

PART A

1.	**List** the six pillars/components of Cisco IoT Systems.	Remember	BTL-1
2.	**Define** Watson IoT Platform.	Remember	BTL-1
3.	**Brief** the sub layers of security in IoT systems.	Remember	BTL-1
4.	**Analyze** the use of Fog Computing.	Analyze	BTL-4
5.	**Classify** the key features of IBM Watson platform.	Apply	BTL-3
6.	**Summarize** the use of Watson Conversation services.	Evaluate	BTL-5
7.	**Describe** in brief Converged Plantwide Ethernet Model.	Remember	BTL-1
8.	**Relate** the use of blockchain services in IBM Watson IoT platform.	Apply	BTL-3
9.	**Classify** the implementation and design guidance of CPwE.	Apply	BTL-3
10.	**Compose** the three stages of power supply-chain in power utility industry.	Create	BTL-6
11.	**Compose** the use of smart traffic application.	Create	BTL-6
12.	**Infer** how IoT data are Securely connected, managed and analysed.	Analyze	BTL-4
13.	**Summarize** on GridBlocks reference model.	Understand	BTL-2
14.	**Tell** the challenges that become even more evident as the IT and OT networks become interconnected.	Remember	BTL-1
15.	**Give** the benefits provided by The GridBlocks reference architecture to utility operators.	Understand	BTL-2
16.	**Discuss** any one usecase of smart applications of IoT.	Understand	BTL-2
17.	**Conclude** An IoT Strategy for Smarter Cities.	Evaluate	BTL-5
18.	**Express** why LED technology is used in street lighting?	Understand	BTL-2
19.	**Define** connected manufacturing.	Remember	BTL-1
20.	**Analyze** the smart parking usecase.	Analyze	BTL-4

21.	**Quote** the uses of Cisco IOT system.	Understand	BTL-2
22.	**Discover** the role of IOT in industrial applications.	Apply	BTL-3
23.	**Pointout** the definition of IIOT.	Analyze	BTL-4
24.	**Assess** how IOT is used for traffic control.	Evaluate	BTL-5
	PART B		
1.	**Analyze** the purpose of the Six-Pillar Approach for Cisco IoT System also explain the security framework. (13)	Analyze	BTL-4
2.	**Examine** the Features of IBM Watson IoT platform, and brief on the services provided in it. (13)	Remember	BTL-1
3.	(i) **Describe** an IoT strategy for connected Manufacturing. (7) (ii) **Examine** the architecture for connected factory. (6)	Remember	BTL-1
4.	**Analyze** in detail the architecture of Converged Plantwide Ethernet Model with suitable illustration. (13)	Analyze	BTL-4
5.	**Examine** the challenges faced for parking in cities, and explain how smart parking provides a solution to this. (13)	Remember	BTL-1
6.	(i) **Demonstrate** the use of Power Utility Industry. (7) (ii) **Examine** the IT/OT divide in Utilities. (6)	Apply	BTL-3
7.	**Illustrate** the 11-Tiered Reference Architecture of Grid Blocks and the use of reference model.	Apply	BTL-3
8.	**(i) Summarize** in detail the architecture model of CPwE**.** (7) **(ii) Discuss** on design and implementation guidance of CPwE. (6)	Understand	BTL-2
9.	**Summarize** on the solution for smart lighting and explain street lighting architecture in detail. (13)	Evaluate	BTL-5
10.	(i) **Generalize** an IoT strategy for smart city. (7) (ii) **Design** an smart city layered architecture and explain how security is provided. (6)	Create	BTL-6
11.	**Discuss** the features of Cisco IoT System and explain the components and security involved in it. (13)	Understand	BTL-2
12.	**Describe** the architecture of smart traffic control architecture and explain the applications of smart traffic. (13)	Understand	BTL-2
13.	**Analyze** the grid block reference model and the reference architecture with suitable illustration. (13)	Analyze	BTL-4
14.	(i) **Define** any one use case example of smart city examples. (7) (ii) **Describe** the smart city security architecture. (6)	Remember	BTL-1
15.	**Summarize** Smart Business applications using IOT. (13)	Understand	BTL-2
16.	**Illustrate** about the possible applications of IOT in the energy power sector. (13)	Apply	BTL-3
17.	**Evaluate** the smart irrigation using IOT. (13)	Evaluate	BTL-5

PART C			
1.	**Summarize** the IoT platform designed by IBM Watson, explain what it can do to your business, and infer how IoT data are securely connected, managed and analyzed. (15)	Evaluate	BTL-5
2.	**Prepare** an IoT strategy for smart city and design the layered architecture for implementing smart cities. (15)	Create	BTL-6
3.	**Consider** any use case example of smart applications of IoT, explain the architecture and technology need in building the application. (15)	Evaluate	BTL-5
4.	**Formulate** an Industrial application of IoT system and brief on the various usecase of smart and connected cities. (15)	Create	BTL-6
5.	**Design** smart lightening using IOT and throw a light into its inside details. (15)	Create	BTL-6