24.	According to analysis, for what the traditional IT systems provide a foundation, when they are integrated with big data technologies like hadoop? (A) Big data management and data mining (B) Data warehousing and business intelligence (C) Management of Hadoop clusters (D) Collecting and storing unsaturated data	1	2	5	2
25.	At which layer, the emphasision reduction and converting network data flow into information that is ready for storage and processing by higher layers (A) Physical devices and controllers layer (B) Connectivity layer (C) Edge computing layer (D) Application layer	1	1	5	2

PART – B (5 × 10 = 50 Marks)
Answer **ALL** Questions

		Marks	BL	CO	PO
26. a.	Outline the hardware architecture of smart objects used for IOT application.	10	4	1	1
	(OR)				
b.	Summarize the operating system available for smart objects, and illustrate the functional features of any one OS.	10	4	1	1
27. a.	Classify the functional features of IPv4 and IPv6.	10	3	2	3
	(OR)				
b.	What is RPL, examine its support in IOT design?	10	3	2	3
28. a.	Analyze the role of IOT in smart grid application.	10	4	3	5
	(OR)				
b.	Outline the architecture of any one home automation used case.	10	4	3	5
29. a.	Determine the functions of physical and connectivity layers of IOT reference model.	10	3	4	2
	(OR)				
b.	Demonstrate the features of core IOT functional stack layers.	10	3	4	2
30. a.	Distinguish between the structural and unstructured data IOT network.	10	4	5	4
	(OR)				
b.	Explain the industrial automation and control systems reference model.	10	4	5	4

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Reg. No.														

B.Tech. DEGREE EXAMINATION, MAY 2022
Sixth Semester

18ECE231J – IOT SYSTEM DESIGN
(For the candidates admitted from the academic year 2018-2019 to 2019-2020)

Note:
(i) **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.
(ii) **Part - B** should be answered in answer booklet.

Time: 2½ Hours Max. Marks: 75

PART – A (25 × 1 = 25 Marks)
Answer **ALL** Questions

		Marks	BL	CO	PO
1.	Microcontroller consists of (A) Microprocessor and RAM only (B) Microprocessor, RAM, ROM only (C) Microprocessor, RAM, ROM, ports, timers (D) Microprocessor RAM, ROM, timers	1	1	1	1
2.	Type of operating systems for smart objects (A) Multithreading, event-driven programming only (B) Multithreading, proto threads only (C) Event-driven programming, proto threads only (D) Multi-threading, event-driven programming proto threads	1	2	1	1
3.	Smart object communication patterns falls under (A) One-to-one only (B) Many-to-one only (C) One-to-one and one to many only (D) One-to-one, one-to-many and many-to-one	1	1	1	1
4.	Smart objects used physical radio communication mechanism such as (A) IEEE 802.15.4 and IEEE 802.11 (B) IEEE 802.15.4 and PLC (C) IEEE802.11 and PLC (D) IEEE802.15.4 and IEEE802.11 and PLC	1	1	1	1
5.	LORAWAN uses _____modulation. (A) Amplitude (B) Frequency (C) Chirp spread spectrum modulation (D) Phase shift keying	1	1	1	1
6.	IEEE 802.11 DSSS support 2Mbps and the following modulation (A) BPSK (B) PSK (C) QPSK (D) QAM	1	1	2	7
7.	IEEE 802.11a has _____ channels and supports rates upto_____Mbps, but realistically about 27 Mbps max. (A) 12, 6 Mbps (B) 12,56 Mbps (C) 12, 54 Mbps (D) 6, 54 Mbps	1	2	2	1

8.	SLAAC stands for (A) State Less Address Auto Configuration (B) State Level Address Auto Configuration (C) State level autonomous address configuration (D) State less autonomous address configuration	1	1	2	1
9.	_____applies carrier-sense-multiple-access with collision avoidance (CSMA/CA) in wireless networks. (A) Application layer (B) Data link layer (C) Network layer (D) Physical layer	1	1	2	1
10.	Which of the following terminology bridges wireless LAN? (A) Access point (B) Ethernet cable (C) Range extender (D) Hub	1	1	2	1
11.	Smart cities and urban network covers (A) Transport, public safety and security, public services, smart grid, home automation, industrial automation (B) Transport, public safety and security, public services, utilizes, environment (C) Transport, utilities, environment, smart grid, home automation, industrial automation (D) Transport, public safety and security, public services, utilities, environment, smart grid	1	2	3	5
12.	Smart grid remote terminal units uses_____ protocols. (A) IEC 60870-5-101 only (B) IEC 60870-5-101, IEC 608-10-5-105, distributed network protocol and Modbus (C) Distributed network protocol and Modbus only (D) IEC 60870-5-105 only	1	2	3	5
13.	Zigbee specification has the following layers (A) Physical layer, medium access control layer, network layer, presentation layer and application framework layer (B) Physical layer, medium access control layer, network layer, presentation layer and application framework layer (C) Physical layer, medium access control layer, network layer session layer and application framework layer (D) Physical layer, medium access control layer, network layer, application support layer, and application framework	1	2	3	5
14.	Which is not correct in condition based maintenance in smart grid? (A) Moisture in oil sensor, temperature sensor, humidity sensors (B) Infrared thermographic imaging monitors, vibration sensor on rotating equipment, low oil level (C) Overhead cable ice load, swing and tilt sensor (D) Vibration sensor on rotating equipment acoustic emission defect sensors. Customer requirements	1	2	3	5

15.	Smart home area network uses _____protocol. (A) IEEE 802.11, IEEE 802.15.4, PLC (B) IEEE 802.11 only (C) IEEE 802.15.4 only (D) PLC	1	1	3	5
16.	_____was developed as a universal method to access remote systems and send instructions. (A) COAP (B) SCADA (C) MQTT (D) UDP	1	1	4	2
17.	Which one of the following protocols is light-weigth? (A) IP (B) HTTP (C) MQTT (D) COAP	1	1	4	2
18.	COAP stands for (A) Constrained application protocol (B) Constrained automation protocol (C) Advanced message queuing protocol (D) Message queue telemetry transport	1	2	4	2
19.	Constrained networks are often referred to _____ (A) Low power and lossy networks (B) High power and lossy networks (C) Low power and routing network (D) High power and routing network	1	2	4	2
20.	Which of the primary function of IOT reference layers is generating data and being capable of being queried/out OR controlled over a network (A) Physical devices and controllers layers (B) Connectivity layers (C) Edge computing layer (D) Application layers	1	2	4	2
21.	Which is not following type of data analysis? (A) Descriptive (B) Diagonastic (C) Data analytic (D) Predictive	1	1	5	2
22.	The IOT is itself an ecosystem of network devices that transfer the data it is also well interconnected with_____ (A) Big data (B) Cloud computing (C) Either big data or cloud computing (D) Big data and cloud computing	1	1	5	2
23.	Choose the best one which support the machine learning (A) The autonomous acquision of knowledge through the use of manual programs (B) The selective acquisition of knowledge through the use of computer program (C) The selective acquisition of knowledge through the use of manual program (D) The autonomous acquisition of knowledge through the use of computer program	1	2	5	2