Reg. No.														

B.Tech. DEGREE EXAMINATION, NOVEMBER 2022
Sixth and Seventh 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

	Marks	BL	CO	PO
PART – A (25 × 1 = 25 Marks) Answer **ALL** Questions				
1. Which of the following is the way in which an IOT device is associated with data? (A) Internet (B) Cloud (C) Automata (D) Network	1	1	1	1
2. A smart object is defined by IPSO (A) Sensor, actuator (B) Computer (C) Simulator (D) Emulator	1	1	1	1
3. IEEE 802.15.4 is to provide transfer data rates of (A) 450 kbps (B) 350 kbps (C) 250 kbps (D) 150 kbps	1	2	1	1
4. In 6LOWPAN address, how many bits are globally unique (A) 16 bits (B) 32 bits (C) 64 bits (D) 128 bits	1	2	1	1
5. Choose the electrochemical actuator from the following (A) Comb drive (B) AC motor (C) Thyristor (D) Screw jack	1	1	1	1
6. The UIP stock implements the _____layer of protocols of the IP family. (A) Network and security (B) Network and transport (C) Transport and application (D) Application and network	1	1	2	1
7. Which of these is a routing protocol for low power lossy networks over IPV6? (A) RPL (B) OSPF (C) AODV (D) DODAG	1	2	2	1
8. The bit length of the IPV6 is (A) 32 bits (B) 128 bits (C) 126 bits (D) 256 bits	1	1	2	1

9.	The IPsec is compulsory in (A) IPV4 (B) IPV6 (C) UIP (D) IEEE 802.11	1	1	2	1
10.	In UIP periodic processing _____timer based action is performed. (A) Retransmission (B) Congestion (C) Piggybacking (D) Transmission	1	2	2	1
11.	Which of the following layers does not zigbee stack define? (A) Physical and AF (B) Network and APS (C) AF and APS (D) Network and AF	1	1	3	1
12.	Natural hazard monitoring and forecasting involves which type of traffic flow and topology? (A) Mesh (B) Tree (C) Star (D) Ring	1	2	3	1
13.	An automation system is related to (A) Distributed control system (B) Distinct control system (C) Discrete control system (D) Distributed control service	1	2	3	1
14.	Z-wave alliance is developed for (A) Home automation (B) Industrial automation (C) Smart grid (D) Smart city	1	1	3	1
15.	In smart metering (NAN), AMR refers to (A) Automatic meter reservation (B) Automatic meter reading (C) Advanced meter reservation (D) Advanced meter reading	1	1	3	1
16.	Which of the following is the element of SCADA? (A) Graphical displays (B) Tags (C) Alarms (D) Trends	1	1	4	1
17.	Gateway provides the connection between _____and _____ (A) Cloud and controller (B) Network and cloud (C) Network and controller (D) Controller and device	1	2	4	1
18.	_____in the IOT architecture is the hardware and software gateway that pre-process the data. (A) Data center (B) Gateways (C) Data acquisition (D) Edge it	1	2	4	1
19.	How many components IOT mainly consists of (A) 2 (B) 3 (C) 4 (D) 5	1	1	4	1
20.	How many levels does complex SCADA system have? (A) 1 (B) 2 (C) 3 (D) 4	1	1	4	1

21.	The core element of architecture of smart city is (A) Mobile unified service (B) Urban application platform (C) Management centre (D) Integrated information provider	1	1	5	1
22.	Which one of the following is not a valid NOSQL database? (A) Cassandra (B) Scylla (C) postgreSQL (D) Hadhoop	1	2	5	1
23.	Which tier analytics performs maintenance? (A) 3-tier (B) 2-tier (C) 1-tier (D) 4-tier	1	1	5	1
24.	Identify the language preferred for IOT analytics (A) Python (B) HTML (C) PHP (D) C++	1	1	5	1
25.	One way to see observations addressing IOT analytics is (A) 4-tier analytics (B) 2-tier analytics (C) 1-tier analytics (D) 3-tier analytics	1	2	5	1

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

		Marks	BL	CO	PO
26. a.	Illustrate the functionalities of PHY and MAC layers of LORA WAN.	10	3	1	4
	(OR)				
b.	Explain the following IOT access technology in detail IEEE 802.15.4 g/e.	10	4	1	1
27. a.	Explain the packet forwarding, memory buffer management, API of UIP.	10	4	2	3
	(OR)				
b.	Illustrate the different packet headers, addressing architecture and ICMP.	10	3	2	1
28. a.	Illustrate how, traffic monitoring and controlling, automatic charging and fining in smart cities and urban networks takes place.	10	3	3	3
	(OR)				
b.	Explain the implementation of IOT technology into distributed energy systems to optimize the efficiency of energy infrastructure in the smart grid category-core grid network monitoring and control with different use cases.	10	4	3	3
29. a.	Explain one M2M IOT standardized architecture.	10	4	4	3
	(OR)				
b.	Illustrate in detail IOT application transport method: SCADA.	10	3	4	1
30. a.	Demonstrate the purpose of massively parallel processing database-NOSQL database.	10	3	5	4
	(OR)				
b.	Explain in detail the industrial automation control protocols.	10	4	5	1

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