ii. Describe in detail about the different types of IoT architecture and its comparison. 9 1 1 1

(OR)

b. Discuss in detail about the different types of antennas. 12 1 1 1

29. a. Design a smart home system and explain the required components for reducing the energy conservation. 12 4 2 3

(OR)

b. Describe the various energy conservation technique in detail. 12 2 2 1

30. a. To determine the feasible selection to the problem present in the cloud, suggest the best algorithm to rectify and explain the same. 12 4 3 5

(OR)

b. Explain in detail about the different static energy efficient algorithms and its steps to reduce the energy consumption in the cloud. 12 2 3 1

31. a. If one wants to create awareness of their energy usage and current energy need to the users, suggest the best suitable technique and explain the same the techniques are best suitable one. 12 3 4 2

(OR)

b. Describe in detail about the green IoT and its techniques. 12 2 4 1

32. a. Explain about the intelligent transport system. 12 1 5 1

(OR)

b. Describe the motivation for vehicle to everything (V2X) and V2G technology. 12 2 6 1

* * * * *

B.Tech. DEGREE EXAMINATION, MAY 2023

Sixth Semester

18CSE448T – ENERGY MANAGEMENT FOR INTERNET OF THINGS DEVICES

(For the candidates admitted during the academic year 2018-2019 to 2021-2022)

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 & Part - C** should be answered in answer booklet.

Time: 3 hours   Max. Marks: 100

PART – A (20 × 1 = 20 Marks)   Marks BL CO PO

Answer **ALL** Questions

1. What is the responsibility of gateway node? 1 1 1 1
   (A) Collect the desired information data
   (B) Store the data in buffer and forward them to CNS
   (C) Distribute the data to all other node connected in the network
   (D) It makes decision from the collected data

2. Why service layer is added in the four tier architecture? 1 1 1 1
   (A) Resource management
   (B) To collect the data from the environment
   (C) To connect with other smart object
   (D) Information acquisition

3. Among all these subsystem in energy management, the _____ requires more energy on average than the other subsystems. 1 1 1 1
   (A) Sensing subsystem
   (B) Processing subsystem
   (C) Communication subsystem
   (D) Power source

4. Which of the following is the drawback of the vibrational energy harvesting systems? 1 1 1 1
   (A) Less space
   (B) Output is not fixed
   (C) Light in weight
   (D) Small quantity of power generated

5. _____ is used to find out the optimal subset of nodes that guarantee connectivity 1 1 2 4
   (A) Topology control
   (B) Data driven
   (C) Adaptive sampling
   (D) Duty cycling

6. During the data transformation interference may occur with the neighboring node is _____. 1 1 2 4
   (A) Under hearing
   (B) Over hearing
   (C) Under utilization
   (D) Over utilization

7. _____ are low power consuming radio which awake the node when data transmission is required.   1   1   2   4
   - (A) Active wake-up radios
   - (B) Passive wake-up radios
   - (C) Energy conservation wake-up radios
   - (D) Transmission wake-up radios

8. The _____ device communicates with smart energy meters and read the current consumption values and display that on its display unit.   1   1   2   4
   - (A) In-house displays
   - (B) Electric meter displays
   - (C) Meter-home displays
   - (D) In-home display

9. _____ strategy is used for reducing the power consumption by modifying the CPU frequency according to the workload.   1   1   3   4
   - (A) Voltage scaling
   - (B) Frequency scaling
   - (C) Voltage frequency scaling
   - (D) Dynamic voltage frequency scaling

10. Based on _____ the generated chromosomes are sort in decreasing order in genetic algorithm.   1   1   3   4
   - (A) Fitness value
   - (B) Optimum value
   - (C) Seeking mode
   - (D) Tracing mode

11. Fitness value is found for each chromosomes using the _____.   1   1   3   1
   - (A) Euclidean function
   - (B) Position and velocity
   - (C) Seeking mode
   - (D) Tracing mode

12. Which of the following technique is used for reducing the workload of VM (Virtual Machine) by using task scheduling?   1   1   3   1
   - (A) Simulated annealing
   - (B) Particle swarm optimization
   - (C) Genetic algorithm
   - (D) Ant colony optimization

13. The _____ is to have scheduling algorithms for sensors which will change the status of sensors to on duty and off duty based on the requirements of sensing.   1   1   4   1
   - (A) Hard-ware based techniques
   - (B) Software based techniques
   - (C) Policy-based methodologies
   - (D) Awareness-based methodologies

14. Which of the following techniques are leading to the implementation of green IoT?   1   1   4   1
   - (A) Smart metering
   - (B) Smart sensors and smart metering
   - (C) Smart sensors and electric devices
   - (D) Smart metering and electric devices

15. _____ is a rapidly growing field that combines the power of IoT technology with sustainable and environmentally friendly practices.   1   1   4   4
   - (A) IIoT
   - (B) Green IoT
   - (C) Genetic algorithm
   - (D) Energy conservation

16. Which of the following IoT networks has a very short range?   1   1   4   1
   - (A) Short network
   - (B) LPWAN
   - (C) Sigfox
   - (D) Short-range wireless network

17. _____ often need integrated installation with the infrastructure, and hence need pre-planning for installation and are harder to maintain, though, often having negligible operational power consumption.   1   1   5   4
   - (A) Non-intrusive transducers
   - (B) Intrusive transducers
   - (C) Intrusive sensors
   - (D) Non-intrusive sensors

18. In ITS technology strata, _____ layer, fills the gap between sensing technologies, activation process and the computational and information processing levels   1   1   5   1
   - (A) Communication layer
   - (B) Perceptron layer
   - (C) Transport layer
   - (D) Network layer

19. Which of the following techniques provides a trust-based secure communication platform and allows exchange of information in a secure way.   1   1   6   1
   - (A) Internet of vehicle
   - (B) Intra-vehicle network
   - (C) Cooperative automated vehicle
   - (D) Automated vehicle

20. Which of the following is the way in which an IoT device is associated with data?   1   1   6   1
   - (A) Internet
   - (B) Cloud
   - (C) Automata
   - (D) Network

PART – B (5 × 4 = 20 Marks)
Answer **ANY FIVE** Questions

	Marks	BL	CO	PO
21. What are the merits and demerits of energy harvesting systems?	4	1	1	1
22. What are the challenges of IoT in terms of security?	4	1	1	1
23. Identify which schemes schedule node states based on the network activity to understate the idle listening, and explain the same.	4	2	2	1
24. What algorithm you could suggest, if you wanted to distribute the traffic among the pool of available servers?	4	3	2	2
25. Which is an adaptive heuristic search algorithm based on natural selection and genetics, to optimize the energy conservation?	4	2	3	2
26. What are the benefits of energy-efficient smart health care system?	4	2	4	1
27. How duty cycle adjustment could be done for energy optimization?	4	2	5	1

PART – C (5 × 12 = 60 Marks)
Answer **ALL** Questions

	Marks	BL	CO	PO
28. a.i. Is the IoT platform a standard architecture? Justify.	3	2	1	2