INDUSTRIAL INTERNET OF THINGS

1. Dell technologies realized significant cost savings from the use of a predictive maintenance application run in the DELL IT data Lake. The company avoided more than S 100 million in costs due to this change. Explain the technology of predictive maintenance used in detail. **(2) (June/July 2023, Sept makeup 2023)**

2. In the digital transformation of the energy sector, smart grids and smart meters will be key drivers for a successful digitalization. Explain the necessity of adopting IOT technology in the energy sector. **(4)(June/July 2023,Sept makeup 2023,July makeup 2024,April,May 2024)**

3. In health care sector, IOT has brought significant changes to improve the facilities and information system during COVID-19 Pandemic. Justify your answer, how IOT has helped in digitization of medical processes and pt0F management in the hospitals**.(2) (Sept makeup 2023, June/July 2023)**

4. Manufacturing enterprises are seeking to leverage IT OT convergence to achieve gains in productivity and reduction in cost, while managing the inherent risks of convergence. Discuss the challenges of IT/OT convergence in effe Manufacturing Industry**.(1)(June/July 2023)**

5. There are a variety of sensors that can be used in a smart car to enable various features and capabilities. Which is the most preferred protocol for car sensors? It should support event-driven message transfer and queue through wireless networks. Explain its working principle. **(4)(Feb/March 2023, Sept makeup 2023,April/May 2024, June/July 2023)**

6. Bluetooth offers device control through a smartphone. But it only allows eight devices to be connected. ZigBee supports up to 65,000 nodes, but there is a fee for every connected device. Compare and explain both technologies. **(2)(Sept makeup 2023, June/July 2023)**

7. This protocol was not initially created for IoT applications except for banking environments. In this protocol, delivery is guaranteed, as well as acknowledgment. Explain the features of this Advanced message queuing protocol. **(1)(June/July 2023)**

8. Amazon Sidewalk is an Io T network that uses LoRa radios to connect devices with Amazon's cloud when they are beyond the reach of traditional home networks. Elaborate the features and concept of the LoRaWAN technology used by Amazon Sidewalk**.(3)(June/July 2023, Feb/March 2023, Sept makeup 2023)**

9. Organizations today have to constantly evaluate their cloud infrastructure to ensure that the _____ cloud delivers efficient results because there are different security and management demands in all three cloud models. Explore the features of all three cloud models in detail**. (3)(June/July 2023, Feb/March 2023, Sept makeup 2023, April/May 2024)**

10. An IT company decides to provide free access to a public cloud dedicated to higher education. Explain all the three cloud computing services, it can embrace**..(3)(June/July 2023, April/May 2024, July makeup 2024)**

11. The best way to ensure card data security is by using a payment gateway while handling card payments. Explain how gateways are used for data management, local applications and device management in IOT. **.(4)(June/July 2023, April/May 2024, Sept makeup 2023, July makeup 2024)**

12. In Samsung mobile phones, for setting up the apps stacked in its store, the company is using AWS services, using AWS app development services, Samsung wanted to provide its customer with the facility to download the apps anywhere without any network traffic. List the applications and features of services provided by AWS**. (4)(June/July 2023, Feb/March 2023, April/May 2024, Sept makeup 2023)**

13. IOT devices make up for 30% of all network-connected end points, making many companies the primary targets for cyber criminals: Is security support on IOT devices essential? State a better way to secure the IOT devices**. (3)(June/July 2023, Feb/March 2023, Sept makeup 2023)**

14. Security auditing work is used to check the security levels of the IOT based industries. What methodology is incorporated to check the degree of IOT structures? What are the advantages for the company by doing so**?(2)(June/July 2023, Sept makeup 2023)**

15. IOT based data acquisition system is a collection of software and hardware that allows one to measure or control physical characteristics of something in the real world. Analyse how physical dap is measured and controlled in real world using data acquisition system with a neat block diagram. **.(4)(June/July 2023, Feb/March 2023, April/May 2024, Sept makeup 2023)**

16. In the health care industry (Medical IOT) devices are already being utilized to remotely monitor patient's vital signs and has proven very helpful since the pandemic, what are the possible consequences of IOT security attacks in medical 10T ? .(3)(June/July 2023, April/May 2024, Sept makeup 2023)

17. In smart asset tracking, sensor systems like RFID sensor, GPS, accelerometer sensor, etc monitors required system parameters. The data is recorded in the system and historical data can be viewed whenever required using the cloud. In order to design this system what are the components required and if the system behaves improperly, how do you test and troubleshoot to make the system functional? 2)(June/July 2023, July makeup 2024)

18. Even though there is a reduction in the number of air travellers due to the pandemic, the TATA Forecast Predicts 8.2 billion Air Travelers in 2037. To handle this exponential growth in the number of passengers in the coming years, Airlines will require the powerful capabilities of Airport Digitization. Discuss the role of IoT solutions (use cases) (4)(June/July 2023, April/May 2024, Sept makeup 2023, Feb/March 2023)

19. To establish the connectivity between building A computers in one LAN network with building B computers in another LAN through a router. Though after following all the proper procedures like assigning IP addresses to those computers, IP address to Router, proper cable connectivity etc. Still the packet of information is not transferring between two LAN. Find the problem and troubleshoot it?(1)(June/July 2023)

20. Novartis is one of the world's largest health care companies that provide solutions for patient's well-being. Data analysts of Novartis are taking advantage of the AWS services and still implementing new solutions for the patients. Recommend the data analysis and AWS technology adopted by Novartis to meet its desired requirements and improve the efficiency. (1)(June/July 2023)

21. An Intelligent irrigation system is a way to deal with all of the issues in a conventional approach of Agriculture. Explain the ways in which IOT is implemented for reformation in Agriculture.(3)(July makeup 2024, Feb/March 2023, April/May 2024)

22. To meet the needs of Globalization it is very much necessary to implement industry 4.0.Justify its issues and benefits.**(1)(July makeup 2024)**

23. Predictive maintenance is an effective solution to avoid unnecessary stoppage of work in the manufacturing process. Do you agree? Justify your answer with an example from energy sector (oil and gas industry/wind turbine blades**).(2)(April/May 2024, Sept makeup 2023)**

24. A driver who is driving IOT enabled car receives message as :(Red, Google location).Analyse this message using DIKW model**,(2)(Feb/March 2023,July makeup 2024)**

25. In a smart grid and smart meter, sensors like voltage sensor, current sensor, power factor sensor etc. monitors required system parameters .The data is recorded in the system and historical data can be viewed whenever required using cloud. In order to design this system what are the components required and if the system behaves improperly, how do you test and trouble shoot to make the system functional.**(2)(Sept makeup 2023, Feb/March 2023)**

26. Tata Motors limited manufacture four wheel passenger vehicles using traditional techniques. The company planning for transform to smart factories. Recommend various technologies are required this transformation**.(2)(April/May 2024, Feb/March 2023)**

27. The rapid urbanization of Delhi city leads to environmental problems, air pollution, water pollution and noise pollution are major environmental challenges that the city is facing. What IOT solution you will suggest and justify your answer**.(2)(Feb/March 2023, April/May 2024)**

28. In a smart manufacturing company, sensors like Temperature sensor, Pressure sensor, Vibration sensor, Flow sensor etc monitors required system parameters.The data is recorded in the system and historical data can be viewed whenever required using cloud. In order to design this system what are the components required and if the system behaves improperly ,how do you test and trouble shoot to make the system functional**. (2)(April/May 2024, Feb/March 2023)**

29. Will Collaborative platform help supply chain optimization in smart manufacturing sector? Explain elaborately**.(1)(July makeup 2024)**

30. Vulnerabilities are a major and constant issues in the field of the IOT. It can come from any layer of IOT devices severely affecting the business operations of all the industries. As a system engineer what steps would you take to secure the organization from Malware, Adware , Trojans etc.What are the best practices to be used by all the employees of an organization. **.(1)(July makeup 2024)**

31. Hero Motors Limited manufactures two wheel vehicles in Bangalore, Chennai and Pune manufacturing plant and proved sales and service only inIndia. The company operation processes are automated using the PLC, SCADA and HMI. The company planning to enter global market and increase the production for next 10 years. Explain what kind of solution should be adopted by the company to improve production and emerge as leader in global market. **(1)(July makeup 2024)**

32. A Thermal power plant located in Shaktinagar Raichur generates power and distribute to Karnataka state. If this company wants to adopt IIOT, suggest which all the IOT application can adopt by company and how it will benefit. **(1)(July makeup 2024)**

33. The cloud architect of ABB Company has informed you to select the best communication protocol to be used in smart cities, where there are millions of devices that function with less power and memory. Which protocol would you suggest and why? **(1)(July makeup 2024)**

34. Researchers decided to monitor one area in Siachen Glacier using IOT for that they need low power consumption ,wireless communication system for interconnection of things as in this location frequent charging is not possible and communication range will be less than 10 meters. Choose best wireless system for above requirements and explain its operation. **(1)(July makeup 2024)**

35. Amazon wants to build a network system which handles multiple requests at same time without collapse due to heavy load/request to server. Explain a network architecture which is best suitable for above said application and justify reasons to choose this network over others. **(1)(July makeup 2024)**

36. Augmented Reality in IOT is one key way , companies are digitally transforming manufacturing processes. From asset locating to tracking real time data across a factory floor.AR can transform the way manufacturers function. Describe with example the role of Augmented Reality in industry IOT. **(1)(July makeup 2024)**

37. An IT company decides to provide free access to a public cloud dedicated to higher education . Which one of the three cloud computing delivery models SaaS, PaaS, or IaaS should it embrace and why? Will this solution have an impact on distance learning? **(1)(July makeup 2024)**

38. A Cyber physical system (CPS) is a system that combines computational and physical components in order to control, monitor and interact with the physical world. Give examples of CPS application. **(1)(July makeup 2024)**

39. Most commonly used website was hacked. Users were not able to access data from that website. What could be the types of hacking and explain. **(1)(July makeup 2024)**

40. Is Big data analytics refers to the process of examining large and complex data sets, or big data is to discover patterns , trends, and associations that can help organizations make informed decisions and used to improve a wide variety of business functions? Justify your answer. **(1)(July makeup 2024)**

41. In a smart health care system, sensors like smart watches , X-ray machine , CT scanners fitness trackers etc… monitors required system parameters. The data is recorded in the system and historical data can be viewed whenever required using cloud. In order to design this system what are the components required and if the system behaves improperly, how do you test and troubleshoot to make the system functional. **(1)(July makeup 2024)**

42. Given the breadth of operation technology (OT) in manufacturing, the modern Factory often includes many machines, devices, and control mechanisms operating in relative and communicating using a variety of niche protocols. This has created silos, communication difficulties, and blind sports in processes. How can this condition be improved in IIoT to better work with the information technology (IT) components. **(1)(July makeup 2024)**

43. Explain the necessity of adopting IoT technology for the growing need to increase customer loyalty and deliver the best in-store experience by retail sector in the following sectors. i)Inventory management. ii)Manufacturing execution system. iii)Smart payment. **(1)(Sept 2023)**

44. The Internet is a huge part of many people's everyday lives. It's fun, useful, and informative, but can also be dangerous, no matter how safe you feel while browsing. What are the good Internet safety practices that you suggest so that you can protect your information and your identity for years to come? **(1)(Sept 2023)**

45. A BYJU'S education start-up company provides online training & tuition to class 1 to class 12 students in India. The company stores training content and videos in other company servers located near Mumbai because of infrastructure constraints. The company likes to enter Europe, Germany, and North American global market. To provide global services what company should adopt and how it will benefit and what are the main challenges faced by the company? **(1)(Feb/March 2023)**

46. Identify the connective technology for short-range communication within 10 meters and 6 devices that need to connect without wire and data rate around 10Mbps and good quality of service. Explain the working. **(1)(Feb/March 2023)**

47. Facebook, without a doubt, is a widespread social media platform. To build a scalable application, Facebook wants to use AWS. Express your views on it. **(1)(Feb/March 2023)**

48. To establish the connectivity between building A computers in one LAN network with building B computers in another LAN through a router. Though after following all the proper procedures like assigning IP addresses to those computers, IP address to Router, proper cable connectivity etc. Still the packet of information is not transferring between two LAN. Find the problem and troubleshoot it? **(1)(June/July 2023)**

49. The goal of industry 4.0 is to create a smart, highly flexible and responsive manufacturing industry that can adapt quickly to changing market demands. Justify with the benefits of automated decision making in industry 4.0c. **(1)(April/May 2024)**

50. This protocol has formed the foundation of data communication over the web. But it is not a preferred choice nowadays. Justify with its features. **(1)(April/May 2024)**

51. Many industry applications such as smart electric grid, Oil and gas fields, business intelligence etc benefit from cloud data analytic s to improve organizational performance and scalability. Justify your answer. **(1)(April/May 2024)**

52. Insecure cloud services is a type of cloud vulnerability. Do you agree? Justify your answer. **(1)(April/May 2024)**

53. In a smart street light system, sensors like LDR, IR sensor, RADAR sensor, etc monitors required system parameters. The data is recorded in the system and historical data can be viewed whenever required using the cloud. In order to design this system what are the components required and if the system behaves improperly, how do you test and troubleshoot to make the system functional. **(1)(April/May 2024)**

54. Here's a situation- You receive the following email from the help desk: Dear XYZ Email user, To create space for more users we're deleting all inactive email accounts. Here's what you have to send to save your account from getting deleted: Name (first and last): Email Login: Password: Date of birth: Iterate email If we don't receive the above information from you by the end of the week, your email account will be terminated. If you're a user what do you do? Justify your answer. **(1)(Feb/March 2023)**