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 **PRESIDENCY UNIVERSITY**

**Bengaluru**

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| **End - Term Examinations – JANUARY 2025** |
| **Date:** 06 / 01/ 2025 **Time:** 09:30am – 12:30pm |

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| School: SOCSE | Program: B Tech- CIT | |
| Course Code :CSE3055 | Course Name :Wireless Communication in IoT | |
| Semester: V | Max Marks:100 | Weightage:50% |

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| CO - Levels | CO1 | CO2 | CO3 | CO4 |
| Marks | 14 | 26 | 36 | 24 |

Instructions:

1. *Read all questions carefully and answer accordingly.*
2. *Do not write anything on the question paper other than roll number.*

Part A

|  |  |  |  |  |
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| Answer ALL the Questions. Each question carries 2marks. 10Q x 2M=20M | | | | |
| 1 | What is a sensor node? | 2 Marks | L1 | CO1 |
| 2 | Give the elements of WSN. | 2 Marks | L2 | CO1 |
| 3 | What is scalability? | 2 Marks | L1 | CO2 |
| 4 | List the types of network architectures. | 2 Marks | L1 | CO2 |
| 5 | Name the types of Sensors | 2 Marks | L1 | CO2 |
| 6 | List Low duty cycle periods | 2 Marks | L1 | CO3 |
| 7 | Draw MDP diagram | 2 Marks | L3 | CO3 |
| 8 | List MQTT components | 2 Marks | L1 | CO3 |
| 9 | Draw SPI Diagram | 2 Marks | L3 | CO4 |
| 10 | List of Off board Communication Interface | 2 Marks | L1 | CO4 |

Part B

|  |  |  |  |  |  |
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| Answer the Questions Total 80 Marks | | | | | |
| 11. | a. | Explain the requirements that will form typical parts of WSN? | 10  Marks | L2 | CO1 |
| Or | | | | | |  | Or |
| 12. | a. | How does energy scavenging contribute to sustainability and reduced dependence on batteries? | 10  Marks | L1 | CO1 |
|  |  |  |  |  |  |
| 13. | a. | With a neat diagram, describe single node architecture, elements in WSN | 10  Marks | L1 | CO2 |
| Or | | | | | |
| 14. | a. | Illustrate the contention based MAC protocols in WSN  with suitable diagrams | 10  Marks | L2 | CO2 |

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| 15. | a. | In WSN the interfaces should be accessible from the protocol implementations in virtual reality system, explain the interface sensor model for this scenario, with a neat diagram. | 10  Marks | L1 | CO2 |
| Or | | | | | |
| 16. | a. | Write all the optimization goals, and their figure of merits of a WSN and explain each in detail. | 10  Marks | L1 | CO2 |

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| 17. | a. | Identify the suitable protocol which reduces energy consumption of MAC protocol. Write in detail with supporting statements and diagrams. | 15  Marks | L2 | CO3 |
| Or | | | | | |
| 18. | a. | Elaborate the various effective scenarios of the sensor network architecture with suitable diagrams | 15  Marks | L3 | CO3 |

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| 19. | a. | Explain the following in detail. With suitable diagram   1. CSMA Access Mode 2. CSMA Channel Concept 3. CSMA Advantages and Disadvantages | 15  Marks | L2 | CO3 |
| Or | | | | | |
| 20. | a. | Explain the following in detail. With suitable examples   1. Energy issues on MAC Layer 2. Low Duty cycle 3. Contention Based Protocol 4. Scheduled Based Protocol | 15  Marks | L2 | CO3 |

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| 21. | a. | Identify the well-known technology that operates in the band from 2.4 GHz to 2.485 GHz, whose basic principle is FHSS. List out the characteristics, features, advantages, disadvantages and applications of the technology with supporting diagram. | 20  Marks | L1 | CO4 |
| Or | | | | | |
| 22. | a. | A Service provider wants to provide communication in wireless technology for data and voice communication to a particular area. The total bandwidth of service provider licensed Band is 868.0 MHz to 2400 GHz and it supporting distance and data rate of up to 100 meters and 20-250Kbps,  identify the technology and write the following:  a. key specifications  b. Working principles  c. Advantage, Disadvantage and its Application | 20  Marks | L3 | CO4 |

\*\*\*\*\* BEST WISHES \*\*\*\*\*