Register Number:……..

KUMARAGURU
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**B.TECH. DEGREE EXAMINATIONS: APRIL / MAY 2023**

(Regulation 2018)

Fourth Semester

**ARTIFICIAL INTELLIGENCE AND DATA SCIENCE**

U18AII4201: Computer Networks

**COURSE OUTCOMES:**

**CO1:** Understand the functionality and protocols operating in each layer of OSI reference model
**CO2:** Design error control, flow control and routing protocols
**CO3:** Construct network traffic characteristics and congestion control mechanism
**CO4:** Apply error control, flow control and routing protocols

**Time: Three Hours** **Maximum Marks: 100**

**Answer all the Questions:**
**PART A (10 x 2 = 20 Marks)**
**(Answer not more than 40 words)**

| | | | |
|---|---|---|---|
| 1. | List some of the components of data communication | CO1 | [K1] |
| 2. | Compare and contrast radio wave and infrared | CO1 | [K2] |
| 3. | Identify the relationships among capacity, bandwidth, and propagation in terms of reliable transmission | CO1 | [K3] |
| 4. | Show that IPV5 cannot be successfully used in any real time networks | CO2 | [K1] |
| 5. | Identify the various types of delays in network layer | CO2 | [K3] |
| 6. | What do you mean by piggybacking? List its disadvantages | CO3 | [K1] |
| 7. | Interpret the importance of segment numbering system in TCP | CO3 | [K2] |
| 8. | Compare and contrast UDP header and TCP header | CO3 | [K2] |
| 9. | Why DNS is essential in networks? | CO4 | [K1] |
| 10. | List the uses of IP security | CO4 | [K1] |

**Answer any FIVE Questions:-**
**PART B (5 x 16 = 80 Marks)**
**(Answer not more than 400 words)**

| | | | | | |
|---|---|---|---|---|---|
| 11. | a) | Compare and contrast CSMA/CD and CSMA/CA | 8 | CO1 | [K2] |
| | b) | Apply the logic of CRC for error detection when a sample message of 1010000 needs to be tested whose CRC generator is given as 1001 | 8 | CO1 | [K3] |

| | | | | | |
|---|---|---|---|---|---|
| 12. | | Identify the best protocol where the topology of the network changes dynamically. Also, narrate how this protocol differentiates itself from linkstate (OSPF) | 16 | CO2 | [K3] |
| 13. | | Examine the ways of controlling congestion. Give certain use cases in which token bucket and leaky bucket can be used. | 16 | CO3 | [K4] |
| 14. | | Explain the protocol which operates as a contract for receiving emails from the mail server and how it is associated with HTTP | 16 | CO4 | [K2] |
| 15. | a) | Explain the applications of circuit switching and packet switching | 8 | CO2 | [K2] |
| | b) | Compare and contrast TSL and SSL | 8 | CO4 | [K2] |
| 16. | | Identify and detail the most suitable topology that can be implemented for the following scenarios.<br>i. Hospital and health care network<br>ii. Educational sector network<br>iii. PlayStation network<br>iv. Personal Home network | 16 | CO1 | [K3] |

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