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B. M. S. College of Engineering, Bengaluru - 560019

Autonomous Institute Affiliated to VTU

September / October 2023 Supplementary Examinations

Programme: B.E. **Semester: III**
Branch: Artificial Intelligence and Machine Learning **Duration: 3 hrs.**
Course Code: 20AM3PCCNS **Max Marks: 100**
Course: Computer Networks **Date: 13.09.2023**

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may suitably assumed.

UNIT - I

1. a) Explain the Network Architecture with a neat labelled diagram. Further explain Layered system with alternative abstractions. **10**

   b) What will be the propagation time and the transmission time for a 2.5 kbyte message when the bandwidth of the network is 1 Gbps? Assuming the distance between sender and receiver is 12, 000 km and speed of light is 2.4 * 10^8 m/s. **5**

   c) Define with Formula for the following i) Bandwidth, ii) Throughput iii) Latency (Delay) iv) Bandwidth X Delay Product. A network with bandwidth of 10 Mbps can pass only an average of 12, 000 frames per minute where each frame carries an average of 10, 000 bits. What will be the throughput for this network? **5**

UNIT - II

2. a) Analyse Reliable Transmission with help of Stop and wait protocol Sliding window Concurrent logical channels. **10**

   b) A bit stream 1101011011 is transmitted using the standard CRC method. The generator polynomial is x^4+x+1. What is the actual bit string transmitted? **10**

UNIT - III

3. a) Apply the Dijkstra's algorithm to find the shortest path route for the following figure 3a. **10**

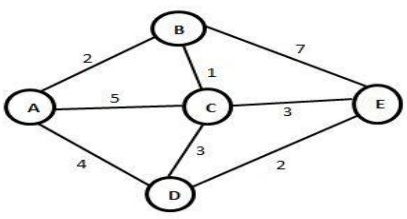

Fig. 3a

b) Given the network shown in Figure 3b, where the letters A to J represent LANs and the circles B1 to B7 represent a switch node. Indicate which ports are not selected by the spanning tree algorithm. **5**

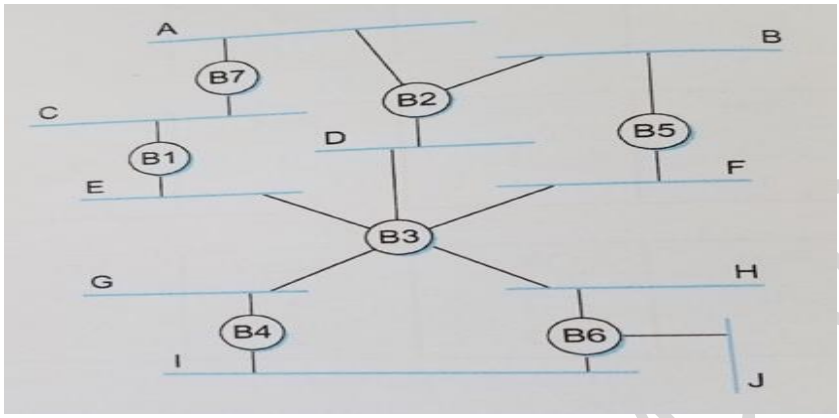

Fig. 3b

c) Given the network shown in Figure 3b, assume that switch B1 suffers catastrophic failure. Indicate which ports are not selected by the spanning tree algorithm after the recovery process and a new tree has been formed. Which ports are not selected by the spanning tree algorithm. **5**

UNIT - IV

4. a) Explain with the neat diagram the process of three – way handshake in TCP. **10**

   b) Explain Karn/Partridge Algorithm. **10**

OR

5. a) Analyze issues in Resource allocations. **10**

   b) Explain Fast retransmit and fast recovery with flow diagram. **10**

UNIT - V

6. a) Analyze the authenticators with a diagram of Computing Mac versus computing HMAC. **10**

   b) Analyze Pre-Distribution of Symmetric Keys by a challenge – response protocol and public key authentication protocol. **10**

OR

7. a) Analyze HTTP 1.0 behavior and HTTP 1.1 behavior with persistent connections. **10**

   b) Analyze the Message flow for a basic SIP session with relevant diagram. **10**

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