Graphic Era
HILL UNIVERSITY
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End Term (Odd) Semester Examination November 2025

Roll no. 22941038

Name of the Course: B. Tech. CSE
Semester: VII
Name of the Paper: Computer Networks - II
Paper Code: TCS703

Time: 3 hours **Maximum Marks: 100**

Note:

(i) All questions are compulsory

(ii) Answer any two sub questions from a, b and c in each main question.

(iii) Total marks for each question is 20 (Twenty).

(iv) Each sub-question carries 10 marks.

Q1. (2×10 = 20Marks)

a. Classify the routing algorithms. Differentiate between link state and distance vector routing algorithms. [CO1]

b. Describe the implementation of multicast and broadcast routing in network layer and in data-link layer. [CO1]

c. How hierarchical routing is implemented? Explain how hierarchy reduces routing table size and improves scalability. Give suitable examples and diagrams. [CO1]

Q2. (2×10 = 20Marks)

a. Suppose the frame 1011100010001 is to be transmitted from a sender to receiver. Calculate the transmitted frame by cyclic redundancy check (CRC) algorithm using the generator polynomial $G(x) = x^4 + x + 1$. [CO2]

b. Explain the channel allocation in CSMA (1-persistent, p-persistent and 0-persistent). How collisions are handled in CSMA? [CO2]

c. Describe the Ethernet frame structure (and the usages of each field present), addressing and evolution of Ethernet technologies. [CO3]

Q3. (2×10 = 20Marks)

a. Explain RTP, RTCP, SIP, and H.323 and describe how these protocols support real-time interactive multimedia applications. [CO4]

b. Discuss streaming of stored video over the Internet. Explain buffering, play out mechanisms, DASH and strategies used to handle network jitter. [CO4]

c. Differentiate between real-time streaming of video/audio and stored-video/audio with respect to protocol, buffering and jitter. [CO4]

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Q4. (2×10 = 20Marks)

a. Explain the SDN architecture. Describe the role of the data plane, control plane, SDN controller and northbound/southbound interfaces. [CO5]

b. What are key challenges in scaling and managing traditional networks, particularly provisioning new services or network nodes over SDN networks? [CO5]

c. Discuss the role of OpenFlow and its importance in SDN implementation. [CO5]

Q5. (2×10 = 20Marks)

a. How UDP socket programming can be implemented? Compare TCP and UDP servers, highlighting reliability, connection setup, flow control and message handling. [CO6]

b. Describe how the TCP protocol can be implemented? Also explain the TCP client-server model with a neat diagram. [CO6]

c. Write notes on (i) crashing and rebooting of server (ii) host shutdown. [CO6]

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