

(3 Hours) [Total Marks : 80]

- Note: 1. Question number 1 is compulsory. Solve any three out of remaining.
 2. Draw figure wherever necessary.
 3. Assume suitable data wherever necessary.

- 1 A virtual university currently has 5 departments of engineering housed in one building with six floors, one floor dedicated to each branch. Each department has different laboratories with each one catering to around 50 students simultaneously. The server room, library and office are on the ground floor. The university plans to expand it streams and two additional buildings are planned in the same campus at a distance of 1km each from the existing building, for Polytechnic and Pharmacy. The laboratory structure of each floor in the new buildings would be similar. The university has been granted the IP address 130.56.0.0 via a 10Mbps leased line. 20M
- Design subnets so that each building is assigned a different subnet. Private IP addressing can be used for providing logical separation between the different departments. Give the network topology design details for the backbone layer, distribution layer and access layer. Include the details for IP addressing in your design. As an upgradation in future, the University proposes to start online multimedia classes for all students in the pharmacy wing.
- Considering multimedia streaming what enhancements would you propose to existing design? Define and discuss the throughput and latency with respect to different bandwidth consideration. What are the propagation and transmission delays for a 5MByte message if the bandwidth of the network is 1Gbps? Assume distance between sender and receiver is 12,000km and light travels at 2.4×10^4 m/sec.
- 2 (a) What are different steps of top-down network design? List typical technical goals. 10M
- (b) Differentiate between design rule of Fast Ethernet, Gigabyte Ethernet & 10G Ethernet. 10M
- 3 (a) Explain the TIA/EIA-942 logical layout for data center design. 10M
- (b) What is a DMZ? Explain its importance in Network Security? Discuss its limitations. 10M
- 4 (a) What are the challenges of a network manager? How are fault management and performance management handled by an NMS? 10M
- (b) What do you mean by Software Defined Networks? Explain the network virtualization techniques. 10M

Turn Over

- 5 (a) Explain performance bottlenecks of network backup. 10M
- (b) Explain WLAN authentication process 10M
- 6 Write short notes on: (any four) 20M
- a. Hierarchical Network model
 - b. TIA-942 design elements
 - c. WLAN controller
 - d. PoX and NoX
 - e. Border less network architecture
 - f. FC SAN protocol Stack
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