

(Time: $2\frac{1}{2}$ hours)

[Total Marks: 60]

- N. B.: (1) **All** questions are **compulsory**.
 (2) Make **suitable assumptions** wherever necessary and **state the assumptions** made.
 (3) Answers to the **same question** must be **written together**.
 (4) Numbers to the **right** indicate **marks**.
 (5) Draw **neat labeled diagrams** wherever **necessary**.
 (6) Use of **Non-programmable** calculator is **allowed**.

1. **Attempt any two of the following:** 12
 - a. Explain the different types of service field in IP datagram
 - b. Explain the following :
 - i) Proxy ARP ii) Gratuitous ARP.
 - c. Explain the following:
 - i) Metrics ii) Convergence time iii) Neighbors iv) Hold-down timer.
 - d. Explain the two node instability in distance vector routing protocol? What are the different techniques to resolve the problem?

2. **Attempt any two of the following:** 12
 - a. What is the purpose of hello protocol? What information does hello packet contain?
 - b. What are designated routers and backup designated routers? Explain the election procedure of designated and backup designated router.
 - c. Explain the OSPF neighbor state machine.
 - d. Explain how database exchange takes place with and without a designated router.

3. **Attempt any two of the following:** 12
 - a. What is IP Server level agreement? Explain the concepts of IP service level agreement.
 - b. Explain the different BGP neighbor states.
 - c. What are extension headers in IPv6? Explain the fields of extension headers in IPv6.
 - d. Explain the concept of IPv6 tunneling encapsulation and decapsulation.

4. **Attempt any two of the following:** 12
 - a. How is High availability obtained in a campus? Explain.
 - b. What is a trunk? Explain VLAN trunking protocol.
 - c. Explain the three design modes for access distribution blocks.
 - d. Explain the architecture of Virtual Private LAN Service.

5. **Attempt any two of the following:** 12
 - a. With the help of a neat diagram explain the architecture of data center.
 - b. What is storage area network? What are its components?
 - c. Discuss the different SAN extension protocols.
 - d. Explain the different design considerations for remote access virtual private networks.