ACN

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 calculators is allowed.
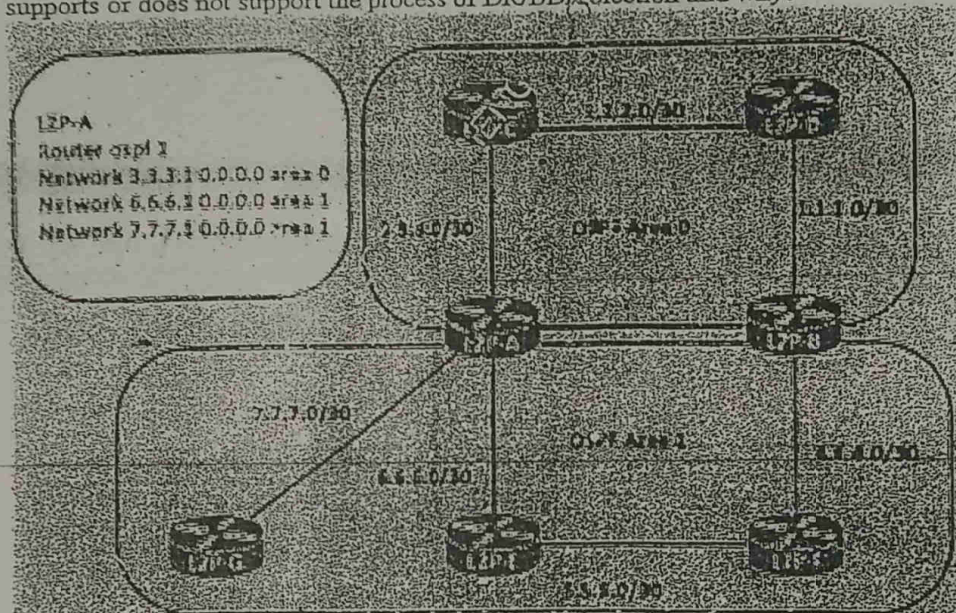
1. Attempt *any two* of the following: 12

a. Explain the difference between simple split horizon and split horizon with poisoned reverse.

    What is load balancing? Explain in detail the types of load balancing.

    Discuss the concepts involved in IGP and EGP routing protocols.

d. Explain different functions of EGP and EGP message types.

2. Attempt *any two* of the following: 12

a. Why DR and BDR are essential? How are they elected? Which type of network supports or does not support the process of DR/BDR election and why?

b.


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L2P-A
Router ospf 1
Network 3.3.3.1 0.0.0.0 area 0
Network 6.6.6.1 0.0.0.0 area 1
Network 7.7.7.1 0.0.0.0 area 1
```

What is the potential issue can be identified from L2P-A declaration configuration? Explain why problem persists and give the solution for it.

c. In OSPFv2 what triggers the first SPF recalculation and in which sequence?

d. Which three factors have the biggest influence on OSPF scalability? Why?

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3. Attempt *any two* of the following:
a) Explain source-specific multicast. Which multicast address ranges are assigned as source-specific multicast destination addresses and are reserved for use by source-specific applications and protocols?
b. Explain IPV6 extension header in detail.
c. Which two orders in the BGP Best Path Selection process are correct? Why?
i. Higher local preference, then lowest MED, then eBGP over iBGP paths
ii. Higher local preference, then highest weight, then lowest router ID
iii. Highest weight, then higher local preference, then shortest AS path
iv. Lowest origin type, then higher local preference, then lowest router ID
v. Highest weight, then higher local preference, then highest MED
d. Explain the major differences between an IPv4-compatible tunnel and IP6 to IP4 (6to4) tunnel?

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4. Attempt *any two* of the following:
a. Explain Concept of SLA. What different metrics a good SLA should encompass?
b. Loop guard and UnDirectional Link Detection both protect against Layer 2 STP loops. In which ways does loop guard differ from UDLD in loop detection and prevention?
c. What is trunk? Explain DTP features and its encapsulation types.
d. The EtherChannel between your LAN switch and the Internet router is not load-balancing efficiently. On the switch, there are several workstations with valid IP ranges. Which different load-balancing algorithms can be used in the switch in order to optimize this load balancing? Explain.

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5. Attempt *any two* of the following:
a. What is Virtual Routing and Forwarding? Explain.
b. Explain the different design considerations for remote access virtual private networks.
c. What are blade servers? What challenges need to be considered while designing and supporting the data center network?
d. What are the different storage technologies used in Data Center? Explain in detail.

(2 ½ hrs)   Max Marks: 60

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Q1   Answer *any two* of the following: 12

a   Explain High-performance computing and High-throughput computing. What are   6
     the design objectives to achieve High-performance computing and High-throughput
     computing?

b   What is Internet of Things? What is Cyber physical system? Explain.   6

c   Discuss the evolution of service oriented architecture.   6

d   Explain the different programming models for parallel and distributed computing. 6

Q2   Answer *any two* of the following: 12

a   Explain the different levels of virtualization implementation along with relative   6
     merits of each level.

b   Explain public, private and hybrid clouds.   6

c   What are cloud ecosystems? Explain the cloud ecosystem for building private   6
     clouds.

d   What is hardware virtualization? Discuss the virtualization support in Windows   6
     Azure, Amazon Web Service and Google App Engine.

Q3   Answer *any two* of the following: 12

a   Explain the architecture, functional modules and applications of Google App   6
     Engine.

b   Enumerate the steps by which an intergrid gateway (IGG) allocates resources from a   6
     local cluster to deploy applications. Explain with the help of diagram.

c   With the help of a diagram, explain the interactions between the components of   6
     Intergrid.

d   What are the traditional features of cluster, grid and parallel computing   6
     environments? Explain.

Q4   Answer *any two* of the following: 12

a   With the help of a neat diagram, explain Google File System.   6

b   Explain the different types of Amazon Machine Images. Explain the execution   6
     environment of Amazon Elastic Compute Cloud.

c   What are the main components of OpenNebula architecture? Explain.   6

d   With the help of a neat diagram, explain the components and architecture of Aneka.   6

Q5   Answer *any two* of the following: 12

a   Compare the programmer's perspective of Data-intensive scalable computing and   6
     conventional supper computer.

b   What are the different performance attributes for HTP/HTC computing?   6

c   What are online social networks? Enumerate the ideas for providing online social   6
     networking services. What are the benefits of social networks?

d   Explain the functionality of different Facebook features.   6

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(5) Draw **neat labeled diagrams** wherever **necessary**.
(6) Use of **Non-programmable** calculators is **allowed**.

Q1   Attempt *any two* of the following: 12
a.   Discuss various types of Antennas used for signal transmission.
b.   Explain frequency hopping spread spectrum (FHSS) techniques with suitable diagram.
c.   Explain Packet reservation technique PRMA in detail.
d.   Explain the concept of multiplexing. Discuss code division multiple access (CDMA) technique in detail.

Q2   Attempt *any two* of the following: 12
a.   Discuss various security services defined in GSM system.
b.   Explain the functional architecture of GPRS system.
c.   Differentiate among GEO, LEO, and MEO.
d.   Explain the basic architecture of DECT.

Q3   Attempt *any two* of the following: 12
a.   Discuss the specification and structure of Multimedia object transfer protocol.
b.   List the advantages and disadvantages of infrared and radio transmission.
c.   Discuss different features of Bluetooth in detail and compare it with IEEE802.11.
d.   Discuss various features of HiperLAN2 standard.

Q4   Attempt *any two* of the following: 12
a.   Discuss various services of WATM.
b.   Explain Handover reference model of BRAN.
c.   Discuss the process of IP packet delivery over mobile network.
d.   What is Reverse tunneling process in Mobile IP? Explain in detail.

Q5   Attempt *any two* of the following: 12
a.   Discuss various advantages and limitations of Mobile TCP.
b.   Compare between I-TCP and Snooping TCP in detail.
c.   What are the primary goals of the WAP forum efforts and how are they reflected in the initial WAP protocol architecture?
d.   What is selective retransmission? What are its advantages and disadvantages?

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