

## IT Infrastructure Design

Q.P. Code : 862800

(3 Hours)

[Total Marks : 80]

- N.B. :** (1) Questions No.1 is compulsory.  
(2) Solve **any three** questions from remaining **five** questions.  
(3) Assume suitable **data** if **necessary**.

1. In the Hospital there is a main block and three wards in the campus. The main block is the administrative block where registration of new patients takes place. The main block has 5 floors. The hospital has identified hospital management software, which should be accessible by the employees. The software is installed on a server at the administrative block. At the ground floor, there are 15 computers at the billing section. At other floors, there is one computer user each. The farthest distance between the computer on the top most floor and the ground floor is less than 70 meters. The wards have 5 floors each, with 10 computers in the ground floor of each ward. The distance between the wards and the blocks are less than 80 Meters. The computers in the wards may be increased based on future expansion plans. 20

**Questions :**

1. Hardware requirement analysis in main block with quantity.
  2. Hardware requirements analysis in wards.
  3. The employees should receive dynamic IP addressing from a central server.
  4. Network should be loop free at Layer 2.
  5. Every computer should be able to access the hospital management software from each of the location using a fixed IP address.
  6. IP Network design table.
  7. Identify configurations on the hardware wherever appropriate.
  8. Network topology diagram with necessary equipment's.
2. (a) Select a routing protocol that interests you, whether it's RIPv2, OSPF, EIGRP, BGP or a different routing protocol. Research any security issues associated with this routing and write two or three paragraphs about what you discovered. 10
- (b) Modern campus networks are almost always built with Ethernet technology these days. What is that? Why did Ethernet outlast older technologies such as Token Ring, FDDI and ATM LAN Emulation (LANE). 10

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3. (a) What are the most important criteria for selecting a WAN service provider. 10  
(b) Explain the service level model of cloud computing. 10
  4. (a) Explain the cloud data center technology architecture. 10  
(b) Explain the wireless network component architecture. 10
  5. (a) Explain the need and architecture of SAN. 10  
(b) Explain the network virtualization techniques in software defined networks? 10
  6. (a) Explain how SDN changed traditional enterprise network design? 10  
(b) Explain designing campus network design topology. Why it is difficult to archive true load balancing in most networks? 10
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