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2504N047

Candidate's Seat No : _____

**Five Years Integrated M.Sc. I.T. (Sem.-2) (IT-IMS & CS) Examination
Fundamentals of Computer Networks**

Time : 2-30 Hours]

April 2019

[Max. Marks : 70

Instructions:

1. Figures to the right indicates full marks
2. Neat diagrams must be drawn wherever necessary.

Q. 1) (A) answer the following questions:

(14 Marks)

1) Draw the OSI model and explain the last three layers in detail.

OR

1) Explain the following network topologies in detail. Also list the pros and cons of each.
(a) Ring (b) Star

2) Draw and explain each part of 802.3_Ethernet frame format.

Q. 1) (B) Choose the appropriate option/s for the following questions:

(04 Marks)

i) Which of the following is a Layer 2 protocol used to maintain a loop-free network?

- a. VTP b. STP c. RIP d. CDP

ii) Which switching technology reduces the size of a broadcast domain?

- a. ISL b. 802.1Q c. VLANs d. STP

iii) Where does a frame have to carry a packet if it is destined for a remote network?

- a. Default gateway b. Neighbor host c. Switch d. Hub

iv) On a network, which mask should you use on point-to-point WAN links in order to reduce the waste of IP addresses?

- a. /27 b. /28 c. /29 d. /30 e. /31

Q. 2) (A) answer the following questions:

(14 Marks)

1) Explain CSMA/CD in detail.

OR

1) Explain DHCP in detail.

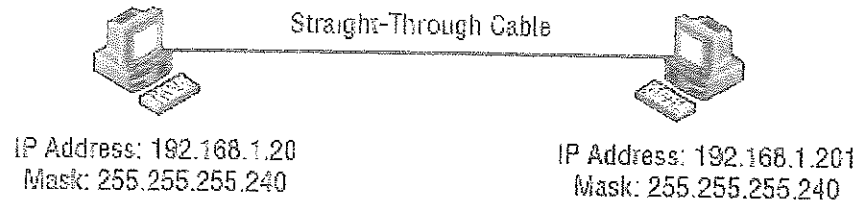
2) List and explain the types of NAT.

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Q. 2) (B) Choose the appropriate option/s for the following questions: (04 Marks)

- i) A network administrator is connecting two hosts directly through their Ethernet interfaces, as shown in the illustration. Ping attempts between the hosts are unsuccessful. What can be done to provide connectivity between the hosts? (Choose two.)



- A crossover cable should be used in place of the straight-through cable.
 - A rollover cable should be used in place of the straight-through cable.
 - The subnet masks should be set to 255.255.255.192.
 - A default gateway needs to be set on each host.
 - The subnet masks should be set to 255.255.255.0.
- ii) If you are forced to replace a router that has failed to the point that you are unable to Access its current configuration to aid in setting up interface addresses on the new router, which of the following can you reference for assistance?
- The default gateway settings on computers from each subnet that the old router interconnected.
 - The router's configuration that was periodically cached on the DHCP server.
 - The router's configuration that was periodically cached on the DNS server.
 - The new router will auto-configure itself with the correct settings.
- iii) What two statements about IPv4 and IPv6 addresses are true? (Choose two.)
- An IPv6 address is 32 bits long, represented in hexadecimal.
 - An IPv6 address is 128 bits long, represented in decimal.
 - An IPv4 address is 32 bits long, represented in decimal.
 - An IPv6 address is 128 bits long, represented in hexadecimal.
- 4) Which of the following services use TCP? (Choose four.)
- DHCP
 - SMTP
 - SNMP
 - FTP
 - HTTP
 - TFTP

Q. 3) (A) answer the following questions: (14 Marks)

1) Explain the given protocols in detail: (a) icmp (b) rdp
OR

1) Explain the given protocols in detail: (a) SMTP (b) POP

2) Explain the VLAN with an appropriate example along with topology.

Q. 3) (B) Choose the appropriate option/s for the following questions: (03 Marks)

- i) You need a device that can prevent your users from accessing certain websites. Which device should you install?

a. Firewall b. IDS c. IPS d. Proxy server

- ii) Which of the following can run full duplex and achieve 200 Mbps with Cat 5e cable?

a. 100BaseF b. 100BaseTX c. 1000BaseF d. 1000BaseT

- iii) What type of connector does UTP cable typically use?

a. BNC b. ST c. RJ-45 d. SC

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Q. 4) (A) Write the subnet mask, subnet address, broadcast address, and valid host range for: (14 Marks)

- (i) 192.168.100.99/25
- (ii) 192.168.100.66/27

Q.4. (B) Choose the appropriate option/s for the following questions: (03 Marks)

- i. Which of the following mnemonic devices can you use to remember the first letter of the name of each layer of the OSI model in the proper order?
 - a. All People Seem To Need Processed Data.
 - b. Always Should People Never Threaten Dog Police.
 - c. Please Do Not Throw Sausage Pizza Away.
 - d. All Day People Should Try New Professions.
- ii. Which of the following is true regarding sequencing and acknowledgments? (Choose all that apply.)
 - a. The segments delivered are acknowledged back to the sender upon their reception.
 - b. If a segment is not received, the virtual circuit must be restarted from the beginning at a slower transmit interval.
 - c. Any segments not acknowledged are retransmitted.
 - d. Segments are sequenced back into their proper order upon arrival at their destination.
 - e. All segments are retransmitted on time slot intervals.
- iii. If you are using a cable medium called 10Base2, what does this mean?
 - a. That you are running Ethernet over HDMI
 - b. That you are running Ethernet over fiber
 - c. That you are running Ethernet over thicknet
 - d. That you are bundling multiple connections
 - e. That you are really old and using thinnet coax for your LAN medium

*****END*****

