

INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous) Dundigal-500043, Hyderabad

B.Tech IV SEMESTER END EXAMINATIONS (REGULAR) - JULY 2022

Regulation: UG20

Time: 3 Hours

COMPUTER NETWORKS (Common to CSE(CS) | IT)

Max Marks: 70

Answer ALL questions in Module I and II Answer ONE out of two questions in Modules III, IV and V (NOTE: Provision is given to answer TWO questions from among one of the Modules III / IV / V All Questions Carry Equal Marks All parts of the question must be answered in one place only

$\mathbf{MODULE}-\mathbf{I}$

- 1. (a) Describe TCP/IP Model. Explain the functions and protocols and services of each layer. Compare it with OSI Model. [BL: Understand| CO: 1|Marks: 7]
 - (b) A network with bandwidth of 10 Mbps can pass only an average of 12,000 frames per minute with each frame carrying an average of 10,000 bits. What is the throughput of this network?

[BL: Apply] CO: 1|Marks: 7]

$\mathbf{MODULE}-\mathbf{II}$

- 2. (a) How CSMA/CA differs from CSMA/CD? Discuss the various data link control (DLC) services with a neat sketch. [BL: Understand] CO: 2|Marks: 7]
 - (b) What is hamming distance? Find the hamming distance for each of the following code words.
 i) d(10000, 01000)
 ii) d(10101, 10010)

iii) d(1111, 1111)

iv) d(0000, 0000)

[BL: Apply| CO: 2|Marks: 7]

$\mathbf{MODULE}-\mathbf{III}$

- 3. (a) Demonstrate the design issues of network layer. Explain the IP packet format with a neat sketch. [BL: Understand] CO: 3[Marks: 7]
 - (b) Find the class of each address: i) 227.12.14.87 ii) 193.14.56.22 iii) 14.23.120.8
 iv) 252.5.15.111 v)134.11.78.56
 [BL: Apply] CO: 3|Marks: 7]
- 4. (a) List the two parts of Open Shortest Path First (OSPF) protocol. Describe various OSPF messages. [BL: Understand] CO: 4|Marks: 7]
 - (b) Analyze how the protocol independent multicast protocols scale well in environments where a relative small proportion of routers want to receive traffic for certain group?

[BL: Analyze| CO: 4|Marks: 7]

$\mathbf{MODULE}-\mathbf{IV}$

- 5. (a) Explain about the three way handshake protocol for connection establishment in TCP. Differentiate between UDP and TCP. [BL: Understand] CO: 5[Marks: 7]
 - (b) Generalize each field of the format of the TCP packet header. Specify the justification for having variable field lengths for the fields in the TCP header. [BL: Apply] CO: 5[Marks: 7]
- 6. (a) Draw and explain the header format for a user datagram protocol. Differentiate between virtual circuit versus datagram subnets. [BL: Apply] CO: 5|Marks: 7]
 - (b) A client uses UDP to send data to server. The data length is 16 bytes. Calculate the efficiency of this transmission at the UDP level (ration of useful bytes to total bytes)

[BL: Apply] CO: 5|Marks: 7]

$\mathbf{MODULE}-\mathbf{V}$

- 7. (a) Enumerate Domain Name Service (DNS) and explain in detail about the domain hierarchy and name servers [BL: Understand CO: 6|Marks: 7]
 - (b) Analyze the message format and the message transfer and the underlying protocol involved in the working of the electronic mail. [BL: Analyze] CO: 6|Marks: 7]
- 8. (a) Write the services provided by SNMPV3 and also compare with SNMPV1. Identify the importance of SNMP in network management standard. [BL: Apply] CO: 6|Marks: 7]
 - (b) Generalize the structure of HTTP server receives a request message from an HTTP client. How does the server know when all headers have arrived and the body of the message is to follow?

[BL: Apply] CO: 6|Marks: 7]

 $-\circ\circ\bigcirc\circ\circ-$