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Question Paper Code: AIT003



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

B.Tech IV Semester End Examinations (Regular / Supplementary) - May, 2019

Regulation: IARE – R16

COMPUTER NETWORKS

Time: 3 Hours

(Common to CSE | IT)

Max Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the question must be answered in one place only

UNIT – I

- (a) What is meant by topology? List out the categories of networks. Explain the topologies of the network. [7M]

(b) Imagine a signal travels through a transmission medium and its power is reduced to half. This means $p_2 = p_1/2$. Calculate attenuation. [7M]
- (a) Explain ISO/ OSI reference model with neat diagram. Explain the functions and protocols and services of each layer? [7M]

(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? [7M]

UNIT – II

- (a) Explain error detection and error correction techniques. Design a CRC process unit for the following two standard generators of computer networking: i) CRC-12 ii) CRC-16 [7M]

(b) Calculate the CRC for $P(x) = x^5 + x^3 + x + 1$ and $G(x) = x^3 + 1$. [7M]
- (a) Explain the frame format of IEEE 802.3 MAC frame format. [7M]

(b) Calculate the hamming distance for each of the following code words? [7M]

 - d(10000, 01000)
 - d(10101, 10010)
 - d(1111, 1111)
 - d(0000, 0000)

UNIT – III

5. (a) List the two parts of Open Shortest Path First(OSPF) protocol. Describe various OSPF messages. [7M]
- (b) Write the following MASKS in slash notation (/n).
i) 255.0.0.0 ii) 255.255.224.0 iii) 255.255.255.0 iv) 255.255.240.0 [7M]
6. (a) List and explain the features of the IPv6 protocol. Draw the header format of IPv6 and explain each field. [7M]
- (b) Find the class of the following IP addresses?
i) 237.14.2.1 ii) 208..35.54.12 iii) 129.14.6.8 iv) 114.34.2.8 [7M]

UNIT – IV

7. (a) List out functions and duties of transport layer. Explain the features of transport layer. [7M]
- (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) [7M]
8. (a) Explain the concept of sliding window protocol in transport layer with and without errors. [7M]
- (b) An end system sends 50 packets for second using UDP over a full duplex mode 100 Mbps Ethernet LAN Connection. Each packet consists of 1500 Bytes of the Ethernet frame payload data. What is the throughput when measured at UDP protocol? [7M]

UNIT – V

9. (a) Explain the concept of Domain Naming System(DNS). Illustrate the concept of resource records of DNS. [7M]
- (b) Determine which of the following is FQDN and is PQDN?
i. Mil ii. edu iii. xxx.yyy.net iv. zzz.yyy.xxx.edu [7M]
10. (a) Explain the architecture of SMTP. Illustrate the working principle of FTP. [7M]
- (b) Show the sequence of bits sent from a client TELNET for the binary transmission of 11110011 00111100 11111111. [7M]

