Code No: 813AR

R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
MCA III Semester Examinations, June/July - 2018
COMPUTER NETWORKS

Time: 3 Hours   **Max. Marks: 60**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 20 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 8 marks and may have a, b, c as sub questions.

PART - A

5 × 4 Marks = 20

1.a)   Give a critical comparison between OSI and TCP-IP network models.   [4]
  b)   Compare working of ALOHA and Slotted ALOHA. How is the performance improved in Slotted ALOHA?   [4]
  c)   What is count-to-infinity problem in Distance Vector Routing? Give a solution to solve this problem.   [4]
  d)   Explain the process of fragmentation with suitable examples.   [4]
  e)   Explain the slow start algorithm used in TCP congestion control.   [4]

PART - B

5 × 8 Marks = 40

2.a)   A bit stream **10011101** is transmitted using the standard CRC method. The generator polynomial is $x^3 + 1$. Show the actual bit string transmitted. Supposethat the third bit from the left is inverted during transmission. Show that this error is detected at the receiver's end. Give an example of bit errors in the bit string transmitted that will not be detected by the receiver.
  b)   In CRC, show the relationship between the size of the divisor and the remainder.   [6+2]

OR

3.   Explain about Go-Back N and Selective Repeat versions of sliding window.   [8]

4.   Give the frame format of standard IEEE 802.3 Ethernet and explain the binaryexponential backoff algorithm used in Ethernet.   [8]

OR

5.a)   Store-and-forward switches have an advantage over cut-through switches with respect to damaged frames. Explain.
  b)   Explain the working of Token Passing as a Collision Free Protocol.   [4+4]

6.a)   For hierarchical routing with 4800 routers, what region and cluster sizes should be chosen to minimize the size of the routing table for a three-layer hierarchy?
  b)   Explain Hierarchical Routing.   [3+5]

OR

7.   What are the advantages of Token Bucket over Leaky Bucket? Explain the working of Token Bucket algorithm with suitable diagrams.   [8]

8.   Write Short notes on:
     a) Tunneling
     b) IPv4 Header Format.   [4+4]

OR

9.a) A network on the Internet has a subnet mask of **255.255.240.0**. What is the maximum number of hosts it can handle?

  b) Why do we need addressing at transport layer also? With a neat diagram explain how a process in one host establishes a connection with a server in another host.   [3+5]

10. With a neat diagram explain the different fields of TCP Segment header.   [8]

OR

11. Give a brief introduction to Electronic Mail and FTP applications.   [8]

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