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BTech Degree Examination October 2018  
Fifth Semester  
Information Technology  
14ITT51 – COMPUTER COMMUNICATION NETWORKS  
(Regulations 2014)  
Common to BE Computer Science and Engineering

Time: Three hours

Maximum: 100 marks

Answer all Questions

Part – A (10 × 2 = 20 marks)

1. Name the four basic network topologies and cite an advantage of each type. [CO1,K1]
2. A signal carrying data in which one data element is encoded as one signal element. If the bit rate is 100kbps, what is the average value of the baud rate if 'C' is between 0 & 1? [CO2,K2]
3. Identify the purpose of ARP and RARP in data link layer. [CO3,K2]
4. Unstuff the following frame payload: [CO3,K2]  

00011111000001011101110100111011111001101111
5. Draw the general format of ICMP messages. [CO4,K1]
6. Distinguish between multicasting and multiple unicasting. [CO4,K2]
7. Decompress the following addresses and show the complete unabbreviated IPv6 address: [CO4,K2]
  - a)  $\text{:::23AA}$
  - b)  $\text{B::A:::12}$
8. The following is the content of a UDP header in hexadecimal format [CO5,K2]  

ABC100AA01AA0000

  - a) What is the source port number?
  - b) What is the destination port number?
9. Specify the purpose of RSVP messages in integrated services. [CO5,K2]
10. Name any four resource records in DNS. [CO6,K1]

Part – B (5 × 13 = 65 marks)

11. a. i) With neat diagram, explain the TCP/IP protocol suite. Write the responsibilities of individual layers. (9) [CO1,K1]
- ii) Compare the various transmission modes used for communication. (4) [CO2,K2]
- (OR)
- b. i) Draw the graph of the NRZ – I, Manchester and differential Manchester schemes using each of the following data streams. (9) [CO2,K4]
  - 1) 00000000
  - 2) 01010101
  - 3) 00110011
- ii) Explain the properties of fiber – optic cables. (4) [CO2,K1]
12. a. i) Illustrate the operations of CRC encoder and decoder with neat diagram. (7) [CO3,K2]
- ii) For the given data word 110110101, show the generation of CRC codeword at the sender. Use the divisor 10101 to generate codeword. (6) [CO3,K3]

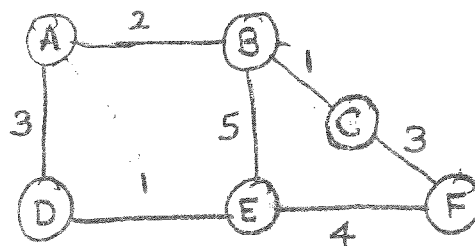
(OR)

- b. Summarize the point – to – point protocol at the data link layer. (13) [CO3,K2]

13. a. i) Identify the congestion control mechanisms used in network layer. Explain the mechanisms in detail. (7) [CO4,K2]
- ii) An ISP is granted the block 16.12.64.0/24. The ISP needs to allocate addresses for 3 blocks. One block of 120 addresses, one block of 60 addresses and one block of 10 addresses. Design the blocks. (6) [CO4,K4]

(OR)

- b. Write the distance – vector routing algorithm for a node to find routing table. Also find the routing table for the given network scenario. (13) [CO4,K3]



14. a. i) Draw the IPv6 frame format and explain its fields. (7) [CO4,K1]
- ii) Analyse the operations of stop - and - wait protocol in transport layer. (6) [CO5,K2]

(OR)

- b. Point out the features of TCP in transport layer. Draw the TCP segment format and explain the fields. (13) [CO5,K2]

15. a. Define quality - of - service. Examine the various techniques to improve QoS in networks. (13) [CO5,K1]

(OR)

- b. Illustrate the working of HTTP in retrieving contents from the internet. (13) [CO6,K3]

Part – C (1 × 15 = 15 marks)

16. a. i) Examine the HDLC transfer modes and frame formats used in data link control. (7) [CO3,K2]
- ii) Analyse the various channelization methods available in media access control to access transmission medium. (8) [CO3,K3]

(OR)

- b. i) Identify the architecture and working of electronic mail. (7) [CO6,K2]
- ii) Outline the purpose of SNMP used by the internet. (8) [CO6,K2]

Bloom's Taxonomy Level	Remembering (K1)	Understanding (K2)	Applying (K3)	Analysing (K4)	Evaluating (K5)	Creating (K6)
Percentage	21.67	47.78	22.22	8.33	-	-