**Reg. No. :** | | | | | | | | | | |

**Question Paper Code: 31582**

B.E. / B.Tech. DEGREE EXAMINATION, NOVEMBER 2015

Fifth Semester

Information Technology

01UIT502 – COMPUTER NETWORKS

(Common to Computer Science and Engineering)

(Regulation 2013)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. In a network with 5 devices find the total number of cable links required for (a) mesh topology (b) star topology.
2. Bit-stuff the data: 000111111100111110100011111111111000011111.
3. How does a bridge differ from a repeater?
4. What is piconet?
5. Find the netid and the hostid of the following IP addresses (a) 114.34.2.8 (b) 208.34.54.12.
6. Mention the uses of ARP and RARP protocols.
7. Why “A priority queue can provide better QoS than the FIFO queue”?
8. List the uses of UDP.
9. Distinguish between transport mode and tunnel mode of IPSec.
10. Define URL.

PART - B (5 x 16 = 80 Marks)

11. (a) (i) Distinguish between single bit error and burst error. Which of these errors is more likely to occur in data transmission? Justify your answer. (8)

(ii) A sender needs to send the four data items 0x3456, 0xABCC, 0x02BC and 0xEEEE. Answer the following: (8)

1) Find the checksum at the sender site

2) Find the checksum at the receiver site if there is no error

3) Find the checksum at the receiver site if the second data item is changed to 0xABCE and the third data item is changed to 0x02BA

Or

(b) (i) Explain in detail the functions of various layers in the OSI model . (10)

(ii) Differentiate between stop and wait flow control and sliding window flow control techniques. (6)

12. (a) (i) Explain in detail CSMA technique and the three persistent methods. (8)

(ii) Summarize the categories of standard Ethernet. (8)

Or

(b) (i) Explain in detail the architecture and addressing mechanism of IEEE 802.11. (8)

(ii) Illustrate how RTS/CTS signals can be used to overcome the hidden terminal problem. (8)

13. (a) (i) Explain in detail various error reporting and query messages of ICMP. (8)

(ii) Compare and contrast circuit switching and packet switching networks. (8)

Or

(b) An ISP is granted a block of addresses starting with 190.100.0.0/16 (65, 536 addresses). The ISP needs to distribute these addresses to three groups of customers as follows:

1) The first group has 64 customers; each needs 256 addresses.

2) The second group has 128 customers; each needs 128 addresses.

3) The third group has 128 customers; each needs 64 addresses.

Design the subblocks and find out how many addresses are still available after these allocations. (16)

14. (a) (i) The following is a dump of a TCP header in hexadecimal format. (12)
05320017 00000001 00000000 5OO207FF 00000000

a) What is the source port number?

b) What is the destination port number?

c) What the sequence number?

d) What is the acknowledgment number?

e) What is the length of the header?

f) What is the type of the segment?

g) What is the window size?

(ii) In a TCP connection, the value of *cwnd* is 3000 and the value of *rwnd* is 5000. Determine the size of the sender window. The host has sent 2000 bytes which has not been acknowledged. How many more bytes can be sent? (4)

Or

(b) Why does congestion occur in a network? Explain in detail about one congestion control technique. (16)

15. (a) (i) Summarize the services provided by PGP. (8)

(ii) With a neat sketch explain the architecture of Email system. (8)

Or

(b) (i) Illustrate the classification of firewalls. (10)

(ii) Illustrate how FTP differs from client server application. (6)

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