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**P.E.S. College of Engineering, Mandya - 571 401**  
*(An Autonomous Institution affiliated to VTU, Belgaum)*  
**Sixth Semester, B.E. - Electronics and Communication Engineering**  
**Make - up Examination; July - 2016**  
**Computer Communication Networks**

*Time: 3 hrs*

*Max. Marks: 100*

*Note: Answer FIVE full questions, selecting ONE full question from each unit.*

**UNIT - I**

- 1 a. Define the term with respect to computer networks : 10  
 (i) Host (ii) Client (iii) Server (iv) Network Core (v) Protocol.
- b. Compare and contrast circuit switched network with packet switched network. 5
- c. Suppose two hosts A and B are separated by 10,000 km are connected by direct link of  $R = 1$  Mbps with propagation speed of  $2.5 \times 10^8$  m/s; 5  
 i) Calculate the Bandwidth Delay product  
 ii) What is the width of bit in the link?
- 2 a. Explain the concept of TDM and FDM circuit switching. 10
- b. Compare Virtual Circuit Network with Datagram Network. 5
- c. What is Queuing Delay? Model and describe queuing delay in relation to traffic intensity and show it through the quantitative plot. 5

**UNIT - II**

- 3 a. With required formats explain HTTP request and response messages. 10
- b. With required diagram explain the SMTP protocol and justify it is a PUSH protocol. 10
- 4 a. Illustrate with an appropriate example how cookies modify or makes a non-state full HTTP into a state full one. 10
- b. List out the generic FTP commands and Demonstrate the task of file transfer as a stream lined process with TCP connections setup and commands. 10

**UNIT - III**

- 5 a. With a neat diagram describe the semantics (field wise explanation) of TCP segment structure. 10
- b. Examine the process of segment exchange using 3-way handshake signals. 10
- 6 a. Write the UDP segment structure and explain its components. 10
- b. Explain End to End congestion control and network assisted congestion control. 10

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**UNIT - IV**

- 7 a. With a diagram explain the internal architecture of router, analyze the packet queuing scenario at input and output ports with respect to the switching fabric and illustrate head of the Line blocking. 12
- b. With frame format describe the discrete fields in IPV6 datagram. 8
- 8 a. What is Tunnelling? Identify the need for Network Address Translation (NAT) in IPV4 and explain it briefly. 10
- b. Consider the following network shown in Fig. Q8b. With the indicated link costs, use Dijkstra's shortest path algorithm to compute the shortest path from A to all nodes.

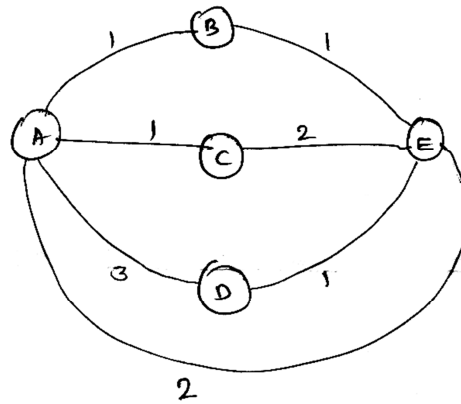


Figure 8. b)

**UNIT - V**

- 9 a. Given the bit stream  $D = [1101011101]$  being transmitted using CRC method with the generator polynomial  $x^4+x+1$ . Compute the actual bit stream transmitted with CRC. 6
- b. Explain in brief Pure ALOHA scheme and show that its efficiency is 18%. 10
- c. Write the Ethernet frame format. 4
- 10 a. Compare MAC address with IP address. 5
- b. Illustrate with an example how a 2-dimensional parity scheme can be used to detect and correct bit errors. 5
- c. How a VLAN is different from a Physical LAN? What is Trunking? Write the VLAN frame format and describe the VLAN tag field. 10

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