

--	--	--	--	--	--	--	--	--	--



P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

First Semester, Master of Computer Applications (MCA)

Semester End Examination; June - 2022

Computer Networks

Time: 3 hrs

Max. Marks: 100

Course Outcomes

CO1: Describe basic terminologies used for computer networking and data communication model with its components.

CO2: Classify various categories of networks and types of networking devices with their functions.

CO3: Explain the roles and functions of each layer of TCP/IP.

CO4: Analyze the routing table for a given subnet using various routing algorithm.

CO5: Identify how error free transmission held between two end nodes.

Note: I) Answer any FIVE full questions, selecting ONE full question from each unit.

II) Any THREE units will have internal choice and remaining TWO unit questions are compulsory.

III) Each unit carries 20 marks.

Q. No.	Questions	Marks	BLs	COs	POs
UNIT - I					
1 a.	Explain the functionalities of seven-layer OSI reference model.	10	L1,2	CO1	PO1,2,7,11
b.	How long does it take a packet of length 1000 bytes to propagate over a link of distance 2,500 km, propagation speed 2.5×10^8 m/s? Does delay depends on packet length and transmission rate.	10	L2	CO1	PO1,2,7,11
UNIT - II					
2 a.	Explain HTTP with non-persistent and persistent connections.	10	L1,2	CO2	PO1,2,3
b.	With an example, explain the working principle of SMTP and give its high-level view of the internet email system.	10	L1	CO2	PO1,2,3
UNIT - III					
3 a.	With a neat diagram, explain the UDP segment structure and depict how the checksum is calculated in data transmission?	10	L2	CO3	PO2,10
b.	Explain the working of SR protocol with suitable scenarios.	10	L2	CO3	PO2,10
OR					
3 c.	Explain TCP segment structure. Give its pictorial representation.	10	L1,2	CO3	PO2,10
d.	Explain the TCP connection establishment and torn-down process.	10	L1	CO3	PO2,10
UNIT - IV					
4 a.	Explain the IPv4 datagram frame format.	10	L1	CO4	PO1,2,5,8,10
b.	Explain ICMP and its message types.	10	L1,2	CO4	PO1,2,5,8,10
OR					
4 c.	Explain link state routing algorithm.	10	L2	CO4	PO1,2,5,8,10
d.	Explain the controlled flooding technique for broadcasting.	10	L2	CO4	PO1,2,5,8,10

UNIT - V

- 5 a. Explain the different services provided at link layer. 10 L1 CO5 PO2,3,4,12
- b. What is parity check? Give example for odd and even parity check. 5 L2 CO5 PO2,3,4,12
- c. Suppose the information content of a packet is the bit pattern
- 1 1 1 0
0 1 1 0
1 0 0 1
1 1 0 1
- 5 L2 CO5 PO2,3,4,12
- and an even parity scheme is being used. What would the value of the field containing the parity bit for the case of a 2-D parity check [used minimum length checksum field].

OR

- 5 d. Explain the key elements of a wireless network and obtain the difference between wired link and wireless link. 10 L1 CO5 PO2,3,4,12
- e. A bit stream 11011011111 is transmitted using standard CRC method. The generator polynomial is 10011. Show the actual bit string transmitted. Due to noise the least significant bit is inverted, the inverted bit string is received at the receiver. Show how this error is detected at the receiver end? 10 L1,2 CO5 PO2,3,4,12

* * *