



B.E DEGREE EXAMINATIONS: NOV/DEC 2023

(Regulation 2018)

Fifth Semester

COMPUTER SCIENCE AND ENGINEERING

U18CSI5201: Computer Networks

COURSE OUTCOMES

CO1: Summarize the functionality and protocols operating in each layer of OSI reference model.

CO2: Compare network topology, devices and transmission medium.

CO3: Analyze error control, flow control and routing protocols.

CO4: Analyze IP, TCP and UDP header formats.

CO5: Analyze Network traffic characteristics and congestion control mechanism.

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 2 = 20 Marks)

(Answer not more than 40 words)

- | | | |
|---|-----|-------------------|
| 1. Enumerate the characteristics of effective data communication. | CO1 | [K ₂] |
| 2. Outline the classification of transmission media. | CO2 | [K ₂] |
| 3. Compare error control done at data link layer and transport layer. | CO3 | [K ₂] |
| 4. Differentiate CSMA/CD and CSMA/CA | CO3 | [K ₂] |
| 5. Explain how switching is done in the Internet. | CO5 | [K ₂] |
| 6. Explain LAN switch. | CO5 | [K ₂] |
| 7. Define piggybacking. | CO5 | [K ₂] |
| 8. Explain the UDP format. | CO4 | [K ₂] |
| 9. Explain proxy server. | CO1 | [K ₂] |
| 10. Justify – “FTP differs from client server application”. | CO1 | [K ₂] |

Answer any FIVE Questions:-

PART B (5 x 16 = 80 Marks)

(Answer not more than 400 words)

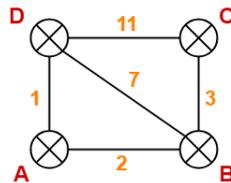
- | | | | |
|---|------|-----|-------------------|
| 11. a) Enumerate the functions, protocols, unit of transfer, devices and addressing used in various layers of OSI model. | (10) | CO1 | [K ₃] |
| b) Compare bus, ring and star topology in terms of network size, installation cost, difficulty in deploying, troubleshooting and effect of network or node failure. | (6) | CO2 | [K ₃] |

12. a) Given the data word 1010011010 and divisor 10111. Show generation of codeword using CRC in sender side and if 2nd bit is altered during transmission, verify for error in receiver side. (10) CO3 [K₃]
- b) Explain with illustration the operation of Go Back-n for successful transmission of Frame 0 and Frame 1. Assume that Frame 2, Frame 3, ACK4 and NAK4 are lost during transmission. (6) CO3 [K₃]

13. a) An ISP is granted a block of addresses starting with 190.100.0.0/16. The ISP needs to distribute these addresses to three groups of customers as follows: (10) CO4 [K₃]
- i. The first group has 64 customers; each needs 256 addresses.
 - ii. The second group has 128 customers; each needs 128 addresses.
 - iii. The third group has 128 customers; each needs 64 addresses.

Design the subblocks and give the slash notation for each subblock. Find out how many addresses are still available after these allocations.

- b) Outline the algorithm for Distance Vector Routing and explain its working for the network shown below: (6) CO4 [K₃]



14. a) Illustrate the format of TCP segment and explain its fields. The following is the dump of the TCP header in hexadecimal format. Analyze and identify the source port number, destination port number, sequence number and acknowledgement number. (10) CO4 [K₃]
- 05320017 00000001 00000000 500207FF 00000000

- b) Summarize the working of RSVP protocol (6) CO5 [K₂]

15. a) Explain the congestion control in TCP (10) CO4 [K₂]
- b) Compare the packet headers of IPv4 and IPv6. (6) CO4 [K₂]

16. a) Illustrate the working of POP3 and IMAP4 in Email. (8) CO1 [K₂]
- b) Elaborate domain namespace in DNS. (8) CO1 [K₂]
