



B.E DEGREE EXAMINATIONS: NOV/DEC 2022

(Regulation 2018)

Fifth Semester

INFORMATION SCIENCE AND ENGINEERING

U18ISI5201- Computer Network

COURSE OUTCOMES

- CO1:** Summarize the functionality and protocols operating in each layer of OSI reference model. [K3]
CO2: Compare network topology, devices and transmission medium. [K4]
CO3: Analyze error control, flow control and routing protocols. [K3]
CO4: Analyze IP, TCP and UDP header formats. [K4]
CO5: Analyze Network traffic characteristics and congestion control mechanism. [K5]

Time: Three Hours

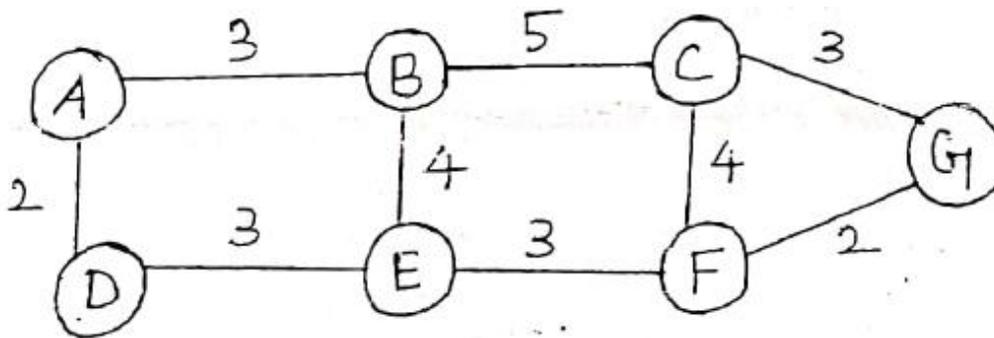
Maximum Marks: 100

**Answer all the Questions:-
PART A (10 x 2 = 20 Marks)
(Answer not more than 40 words)**

- | | | |
|--|-----|-------------------|
| 1. How many cables are needed to connect 5 devices in the following topologies?
i) Mesh ii) Ring | CO1 | [K ₁] |
| 2. Define Bit rate. | CO1 | [K ₁] |
| 3. Identify the need of physical address. | CO2 | [K ₃] |
| 4. Differentiate between CSMA/CD and CSMA/CA | CO2 | [K ₂] |
| 5. The following address belongs to a block. Find the first and last address:
72.110.18.16/16 | CO3 | [K ₁] |
| 6. Justify the reason why RIP used UDP instead of TCP. | CO3 | [K ₅] |
| 7. Differentiate between process to process communication and host to host communication. | CO4 | [K ₂] |
| 8. The following is the content of a UDP header in hexadecimal format: CB74008D001C001B
i) What is the source port number and destination port number?
ii) Identify the total length of the user datagram. | CO4 | [K ₃] |
| 9. List any two protocols in TCP/IP application layer. | CO5 | [K ₁] |
| 10. Can you find an analogy in our daily life as to when we use two separate connections in communication similar to the control and data connection in FTP? | CO5 | [K ₂] |

**Answer any FIVE Questions:-
PART B (5 x 16 = 80 Marks)
(Answer not more than 400 words)**

11. a) Describe various layers in TCP/IP protocols suite. 8 CO1 [K₂]
 b) Draw the graph of the following line coding schemes for the data stream 001100011010. Assume last signal level has been positive.
 a) NRZ-I b) NRZ-L c) Manchester d) AMI 8 CO1 [K₄]
12. a) The CRC encoder takes a data word 10101 and divisor 1011 as input. Find the codeword. How this codeword is verified by the CRC decoder if the codeword is received without any error. 8 CO2 [K₃]
 b) Draw the flow diagram for stop and wait protocol for the following scenario: 8 CO2 [K₄]
 i) The first frame is sent and acknowledged
 ii) The second frame is sent but it is lost and it is timed out
 iii) The second frame is sent again and acknowledged but acknowledgement is lost
 iv) The second frame is resent and acknowledged
 v) Third frame is sent and acknowledged
13. a) Demonstrate various service provided by the network layer. 8 CO3 [K₂]
 b) Apply distance vector routing algorithm to find the route from node A to node G 8 CO3 [K₃]
 for the following network



14. a) Differentiate between TCP and UDP 8 CO4 [K₂]
 b) Illustrate how TCP handles congestion in the network 8 CO4 [K₂]
15. a) Discuss with simplified flow diagram for interactive communication using TCP and explain the process involved. 8 CO5 [K₂]
 b) Build the design of UDP server used in interactive programming. 8 CO5 [K₃]
16. a) Describe how file is transferred from one host system to another with file transfer protocol. 8 CO5 [K₂]
 b) Explain different types of connections used in HTTP protocol with an example. 8 CO5 [K₂]
