

**Fifth Semester B.E. Makeup Examination, January 2020**  
**COMPUTER NETWORKS**

Time: 3 Hours

Max. Marks: 100

*Instructions:* 1. Draw the figures/ diagrams compulsorily wherever necessary.  
 2. Attempt only ONE question from each UNIT

**UNIT - I**

- 1 a. Explain the following terms.  
 i. Data Flow.  
 ii. Half and full duplex connections.
- b. Identify and explain the different layers of the TCP/IP model and correlate the layers of OSI model.

(2) (1) (10)  
 (2) (1) (10)

**OR**

- 2 a. Compare and contrast between the following terms:  
 i. LAN and WAN.  
 ii. Mesh and Bus topology.  
 iii. Physical address and Logical address.  
 iv. Specific address and Port address.

(2) (1) (1) (10)

- b. List the different layers of the OSI reference model and explain the following layers in details  
 i. Network Support Layers.  
 ii. Transport Layer.  
 iii. User Support Layers.

(1) (1) (1) (10)

**UNIT - II**

- 3 a. Discuss the following terms with respect to performance on the network efficiency:

- i. Bandwidth  
 ii. Throughput  
 iii. Latency  
 iv. Bandwidth Delay Product for LAN

(1) (1) (1) (10)

- b. What are the two approaches to packet-switching? Explain the three phases of the Virtual-Circuit network in detail with an example.

(2) (2) (1) (08)  
 (1) (2) (1) (12)

- 4 a. What are the different causes of transmission impairments? In figure below, a signal travels from point 1 to point 4. Calculate the resultant decibel value for the signal and specify whether the signal is attenuated or amplified.

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Note: L (Level), CO (Course Outcome) NO: 05  
 (1) (2) (1) (08)

- b. Draw the graph for the following line coding schemes using the data stream of 01011010.
- NRZ-I. (2)
  - Manchester. (2)
  - Differential Manchester. (2)
- c. Write a short note on the following:
- Coaxial Cable (3)
  - Fiber Optic Cable (2)
  - Propagation Methods (1)

### UNIT - III

- 5 a. Solve using CRC method, if the data word is 1100 and generator polynomial is 1011 if  
 a) Data word is unchanged at the receiver (3)  
 b) Data word is changed to 1110 during transmission (3)
- b. Explain Stop and Wait ARQ and show the flow diagrams for Lost frame and Lost Ack. (2) (3) (1) (1)
- OR**
- 6 a. Discuss the steps involved in generating a Checksum. Solve using checksum method if the data sequence is 8,9,10,7,12 and verify at the receiver. (2,3) (3) (2) (1)
- b. Explain Go Back N ARQ using the flow diagram for a lost frame. (2) (3) (1) (1)

### UNIT - IV

- 7 a. Change the following IP addresses from binary notation to dotted-decimal notation and also identify the class to which they belong to.
- 01111111 11110000 01100111 11111001 (2)
  - 10101111 11000111 11111000 00011101 (4)
  - 11011111 10110000 00011111 01011101 (2)
  - 11100000 11110111 11000111 01111101 (2)
- b. Find the:
- First address
  - Last address
  - Number of addresses
- For the addresses 211.17.180.0/24 (assume the MASK as 11111111 11111111 11111111 00000000) (2) (4) (2) (1)
- c. Explain the IPv4 datagram format. (2) (4) (1) (1)

### OR

- 8 a. Find the class, netid and the hostid of the following IP addresses.
- 111.56.45.78 (2)
  - 191.255.25.10 (4)
  - 207.3.54.12 (2)
  - 178.120.40.90 (2)
- b. Explain the IPV6 header format with its extension headers. (2) (4) (1)
- c. Compare and contrast the IPV4 and the IPV6 headers. (2) (4) (1)

**UNIT -V**

L CO PO M

- 9 a. Explain the UDP datagram format. And describe the port numbers used with UDP for the following protocols.
- i. Echo.
  - ii. Users.
  - iii. Name server.
  - iv. RPC.
  - v. SNMP.
- (2) (5) (1) (10)
- b. What is Domain Name Space? Discuss the following terms with examples w.r.t. DNS in the Internet.
- i. Generic domains.
  - ii. Country domains.
  - iii. Inverse domains.
- (1) (5) (1) (10)

**OR**

- 10 a. Explain the TCP segment format in detail.
- (2) (5) (1) (10)
- b. Explain the FTP in detail.
- (2) (5) (1) (10)

**Fifth Semester B.E. Semester End Examination, Dec./Jan. 2019-20**  
**COMPUTER NETWORKS**

Time: 3 Hours

Max. Marks: 100

*Instructions:* 1. Draw diagrams neatly wherever applicable  
 2. Answer any one question from each Unit

**UNIT - I**

L	CO	PO	M
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- 1 a. Define the term data communication. Explain data communication with respect to its fundamental characteristics and components. (2) (1) (1) (10)
- b. Explain the advantages and disadvantages of Mesh, Star and Bus topologies with neat diagrams. (2) (1) (1) (10)

**OR**

- a. Explain the functions of each layer involved in OSI model with a neat diagram. (2) (1) (1) (10)
- b. Explain the different categories of networks with neat diagrams. (2) (1) (1) (10)

**UNIT - II**

L	CO	PO	M
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- 3 a. Discuss the different types of transmission impairment with neat diagrams. (2) (2) (1) (10)
- b. Discuss the different types of bands of Unguided media in detail. (2) (2) (1) (10)

**OR**

- 4 a. Explain the different modes of Fiber Optic cable along with its advantages and disadvantages. (2) (2) (1) (10)
- b. Differentiate between Datagram Networks and Virtual Circuit networks with the help of neat diagram. (2) (2) (1) (10)

**UNIT - III**

(2)	(2)	(1)	(10)
L	CO	PO	M

- 5 a. Discuss the following terms:  
 i. Single bit error.  
 ii. Burst error.  
 iii. Forward error correction.  
 iv. Retransmission. (2) (3) (1) (04)
- b. Given the data-word 1111 with the given generator polynomial 1101,  
 i. Show the generation of the code-word at the sender site (using binary division).  
 ii. Show the checking of the code-word at the receiver site in both ways i.e. without error and with error (Assume the error at the MSB bit of the code-word). (2) (3) (2) (06)
- c. Define Framing and the reason for its need. Explain in detail the Stop-and-Wait ARQ protocol. (2) (3) (1) (10)

**OR**

- 6 a. Recall the steps undertaken by the sender and receiver for error detection in Internet Checksum. And for the following data items 0x466F, 0x726F, 0x757A, and 0x616E, find the Internet Checksum at:
- Sender Site.
  - Receiver Site if there is no error.
  - Receiver Site if the fourth data item is changed to 0x617E
- (1) (3) (1) (08)
- b. List the different protocols available for noisy channels. And explain the Go-Back-N ARQ protocol in detail.
- (1) (3) (1) (12)

**UNIT - IV**

- 7 a. What is IPv4 address? Explain the IPv4 classful addressing in detail.
- b. Explain IPv4 datagram format in detail with the help of a neat diagram.

**OR**

- 8 a. Explain the IPv6 datagram format with a neat diagram.
- b. Discuss the advantages of IPv6 over IPv4. Compare IPv4 and IPv6 headers.

(2) (4) (1) (10)

(4) (4) (1) (10)

**UNIT - V**

- 9 a. Discuss File Transfer Protocol (FTP) in detail with the help of a neat diagram.
- b. Explain User Datagram Protocol (UDP) along with User datagram format and Pseudo header format and its use.

(2) (5) (1) (10)

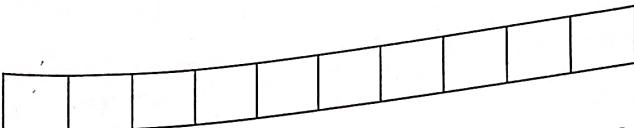
(2) (5) (1) (10)

**OR**

- 10 a. Explain SMTP protocol in detail with the help of a neat diagram.
- b. Explain TCP segment format in detail with the help of a neat diagram.

(2) (5) (1) (10)

(2) (5) (1) (10)



**Fifth Semester B.E. Makeup Examination, January 2019**  
**COMPUTER NETWORKS**

Max. Marks: 100

Time: 3 Hours

**Instructions:** 1. UNIT I and UNIT II are Compulsory. Answer any three FULL Questions from remaining UNITS  
 2. Show suitable diagrams wherever necessary, which is not mandatory.

L	CO	PO	M
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**UNIT - I**

- 1 a. Define communication system. And Identify the five components of data communication system. (01) (01) (01) (06)
- b. Compare and contrast between the following:  
 i. Point-to-Point connection and Multipoint connections. (01) (01) (01) (04)  
 ii. Mesh topology and Star topology.
- c. Explain the functions carried out by different layers of OSI reference model. (02) (01) (01) (10)

**UNIT - II**

- 2 a. Describe 'Phase' of a sine wave. Calculate the frequency of a wave with wavelength 2.5m and speed 50m/s. List broad categories of transmission medium used for data communication. (02) (02) (02) (07)
- b. What is 'Virtual-Circuit' networks? Explain its characteristics. (02) (01) (01) (05)
- c. Illustrate 'Circuit Switched' networks showing switch connection and explanation for all the three phases of communication. (02) (03) (02) (08)

**UNIT - III**

- 3 a. Differentiate between the following:  
 i. Single bit error v/s Burst Error.  
 ii. Error Detection v/s Error Correction.  
 iii. Forward Error correction v/s Retransmission. (02) (03) (01) (05)
- b. For the following data-word 1011 with the given divisor 1001,  
 i. Show the generation of the code-word at the sender site (using binary division).  
 ii. Show the checking of the code-word at the receiver site in both ways i.e. without error and with error (Assume the error at the MSB bit of the code-word). (02) (03) (03) (05)
- c. Explain in detail the Stop-and-Wait ARQ protocol. (02) (03) (01) (10)

**OR**

- 4 a. List the steps undertaken by the sender and receiver for error detection in 16 bit IP Checksum. For the following data items 0x3456, 0xABCC, 0x02BC and 0xEEEE find the 16 bit IP Checksum at:  
 i. Sender Site.  
 ii. Receiver Site if there is no error.  
 iii. Receiver Site if the second data item is changed to 0xABCD (02) (03) (01) (06)

- b. Distinguish between the Go-Back-N ARQ protocols and Selective-Repeat ARQ protocol. (02) (03) (01) (04)
- c. Write notes on following:  
 i. Character-Oriented protocols.  
 ii. Bit-Oriented protocols. (03) (03) (01) (10)

#### UNIT-IV

- 5 a. Compare classful and classless addressing. Categorize IPv4 address classes. (02) (03) (01) (08)
- b. Explain network layer functions. Discuss IPv4 address, address-space and notations used. (02) (01) (01) (06)
- c. Explain 'Network Address Translation' (NAT) (02) (01) (01) (06)

#### OR

- 6 a. Identify the main deficiencies in network layer IPv4 overcome by IPv6? List and explain other advantages of IPv6 over IPv4. (01) (02) (02) (07)
- b. Differentiate interdomain routing from intradomain routing. Classify the protocols used in these concerns with a brief note. (02) (02) (02) (06)
- c. State the main reasons for address transition from IPv4 to IPv6. Describe the strategies of this address transition. (02) (02) (01) (07)

#### UNIT -V

- 7 a. Explain the UDP protocol in detail. (02) (05) (01) (10)
- b. What is DNS? Discuss the use of DNS in the Internet. (02) (05) (01) (10)

#### OR

- 8 a. Explain in detail the connection establishment in TCP. (02) (05) (01) (10)
- b. Explain the FTP in detail. (02) (05) (01) (10)

**Fifth Semester B.E. Semester End Examination, Dec/Jan 2018-19**  
**COMPUTER NETWORKS**

Time: 3 Hours

Max. Marks: 100

**Instructions:** 1. UNIT I and UNIT II are Compulsory. Answer any three FULL Questions from remaining UNITS.  
 2. Draw the figures/ diagrams compulsorily wherever necessary.

**UNIT - I**

L CO PO M

- 1 a. Define protocol and explain its key elements. List the network topologies used for data communications. Explain any two with a neat diagram. (2) (1) (1) (07)
- b. Describe standards in data communication. (2) (1) (1) (05)
- c. Explain functions of each layers involved in TCP/IP protocol suite (2) (3) (1) (08)

**UNIT - II**

L CO PO M

- 2 a. Discuss the relation of the following terms with respect to performance of network:  
 i. Bandwidth  
 ii. Throughput  
 iii. Latency  
 iv. Bandwidth Delay product (2) (2) (1) (08)
- b. What are the two approaches of switching in networks? Explain any one in detail. (2) (2) (1) (12)

**UNIT - III**

L CO PO M

- 3 a. Identify the responsibilities of data link layer. What are the types of errors in network communication? Give examples. Compare error detection with error correction. (2) (3) (1) (08)
- b. Derive a CRC codeword using the dataword 1100 and the divisor 1011. Decode the same to show the syndrome as zero. (2) (2) (2) (07)
- c. Explain the terms 'Cyclic Code' and 'Checksum' with suitable examples. List the advantages of cyclic codes. (2) (1) (1) (05)

**OR**

- 4 a. Describe 'Data Link Control' functionalities. How 'Framing' is useful in data link layer? List its variants and protocols used in data transmission. (2) (1) (1) (08)
- b. Explain 'Noiseless Channel' and Nyquist theorem. (2) (1) (1) (07)
- c. Distinguish between 'Flow control' and 'Error control' with a suitable note on each. (2) (2) (1) (05)

**UNIT - IV**

L CO PO M

- 5 a. Discuss the different addressing classes used in IPV4. Give the details of address space. (2) (4) (1) (10)
- b. Compare and contrast the IPV4 and the IPV6 headers. (2) (4) (1) (06)

c. Find the netid and the hostid of the following IP addresses.

- i. 117.34.3.8
- ii. 207.3.54.12

(2) (4) (2) (04)

**OR**

6 a. Explain the IPV6 header format with its extension headers.

(2) (4) (1) (10)

b. Find the:

- i. First address
- ii. Last address
- iii. Number of addresses

For the addresses 205.16.37.39/28 (assume the MASK as 11111111 11111111 11111111  
11110000)

(2) (4) (2) (05)

c. Discuss the advantages of IPV6 over IPV4 protocol.

(2) (4) (1) (05)  
L CO PO M

**UNIT -V**

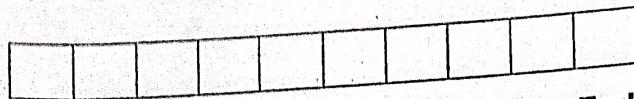
- 7 a. Discuss 'User Datagram Protocol' (UDP) and list different well known ports of UDP. With a neat diagram explain 'User Datagram', giving the size of header and all of its fields details.
- b. What is 'Hierarchy of Name Servers' in distribution of name space in Domain Name System (DNS)? Differentiate zone and root servers with a brief note and an example for each.
- c. Explain with an example and a diagram; how a DNS client/server program can support e-mail program to find an IP address of a mail recipient.

(2) (2) (2) (06)

**OR**

- 8 a. Write a note on the services offered by TCP to the processes at application layer. List with brief note for all of the TCP features providing the service.
- b. How FTP differs from other client server applications for data exchange? Justify your answer with reference to the ports used, two connections, file type, data structure and modes of transmission.
- c. Explain 'DNS in the Internet' showing domain space section tree divided into different sections.

(1) (2) (1) (08)  
(2) (2) (2) (06)  
(2) (2) (1) (06)



Sixth Semester B.E. Semester End Examination, May / June 2018  
**COMPUTER NETWORKS**

Max. Marks: 100

Time: 3 Hours

- Instructions:**
1. Unit I and III are compulsory
  2. Answer any one full question from each of the remaining units.
  3. Give examples and write assumptions wherever necessary.

**UNIT - I**

- 1 a. What is data communication? List and explain the components of data communication with diagram. 05 M  
( Level [1,2], CO [1], PO [3] )
- b. With diagram explain the OSI reference model. Discuss in brief the functionality of each of the layer. 10 M  
( Level [2], CO [1], PO [3] )
- c. Differentiate between physical addressing and logical addressing used in network communication. 05 M  
( Level [4], CO [1], PO [1] )

**UNIT - II**

- 2 a. Compute the theoretical channel capacity, given that  $SNR_{db} = 36$  and the channel bandwidth is 2 MHz. 05 M  
( Level [3], CO [2], PO [3] )
- b. List the salient features of Virtual-circuit Networks 05 M  
( Level [1], CO [2], PO [1] )
- c. Explain with neat diagram, the causes for transmission impairments 10 M  
( Level [2], CO [2], PO [1] )

OR

05 M

- 3 a. Define the followings:  
 i) Bandwidth  
 ii) Throughput  
 iii) Transmission time  
 iv) Latency  
 v) Jitter ( Level [1], CO [2], PO [1] )

- b. Construct the frequency domain of the signal for a non-periodic composite signal that has a bandwidth of 200 KHz with a middle frequency of 140 KHz and peak amplitude of 20V. The two extreme frequencies have amplitude of 0(zero). 05 M  
( Level [3], CO [2], PO [3] )

- c. Illustrate with a neat diagram, the baseband and broadband transmissions. 10 M  
( Level [2], CO [2], PO [1] )

**UNIT - III**

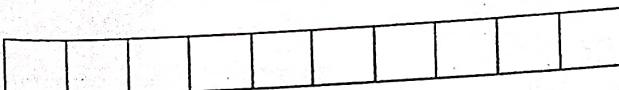
- 4 a. Define Hamming distance. Explain the encoder and decoder for simple parity check code  $C(5,4)$  with  $d_{min}=2$ . 07 M  
( Level [2], CO [3], PO [1] )
- b. Compute the codeword  $c(x)$ , using Cyclic Redundancy Code for the data word 1001 with generator polynomial 1011 05 M  
( Level [4], CO [3], PO [1] )

c. With neat diagram discuss Stop and Wait Automatic Repeat Request protocol. With frame flow diagram explain how a frame is delivered when:

- i. It is delivered and first time it is acknowledged
- ii. When it is lost
- iii. When it is delivered but its acknowledge is lost

(Level [2,3], CO [3], PO [1])

- UNIT IV** 05 M
- 5 a. Explain briefly, the network address Translation. (Level [2], CO [4], PO [1])  
b. Explain the dynamic routing table with its common fields. (Level [2], CO [4], PO [1])  
c. Illustrate the distance vector routing protocol and apply the same for five nodes. (Level [3], CO [3], PO [1])
- OR** 05 M
- 6 a. What are Transient and Stub links? Explain briefly with a diagram. (Level [2,3], CO [4], PO [1])  
b. Explain the Routing Information Protocol for an autonomous systems. (Level [2], CO [4], PO [1])  
c. Compare with an example Logical addressing with physical addressing. (Level [4], CO [4], PO [3])
- UNIT V** 08 M
- 7 a. Differentiate between TCP and UDP. (Level [4], CO [1], PO [3])  
b. Discuss TCP segment format with diagram. (Level [2], CO [1], PO [1])
- OR** 12 M
- 8 a. Discuss User Datagram protocol. (Level [2], CO [1], PO [1])  
b. Discuss mobile transport protocols. (Level [2], CO [4], PO [1])  
c. Explain the architecture of email with respect to four different scenarios. (Level [2], CO [5], PO [1])



**Sixth Semester B.E. Makeup Examination, June 2018**  
**COMPUTER NETWORKS**

Max. Marks: 100

Time: 3 Hours

**Instructions:** 1. Unit I and III are compulsory  
 2. Answer any one full question from remaining each unit.

**UNIT - I**

- 1 a. What are the components of data communication system? Explain in brief (Level [2], CO [1], PO [1]) 05 M
- b. Distinguish between physical and logical address? Explain with example (Level [3], CO [1], PO [1]) 05 M
- c. Explain the interaction between layers in the OSI Model, with a neat diagram (Level [2], CO [1], PO [1]) 10 M

**UNIT - II**

- 2 a. If a periodic signal is decomposed into five sine waves with frequencies of 100, 300, 500, 700 and 900 Hz, what is its bandwidth? Draw the spectrum assuming that the components have an amplitude of 7V, 3V, 5V, 12V, and 9V respectively. (Level [2,3], CO [2], PO [1]) 05 M
- b. i) Explain the different causes for transmission impairments when signal passes through media. ii) Differentiate circuit switched network from Packet switched network. (Level [2,4], CO [3], PO [1]) 10 M
- c. Calculate the throughput of a network with bandwidth of 10Mbps which can pass only an average of 18000 frames per minute with each frame carrying an average of 10,000 bits. (Level [4], CO [2], PO [1]) 05 M

**OR**

- 3 a. Explain the following (Level [2], CO [2], PO [3]) 10 M
- i) Bandwidth
  - ii) Throughput
  - iii) Latency
  - iv) Jitter
  - v) Bit Rate
- b. Given a channel with 5kHz bandwidth, if we want to send data at 150 Kbps, what is the minimum  $\text{SNR}_{\text{db}}$  and SNR? (Level [3], CO [2], PO [1]) 04 M
- c. Explain the three phases of circuit switched networks with delay in timing diagram (Level [2], CO [3], PO [1]) 06 M

**UNIT - III**

- 4 a. Explain with an example of block coding method for error detection and correction. (Level [2], CO [3], PO [1]) 10 M
- b. Outline GO-BACK-N ARQ Protocol with a neat diagram. (Level [2], CO [3], PO [1]) 10 M
- (Level [2], CO [3], PO [1])

## UNIT - IV

- 5 a. Find the class of the following IP addresses.

1. 237.14.2.1
2. 208.35.54.12
3. 129.14.6.8
4. 114.34.2.8

(Level [4], CO [4], PO [1])

10 M

- b. With a neat diagram explain IPv4 datagram format.

(Level [2], CO [4], PO [3])

06 M

- c. Discuss with diagram the common fields in a routing table.

(Level [2], CO [4], PO [3])

06 M

**OR**

- 6 a. Differentiate subnetting from supernetting. How do the subnet mask and supernet mask differ from a default mask in classful addressing?

(Level [4], CO [4], PO [3])

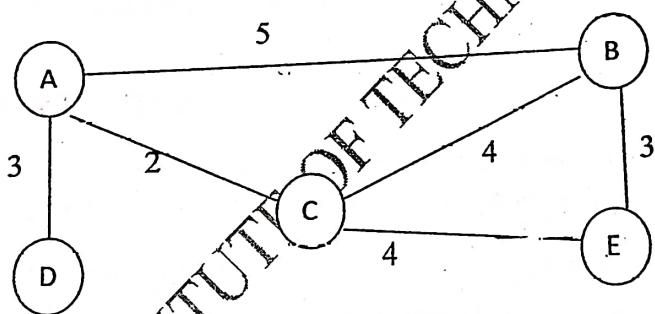
04 M

- b. Discuss the advantages of IPV6 over IPV4

(Level [2], CO [4], PO [1])

10 M

- c. Apply Distance Vector Routing algorithm for the following graph. Write routing table for all the nodes in the graph.



(Level [3], CO [4], PO [1,3])

## UNIT - V

- 7 a. Discuss in detail the TCP Segment format.

(Level [1], CO [4], PO [1])

10 M

- b. Explain I-TCP and Fast Retransmit protocol for mobility.

(Level [2], CO [1], PO [1])

10 M

**OR**

- 8 a. Explain the UDP segment format briefly.

(Level [2], CO [1], PO [1])

07 M

- b. Explain briefly, the source based congestion avoidance method.

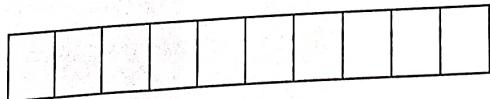
(Level [2], CO [3], PO [1])

07 M

- c. Demonstrate, the two users exchanging e-mail through SMTP with neat diagram.

(Level [3], CO [5], PO [1])

06 M



**Sixth Semester B.E. Degree Examination, Dec.2015/Jan.2016**  
**Computer Networks – II**

Time: 3 hrs.

**Note:** Answer any FIVE full questions, selecting atleast TWO questions from each part.

Max. Marks: 100

**PART - A**

- 1 a. Differentiate between connection oriented and connectionless services. (04 Marks)  
 b. Define routing and its goals. (06 Marks)  
 c. Explain Dijkstra's algorithm. Consider the network given below in Fig. 1(c). Use the Dijkstra's algorithm to find shortest paths from node 4 to other nodes. (10 Marks)

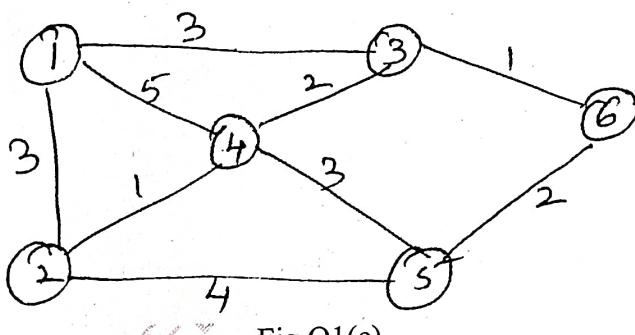


Fig.Q1(c)

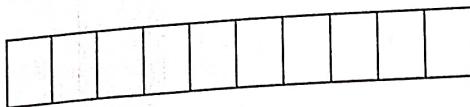
- 2 a. Explain the FIFO and priority queue scheduling for managing traffic at flow level. (10 Marks)  
 b. Define congestion control with graph. Explain the leaky bucket algorithm for policing the traffic at flow level. (10 Marks)
- 3 a. Explain the IP address classification. Identify the following IP address to which class they belong to :  
 i) 200.58.20.165  
 ii) 128.167.23.20  
 iii) 16.196.128.50  
 iv) 150.156.10.10. (07 Marks)
- b. A host in an organization has an IP address 150.32.64.34 and subnet mask 255.255.240.0. What is the address of this subnet? (06 Marks)
- c. Give the format of IPv6 basic header. Compare IPv6 with IPv4. (07 Marks)
- 4 a. Write a note on :  
 i) IGMP protocol  
 ii) Mobile IP. (10 Marks)  
 b. Explain the three way handshake for establishing a TCP connection. (06 Marks)  
 c. Write a short note on routing information protocol. (04 Marks)

**PART - B**

- 5 a. Explain the routing table poisoning and denial -of -service attacks. (08 Marks)
- b. Define network management and explain SNMP and SNMP messages. (08 Marks)
- c. Differentiate between DES and RSA. (04 Marks)
- 6 a. Define MPLS. Explain its operation. (06 Marks)
- b. Explain the classification of resource allocation schemes. (06 Marks)
- c. With a neat diagram, explain the differentiated services QoS. (08 Marks)
- 7 a. Briefly explain MPEG standards and frame types for compression. (06 Marks)
- b. With a neat diagram, explain the H.323 components and list the steps in signaling. (06 Marks)
- c. Explain session initiation protocol (SIP) in detail. (08 Marks)
- 8 a. Write short notes on :  
i) Zigbee technology  
ii) Clustering in sensor networks. (08 Marks)
- b. Briefly explain the direct and multihop routing of intra-cluster routing protocol, with the help of relevant diagrams. (06 Marks)
- c. Explain sensor node structure with relevant figure. (06 Marks)

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**Sixth Semester B.E. Degree Examination, June/July 2016**  
**Computer Networks – II**

Max. Marks: 100

Time: 3 hrs.

**Note:** Answer any FIVE full questions, selecting atleast TWO questions from each part.

**PART – A**

1. a. Differentiate between connection oriented and connectionless services. (04 Marks)
- b. Define routing algorithm. Explain the Bellman – Ford algorithm with an example. (10 Marks)
- c. A 64 – kilobyte message is to be transmitted over two hops in a network. The network limits packets to a maximum size of 2 kilobytes, and each packet has a 32 – byte header. The transmission lines in the network are error free and have a speed of 50 Mbps. Each hop is 1000 km long. How long does it take to get the message from source to destination? (06 Marks)
  
2. a. With neat diagram explain leaky bucket algorithm used for policing. (08 Marks)
- b. Explain the FIFO and priority queue scheduling for managing traffic at packet level. (08 Marks)
- c. Write a note on closed loop control in packet switching network. (04 Marks)
  
3. a. Explain the format of IPV4 basic header. (08 Marks)
- b. With neat diagram, explain UDP datagram. (08 Marks)
- c. Write a note on address resolution protocol. (04 Marks)
  
4. a. Explain the three – way handshake for establishing a TCP connection. (08 Marks)
- b. Write a note on RIP protocol. (04 Marks)
- c. Explain the border gateway protocol. (08 Marks)

**PART – B**

5. a. Define domain name system. Explain DNS message format. (08 Marks)
- b. Explain in detail any two major categories of threats to network security. (08 Marks)
- c. Write a note on network management system. (04 Marks)
  
6. a. Explain the overview of differentiated services operation of QOS with neat diagram. (08 Marks)
- b. Explain multiprotocol Lable switching (MPLS) and its packet format. (06 Marks)
- c. Write a note on P2P connection in context with overlay networks. (06 Marks)
  
7. a. Define data compression. Explain overview of digital voice process in multimedia networking. (08 Marks)
- b. Explain in brief SIP. (08 Marks)
- c. Write a short note on H.323 protocol. (04 Marks)
  
8. a. Explain types of attack in Ad-hoc networks. (06 Marks)
- b. Explain LEACH clustering protocol in wireless sensor network. (08 Marks)
- c. Write a note on Zig-Bee technology. (06 Marks)

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**Fifth Semester B.E. Degree Examination, Dec.2014/Jan.2015**  
**Computer Networks – I**

Time: 3 hrs.

Max. Marks: 100

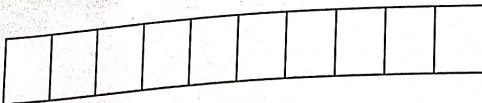
**Note: Answer any FIVE full questions, selecting atleast TWO questions from each part.**

**PART – A**

1. a. What are the components of data communication system? Explain in brief. (05 Marks)  
 b. With a neat diagram, explain the interaction between layers in the OSI model. (10 Marks)  
 c. What is the difference between a physical and logical address? Explain with example. (05 Marks)
  
2. a. Distinguish between low pass channel and a band pass channel. (06 Marks)  
 b. A network with bandwidth of 10Mbps can pass only an average of 18,000 frames per minute with each frame carrying an average of 10,000 bits. What is the throughput of this network? (04 Marks)  
 c. Compare and contrast between PCM and DM. (06 Marks)  
 d. Explain polar biphasic Manchester and differential Manchester encoding schemes with example. (04 Marks)
  
3. a. Explain following modulation techniques:  
     i) Amplitude modulation  
     ii) Frequency modulation. (06 Marks)  
 b. A multiplexer combines four 100kbps channels using a time slot of 2 bits. Show the output with four arbitrary inputs. What is the frame rate? What is the frame duration? What is the bit rate? What is the bit duration? (04 Marks)  
 c. With relevant diagrams, explain the data transfer phase in a virtual circuit network. (10 Marks)
  
4. a. Explain CRC error detection method with an example. (06 Marks)  
 b. Explain the structure of encoder and decoder for a Hamming code. (04 Marks)  
 c. What is internet checksum? If a sender needs to send four data items  $0 \times 3456$ ,  $0 \times ABCC$ ,  $0 \times 02BC$  and  $0 \times EEEE$ , answer the following:  
     i) Find the checksum at sender site.  
     ii) Find the checksum at receiver's site if there is no error. (10 Marks)

**PART – B**

5. a. Explain GO-BACK-N ARQ and selective-repeat-ARQ. List the differences between them. (10 Marks)  
 b. Explain the different frame types in HDLC. (06 Marks)  
 c. Write a short note on piggybacking. (04 Marks)
  
6. a. With a flow diagram, explain the working of CSMA/CD. (10 Marks)  
 b. Explain the following channelization techniques: i) TDMA    ii) CDMA. (10 Marks)



**Sixth Semester B.E. Degree Examination, Dec.2014/Jan. 2015**  
**Computer Networks – II**

Time: 3 hrs.

Max. Marks: 100

**Note: Answer FIVE full questions, selecting atleast TWO questions from each part.**

**PART – A**

- 1 a. Differentiate between virtual circuit and datagram. (06 Marks)  
 b. Find shortest path tree from node 5 to all nodes and also find the associated routing table entries for node 5 using Dijkstra's algorithm. (08 Marks)

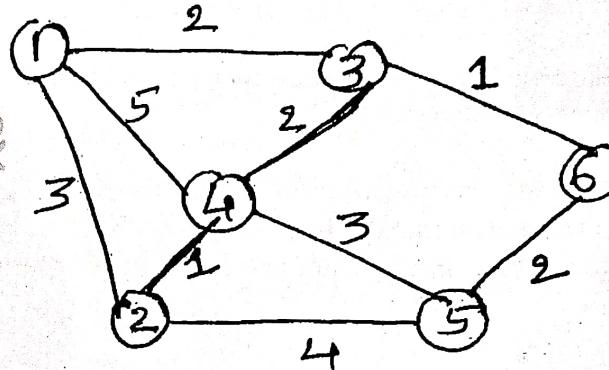


Fig. Q1(b)

- c. Suppose we wish to transmit a large message ( $L = 10^6$ ) over three hops. Now suppose that transmission line in each hop has an error rate of  $P = 10^{-6}$  and each hop does error checking and retransmission :  
 i) How many bits need to be transmitted using message switching?  
 ii) Now suppose the same above message is broken up into ten  $10^5$  bit packets, how many bits need to be transmitted over the three hops? (06 Marks)
- 2 a. Explain Fair queuing mechanism of traffic management at packet level and also compute the expression for finish time in packet by packet fair queuing. (07 Marks)  
 b. Explain the leaky bucket algorithm used for policing. (06 Marks)  
 c. Suppose that ATM cells arrive at a leaky bucket policer at times  $t = 1, 2, 3, 5, 6, 8, 11, 12, 13, 15$  and  $19$ . Assume  $I = 4$  and  $L = 4$ . Plot the bucket content and identify any nonconforming cells. (07 Marks)
- 3 a. Explain the IP address classification. Identify the following IP address to which class they belong to : i) 200.58.20.165 ii) 128.167.23.20  
 iii) 16.196.128.50 iv) 150.156.10.10. (07 Marks)  
 b. A host in an organization has an IP address 150.32.64.34 and subnet mask 255.255.254. 0. What is the address of this subnet? What is the range of IP address that a host can have on this subnet?  
 c. Write a note on user datagram protocol(UDP). (07 Marks)  
 (06 Marks)
- 4 a. Provide a structure of OSPF common header and write a note on OSPF operation. (08 Marks)  
 b. Write a note on internet group management protocol. (06 Marks)  
 c. What do you mean by mobile IP? Explain mobile IP routing operation. (06 Marks)

## PART - B

- 5 a. What do you mean by remote login and also explain secure shell(SSH) protocol. (06)  
b. What are the elements of network security? Explain the threats to network security. (06)
- 6 a. Explain RSA algorithm. Using RSA algorithm encrypt a message  $m = 9$ . Assume  $a = 5$ ,  $b = 11$ . Find public and private keys and also show the ciphertext. (08)
- 7 a. What do you mean by VPN? Explain its types. (06)  
b. Write a note on MPLS operation. (06)  
c. Write a note on overlay networks. (06)
- 8 a. Write a note on overview of information process and compression in multimedia. (06)  
b. Briefly explain various compression methods without loss. (06)  
c. Explain voice over IP system. (06)
- 9 a. Briefly explain the classification routing protocols in wireless Ad-hoC networks. (06)  
b. List the security issues in Ad-hoC networks. Explain types of attacks. (06)  
c. Differentiate between inter cluster and intra cluster routing protocols in WSN. (06)



**Sixth Semester B.E. Degree Examination, June/July 2014**  
**Computer Network – II**

Max. Marks: 100

Time: 3 hrs.

*Note: Answer FIVE full questions, selecting atleast TWO question from each part.*

**PART – A**

1. a. Differentiate between connection oriented and connectionless services. (05 Marks)
- b. Compare the datagram packet switching and virtual packet switching. (06 Marks)
- c. Explain the Dijkstra's routing algorithm, with an example. (09 Marks)
  
2. a. Explain the FIFO and priority queue scheduling for managing traffic at packet level. (08 Marks)
- b. Define congestion control with graph. Explain the leaky bucket algorithm for policing the traffic at flow level. (12 Marks)
  
3. a. Explain :  
     i) IP address classification (10 Marks)  
     ii) Subnet addressing. (10 Marks)
- b. Give the format of IPV6 basic header. Compare IPV6 with IPV4. (10 Marks)
  
4. a. Explain OSPF protocol and its operation. (10 Marks)
- b. Write a note on :  
     i) IGMP protocol (10 Marks)  
     ii) Mobile IP. (10 Marks)

**PART – B**

5. a. Write a note on only Two :  
     i) Remote login protocols (08 Marks)  
     ii) File transfer and FTP (06 Marks)  
     iii) World wide web and HTTP. (06 Marks)
- b. Define network management and explain SNMP and SNMP messages. (08 Marks)
- c. Compare secret key and public key cryptography systems. (08 Marks)
  
6. a. Explain the differentiated services QoS with a neat diagram. (08 Marks)
- b. Explain VPN and its types based on tunneling. (08 Marks)
- c. Explain the need for overlay networks. (04 Marks)
  
7. a. Briefly explain the MPEG standards and frame types for compression. (06 Marks)
- b. Explain the Huffman encoding, with an example. (06 Marks)
- c. With a neat diagram, explain the H.323 components and list the steps in signaling. (08 Marks)
  
8. a. Explain the wireless routing protocol for AD – HoC networks. (05 Marks)
- b. Briefly explain the direct and multihop routing of intracluster routing protocol, with the help of relevant diagrams. (06 Marks)
- c. Write short notes on :  
     i) Clustering in sensor networks (09 Marks)  
     ii) Security vulnerabilities of AD – HoC networks. (09 Marks)

**Fifth Semester B.E. Degree Examination, June/July 2014**  
**Computer Networks – I**

Time: 3 hrs. Max. Marks: 100

Note: Answer **FIVE** full questions, selecting atleast **TWO** questions from each part.

**PART – A**

- What is data communication? What are its four fundamental characteristics? With a neat diagram, explain the components of data communication system. (08 Marks)
- Assume that five devices are connected in a mesh topology. How many cables are needed? (02 Marks)
- How many ports are needed for each device? (02 Marks)
- With a neat diagram, explain the functionalities of each layer of OSI reference model. (10 Marks)
- Explain the different causes for transmission impairments during signal transmission through media. (06 Marks)
- Define bandwidth. A periodic signal has bandwidth of 20 Hz. The highest frequency is 60 Hz. What is the lowest frequency? Draw the spectrum, if signal contains all frequencies of same amplitude. (04 Marks)
- What is line coding? Describe and represent the information sequence '101000110' using Biphasic and Bipolar schemes. (10 Marks)
- What is multiplexing? With neat diagram, explain FDM. (06 Marks)
- What is spread spectrum? Explain with an example direct sequence spread spectrum. (06 Marks)
- With a neat diagram, explain how message can be sent from one system to another using datagram networks. (06 Marks)
- Define hamming distance. Explain simple parity check code C(5, 4) with  $d_{\min} = 2$ . How many bits can be corrected? (06 Marks)
- Find the code word  $c(x)$ , using CRC for the information  $d(x) = x^3 + 1$  with generator polynomial  $t(x) = x^3 + x + 1$ . (08 Marks)
- Explain with an example. The computation of internet checksum. List the steps undertaken by the sender and receiver for error detection. (06 Marks)

**PART – B**

- Why bit stuffing and byte stuffing are needed? Explain them, with examples. (06 Marks)
- With neat figures, explain briefly: i) Go-back n ii) selective repeat ARQ protocols. (10 Marks)
- Explain the frame format of PPP protocol. (04 Marks)
- Describe CSMA/CD protocol, with neat flow diagram. (06 Marks)
- What is channelization? Explain CODE division multiple access, with an example. (08 Marks)
- Discuss 802.3 MAC frame format and frame length. (06 Marks)
- Explain the different types of addressing mechanisms in IEEE 802.11. (06 Marks)
- With neat diagram, explain layers of Bluetooth. (06 Marks)
- What is a bridge? Explain with an example the bridge learning and forwarding process of transparent bridge. (08 Marks)
- Explain the following fields in IPv4 packet header : (06 Marks)
- Identification
  - Flags
  - Fragmentation offset.
- What is NAT? How can NAT help in address depletion with a neat diagram? (06 Marks)
- What is the need to change from IPv4 to IPv6? Write IPv6 basic header and describe its fields. (08 Marks)