

CS/B.TECH/EE/ODD SEM/SEM-7/EE-705A/2016-17



**MAULANA ABUL KALAM AZAD UNIVERSITY OF
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Paper Code : EE-705A

COMPUTER NETWORK

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own
words as far as practicable.*

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following :

$10 \times 1 = 10$

i) The total number of links required to connect n devices using Mesh topology is

- | | |
|---------------|---------------|
| a) 2^n | b) $n(n+1)/2$ |
| c) $n(n-1)/2$ | d) n^2 |

ii) Flow control is the responsibilities of the

- | | |
|--------------------|--------------------|
| a) Data link layer | b) Transport layer |
| c) Both of these | d) none of these. |

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iii) A hub is a

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|-------------|------------------|
| a) Router | b) Bridge |
| c) Repeater | d) All of these. |

iv) ICMP resides at the same layer as which of the following protocols mentioned below ?

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|--------|---------|
| a) TCP | b) UDP |
| c) IP | d) ARP. |

v) Which of the following is a valid host for network 192.168.10.32/28 ?

- | | |
|------------------|-------------------|
| a) 192.168.10.39 | b) 192.168.10.47 |
| c) 192.168.10.14 | d) 192.168.10.54. |

vi) Which class of IP address is reserved for multicast ?

- | | |
|------------|-------------|
| a) Class A | b) Class B |
| c) Class C | d) Class D. |

vii) Which channel access method is used in Ethernet network ?

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|---------------|------------------|
| a) CSMA/CD | b) Token bus |
| c) Token ring | d) All of these. |

viii) When host knows its IP address but not its physical address, it can use

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|---------|----------|
| a) RARP | b) ICMP |
| c) ARP | d) IGMP. |

ix) Checksum is used for

- a) Error detection
- b) Error correction
- c) Error encapsulation
- d) Both (a) and (b).

x) Which of the following is an application layer service ?

- a) Remote login
- b) Mail service
- c) File transfer and access
- d) All of these.

xi) The network layer concerns with

- | | |
|------------|---------|
| a) Packets | b) Bits |
| c) Frames | d) IP. |

GROUP - B

(Short Answer Type Questions)

Answer any *three* of the following : $3 \times 5 = 15$

2. a) What do you mean by data transparency ? 1
 b) What is Bit stuffing in HDLC ? 2
 c) Why is bit stuffing needed ? 2
3. a) How does Manchester encoding differ from differential Manchester encoding ?
 b) Draw the following encoding scheme for the bit stream :
 0001110101
 i) NRZ-I
 ii) Manchester coding
 iii) Differential Manchester coding. 2 + 3
4. a) What is the purpose of subnetting ? Find the netid and the hostid of the following IP addresses.
 i) 19.34.21.5
 ii) 220.34.8.9
 b) A network has subnet mask 255.255.255.224. Determine the maximum or number of Host in this network.
 Also determine the broadcast address of this network. 1 + 2 + 2

5. a) What are the differences between TCP & UDP ?
b) Physical address operates in local domain whereas logical/IP address operates in global domain. Explain. 2 + 3
6. Briefly discuss about the different guided media that are used in computer networks and make a comparison among them.

GROUP - C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. a) State the differences between IPV4 and IPV6.
b) State the difference between static and dynamic routing.
c) Describe any shortest path algorithm.
d) Differentiate between ARP and RARP. 4 + 3 + 6 + 2
8. a) What is the basic difference between CSMA and CSMA/CD ?
b) Briefly describe CSMA/CA procedure.
c) What do you mean by back off factor in case of CSMA/CD protocol ?

- d) What is the working operation of stop and wait ARQ for lost acknowledgement ?
e) Selective Repeat ARQ of the window size must be at most $2^m/2$. Explain it. 3 + 5 + 2 + 3 + 2
9. a) Find the expressions for average delay and throughput for both pure ALOHA and slotted ALOHA. Compare their performances as well.
b) What is cryptography ? Explain Public & Private Key cryptography with example.
c) What is the differences between Flow Control & Error Control. 5 + 5 + 5
10. a) Given a 10-bit sequence 1010011110 and a divisor of 1011. Find the CRC.
b) Write down Advantage and disadvantage of Mesh Topology.
c) Write down the advantages of fibre-optic cable over twisted pair and coaxial cable.
d) What is transparent bridge ? How the loop problem is removed in transparent bridge ? 5 + 5 + 2 + 3

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11. Write short notes on any *three* of the following : 3 × 5

- a) FTP
 - b) IEEE 802.11
 - c) Token Bucket Algorithm
 - d) DNS
 - e) QoS in Transport Layer.
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