Faculty of Engineering
End Semester Examination May 2025
CA5CO26 Computer Networks Fundamental

Programme	:	MCA / BCA-MCA (Integrated)	Branch/Specialisation	:	-
Duration	:	3 hours	Maximum Marks	:	60

Note: *All questions are compulsory. Internal choices, if any, are indicated. Assume suitable data if necessary. Notations and symbols have their usual meaning.*

Section 1 (Answer all question(s))	Marks	CO	BL

Q1. Which of the following is not a network topology? | 1 | 1 | 2

- ○ Star
- ○ Mesh
- ● Cluster
- ○ Ring

Q2. Which layer of the OSI model is responsible for the physical connection between devices? | 1 | 2 | 2

- ○ Data link layer
- ● Physical layer
- ○ Transport layer
- ○ Network layer

Q3. Which error detection technique uses a polynomial division method to detect errors in transmitted data? | 1 | 2 | 2

- ○ Parity Check Checksum
- ● Cyclic Redundancy Check (CRC)
- ○ Vertical Redundancy Check (VRC)
- ○ Checksum

Q4. Which multiple access protocol is used in wireless networks to avoid collisions? | 1 | 2 | 3

- ○ CSMA/CD
- ○ Slotted ALOHA
- ○ Pure ALOHA
- ● CSMA/CA

Q5. Which IEEE standard defines wireless LAN (Wi-Fi) communication? | 1 | 1 | 2

- ● IEEE 802.11
- ○ IEEE 802.3
- ○ IEEE 802.15
- ○ IEEE 802.5

Q6. Which network technology uses Asynchronous Transfer Mode (ATM) for data transmission? | 1 | 3 | 3

- ○ Token ring
- ○ ISDN
- ○ Ethernet
- ● SONET

Q7. Which network device operates at the Network Layer (Layer 3) of the OSI model? | 1 | 2 | 2

- ● Router
- ○ RJ-45
- ○ Hub
- ○ Gateway

Q8. Which type of IP address allows for nearly unlimited number of unique addresses? | 1 | 2 | 2

- ○ MAC Address
- ○ IPv5
- ○ IPv4
- ● IPv6

Q9. A _____ is a TCP name for a transport service access point. | 1 | 2 | 2

- ○ Pipe
- ● Port
- ○ Node
- ○ Ring

Q10. Which is not a application layer protocol?   1   2   2
- ⚪ FTP   🔘 TCP
- ⚪ SMTP   ⚪ HTTP

Section 2 (Answer all question(s))

Marks CO BL

Q11. Explain the key differences between the OSI and TCP/IP reference models.   4   1   2

Rubric	Marks
4 differences between OSI and TCP/IP.	4

Q12. (a) Describe the different network topologies along with their advantages and disadvantages.   6   2   2

Rubric	Marks
Describe the different network topologies	3
advantages and disadvantages.	3

(OR)

(b) Explain different multiplexing schemes and their significance in bandwidth utilization.

Rubric	Marks
different multiplexing schemes	3
significance in bandwidth utilization	3

Section 3 (Answer any 2 question(s))

Marks CO BL

Q13. Compare the various Automatic Repeat Request (ARQ) techniques used for error and flow control in the data link layer.   5   3   3

Rubric	Marks
1.Stop-and-Wait ARQ 2.Go-Back-N ARQ 3.Selective Repeat ARQ	5

Q14. Explain the working principles of the following error detection techniques: 5   2   2
- • Parity Check
- • Cyclic Redundancy Check (CRC)

Rubric	Marks
2.5+2.5	5

Q15. Difference between CSMA/CD and CSMA/CA with neat and clean diagram.   5   3   3

Rubric	Marks
2.5+2.5	5

Section 4 (Answer any 2 question(s))

Marks CO BL

Q16. Compare ethernet, fast ethernet, gigabit ethernet, and 10-gigabit ethernet in terms of speed, cable type, and application.   5   2   2

Rubric	Marks
Point wise explanation required like **Technology Speed Cable Type Application Ethernet**	5

Q17. Explain the architecture of an ATM (Asynchronous Transfer Mode) network and its key layers.　　　**5　3　2**

Rubric	Marks
3+2	5

Q18. What is IEEE 802.3? Explain its significance in wired networking.　　　**5　3　2**

Rubric	Marks
2.5+2.5	5

Section 5 (Answer any 2 question(s))

<div style="text-align:right">Marks CO BL</div>

Q19. Differentiate between IPV4 and IPV6.　　　**5　3　2**

Rubric	Marks
2.5+2.5	5

Q20. Define the routing protocol. Explain distance vector routing and link state routing.　　　**5　3　2**

Rubric	Marks
3+2	5

Q21. Write the design issues and duties of network layer.　　　**5　4　3**

Rubric	Marks
design issues (2.5) +duties(2.5)	5

Section 6 (Answer any 2 question(s))

<div style="text-align:right">Marks CO BL</div>

Q22. Explain the leaky bucket and token bucket congestion control algorithms.　　　**5　3　3**

Rubric	Marks
2.5+2.5	5

Q23. Explain the workings of the Domain Name System (DNS) and its components.　　　**5　4　3**

Rubric	Marks
Detail Explanation required with diagram	5

Q24. Explain the duties of transport layer and application layer.　　　**5　4　3**

Rubric	Marks
2.5+2.5	5

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