

Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

Second Semester MCA (Two Years) Degree (R, S) Examination May 2024

**Course Code: 20MCA104**

**Course Name: ADVANCED COMPUTER NETWORKS**

Max. Marks: 60

Duration: 3 Hours

**PART A**

*Answer all questions, each carries 3 marks.*

Marks

- |    |  |     |
|----|--|-----|
| 1  | With figures, explain the basic topologies used in computer networks.  | (3) |
| 2  | Calculate the propagation time and transmission time for a 5Mbytes message if the bandwidth of the network is 1Mbps. Assume that distance between the sender and receiver is 12000km and light travels at $2.4 \times 10^8$ m/s. | (3) |
| 3  | Compare Frequency Division Multiplexing with Time Division Multiplexing  | (3) |
| 4  | With figure explain how Go-Back N ARQ works.   | (3) |
| 5  | Differentiate between virtual circuit and datagram approach used in packet switching.  | (3) |
| 6  | Explain distance vector routing used in packet routing.  | (3) |
| 7  | Write short note on Ethernet along with its frame format.  | (3) |
| 8  | Explain how token passing mechanism works in IEEE 802.5 standard.  | (3) |
| 9  | Explain how Simple Network Management Protocol manages devices in a network with figure.   | (3) |
| 10 | Why gateways are used in computer networks? list its features.   | (3) |

**PART B**

*Answer any one question from each module. Each question carries 6 marks.*

**Module I**

- 11 With figure explain the responsibilities of various OSI protocol layers. (6)

**OR**

- 12 Write short notes on the following protocols used in computer network (6)

- a) ARP      b) ICMP      c) POP3      d) SMTP

**Module II**

- 13 Elucidate TCP header structure and major transport layer services. (6)

**OR**

- 14 Explain congestion control. What are the factors which causes it? Explain each categories of congestion control in detail. (6)

**Module III**

- 15 a) Express how address depletion faced by classful addressing is overcome by classless addressing. (4)  
b) A block of address is granted to a small organization. One of the address is 205.16.37.39/28. Find the starting and ending address given to organization (2)

**OR**

- 16 With suitable diagram explain IPv4 datagram packet format. (6)

**Module IV**

- 17 a) Explain briefly on error detection code technique checksum used in data communication. (3)  
b) For this given data 11001100 10101010 11110000 11000011, perform check sum operation at sender site and receiver site and verify the data at receiver site. (3)

**OR**

- 18 Explain Carrier Sense Multiple Access with collision detection algorithm in detail. (6)

**Module V**

- 19 Explain Bluetooth technology with its architecture. (6)

**OR**

- 20 Explain various functions and protocols used by network management system. (6)

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