

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Second Semester MCA(Two Year) Degree (S,FE) Examination December 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

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|----|---|-----|
| 1 | Explain two different network architectures. | (3) |
| 2 | Find propagation time and transmission time for a 2.5Kbyte message if the bandwidth of the network is 1Gbps. Assume that the distance between sender and receiver is 20000km and the speed of light is 2.4×10^8 m/s. | (3) |
| 3 | Demonstrate how the Stop and Wait protocol works in reliable data transfer. | (3) |
| 4 | Explain the UDP datagram header format. | (3) |
| 5 | Demonstrate with example how the link state algorithm works in routing packets. | (3) |
| 6 | Describe the Border Gateway Protocol and its session types. | (3) |
| 7 | Define Hamming code. Apply the strategy for generating the parity bits from the data word 1011. | (3) |
| 8 | Explain how pure ALOHA avoids packet collision during data communication with flowchart. | (3) |
| 9 | Describe Virtual Private Network with its type. | (3) |
| 10 | List and explain any three active attack which affects the security in data communication. | (3) |

PART B*Answer any one question from each module. Each question carries 6 marks.***Module I**

- 11 Discuss on the following terminologies (6)
a) FTP b) HTTP c) DNS d) IMAP

OR

- 12 What is the concept of Quality of Service in computer networks, explain various techniques used to improve it. (6)

Module II

- 13 Explain the working Transmission Control Protocol with its various features. (6)

OR

- 14 What is the use of multiplexing in the transport layer, explain its types. (6)

Module III

- 15 An ISP is granted a block of addresses starting with 180.100.0.0. The ISP needs to distribute these addresses to three groups as follows (6)

- a) First group have 64 customers, each needs 256 addresses
- b) First group have 128 customers, each needs 128 addresses
- c) First group have 128 customers, each needs 64 addresses.

Allocate the addresses to each group and find the remaining unallocated addresses

OR

- 16 Compare classful addressing with classless addressing used in IPv4 with examples. (6)

Module IV

- 17 Explain how Carrier Sense Multiple Access/Collision Detection is performed in the data link layer, and draw the ethernet frame format. (6)

OR

- 18 a) Analyse and describe how Cyclic Redundancy Check is performed in data communication. (2)

- b) Using Cyclic Redundancy Check, generate the code word for the data polynomial $x^5 + x^2$ with key polynomial $x^3 + x^2 + 1$ at sender site and, at receiver site check the correctness of the data received. (4)

Module V

- 19 Explain the use of firewalls and what are its different types. (6)

OR

- 20 Explain IEEE 802.11 with its architecture and frame format. (6)
