Reg. No. : | | | | | | | | | | | |

Question Paper Code: U5D04

B.E./B.Tech. DEGREE EXAMINATION, NOV 2024

Fifth Semester

Computer Science and Business Systems

21UCB504 – DATA COMMUNICATION AND NETWORKING

(Regulations 2021)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. What is Network topology? List its types.   CO1 U

2. What are the three criteria necessary for an effective and efficient network?   CO1 U

3. What is ARQ?   CO1 U

4. What is piggy backing?   CO1 U

5. Change the following IP address from binary notation to dotted-decimal   CO2 App
    notation. 10000001 00001011 00001011 11101111

6. Define : Subnetting and Supernetting   CO1 U

7. What is meant by congestion?   CO1 U

8. What is meant by segmentation?   CO1 U

9. Compare the HTTP and FTP.   CO1 U

10. What is SMTP (Simple Mail Transfer Protocol)?   CO1 U

PART – B (5 x 16= 80 Marks)

11. (a) Difference between Guided and Unguided Media   CO1 U   (16)

Or

(b) Explain the OSI reference model with neat diagram.   CO1 U   (16)

12. (a) A message that is to be transmitted is represented by the   CO2 AP   (16)
    polynomial $M(x) = x^5 + x^4 + x$ with a generating prime
    polynomial $G(x) = x^3 + x^2 + 1$. Generate a 3 bit CRC code, $C(x)$
    which is to be appended to $M(x)$. What is the result of the
   receivers CRC calculation? How does the receiver know that an
    error has occurred?

Or

(b) Suppose we want to transmit the message 1011 0010 0111 and protect it from errors using the CRC polynomial x^4+x^2+1.use polynomial long division to determine the message that should be transmitted. Suppose the leftmost bit of the message is inverted due to noise on the transmission link. What is the result of the receivers CRC calculation? How does the receiver know that an error has occurred?   CO2 AP   (16)

13. (a) Subnet the IP address 150.15.0.0 into 500 hosts in each subnet   CO2 AP   (16)

Or

(b) Define routing & explain Distance Vector Routing .   CO2 AP   (16)
Tabulate the shortest path between all nodes for the following network using distance vector routing give the initial routing table. Routing table after updation and final routing table (10).
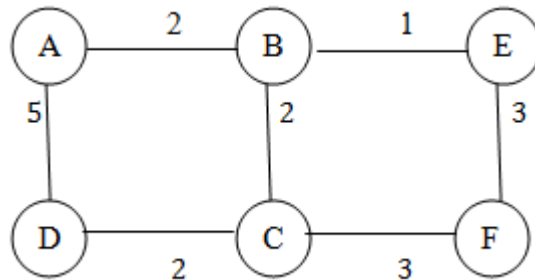
14. (a) Define UDP. Discuss the operations of UDP. Explain UDP checksum with one example.   CO1 U   (16)

Or

(b) Explain the various fields of TCP header and the working of the TCP protocol.   CO1 U   (16)

15. (a) Assess the importance of Simple Network Management Protocol (SNMP).   CO1 U   (16)

Or

(b) Explain in detail about HTTP operation.   CO1 U   (16)

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