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Question Paper Code: U4E06

B.E./B.Tech. DEGREE EXAMINATION, NOV 2023

Fourth Semester

Artificial Intelligence & Data Science

21UAD406 - COMPUTER NETWORK AND SECURITY

(Regulations 2021)

Duration: Three hours

Maximum: 100 Marks

Answer All Questions

PART A - (5 x 1 = 5Marks)

1. A signal in which 1 bit lasts 0.001 s, Bit rate would be CO1-U
(a) 1kbps. (b) 500bps. (c) 5obps. (d) 1700bps
2. You need to subnet a network that has 5 subnets, each with at least 16 CO1-U
hosts. Which class subnet mask would you use?
(a) 255.255.255.192 (b) 255.255.255.224 (c) 255.255.255.240 (d) 255.255.255.248
3. For a host machine that uses the token bucket algorithm for congestion CO2-App
control, the token bucket has a capacity of 1 megabyte and the maximum
output rate is 20 megabytes per second. Tokens arrive at a rate to sustain
output at a rate of 10 megabytes per second. The token bucket is currently
full and the machine needs to send 12 megabytes of data. The minimum
time required to transmit the data is _____ seconds.
(a) 1.1 (b) 0.1 (c) 2.1 (d) 2.0
4. _____ is the method for keeping sensitive information in email CO1-U
communication & accounts secure against unofficial access, loss, or
compromise.
(a) Email security (b) Email hacking (c) Email protection (d) Email safeguarding
5. A stateful firewall maintains a _____ which is a list of active CO1-U
connections.
(a) Routing table (b) Bridging table (c) State table (d) Connection table

PART – B (5 x 3= 15Marks)

6. Group the OSI layers by function? CO1-U
7. Find the hamming distance between two pair of code words : CO2-App
A = 01011
B = 11110
8. Give the format of HTTP response message? CO1-U
9. Assume the client C wants to communicate server S using Kerberos procedure. How can it be achieved? Write the authentication dialogue? CO2-App
10. What are the different phases a virus go through his lifetime? CO1-U

PART – C (5 x 16= 80Marks)

11. (a) Build a telephone network systems using concept of Time division multiplexing and illustrate in detail about TDM functionalities and their types with neat diagrammatical representation CO2-App (16)
- Or
- (b) Apply the concept of ISO/OSI layers in any social media application and clearly explain their layers ad its functionalities in detail with neat diagrammatic representation CO2-App (16)
12. (a) A bit stream 1101011011 is transmitted using the standard CRC method. The generator polynomial is $x^4 + x + 1$. What is the actual bit string transmitted? CO2-App (16)
- Or
- (b) Given the data word 1010011010 and the divisor 10111 CO2-App (16)
- i) Show the generation of code word at the sender site (using binary division). (8 marks)
- ii) Show the checking of the code word at the receiver site (assume no error) (8 marks)

13. (a) Compare the QOS in terms of Integrated Services and Differentiated Services for banking application and also list out the algorithm with traffic shaping. CO3-Ana (16)
- Or
- (b) (i) Examine the message transfer using Simple Mail Transfer Protocol. CO3-Ana (8)
- (ii) Analyze the basics of POP3 and IMAP mail access protocols? CO3-Ana (8)
14. (a) i) What is Kerberos? Explain how it provides authenticated service. (8) CO1-U (16)
- ii) Explain the format of the X.509 certificate. (8)
- Or
- (b) Discuss authentication , header and ESP in detail with their packet format CO1-U (16)
15. (a) Give one reason why a firewall might be configured to inspect incoming traffic. Give one reason why it might be configured to inspect outgoing traffic. Do you think the inspections are likely to be successful? CO1-U (16)
- Or
- (b) (i) Explain firewalls and how they prevent intrusions. CO1-U (8)
- (ii) List and Brief, the different generation of antivirus software CO1-U (8)

