

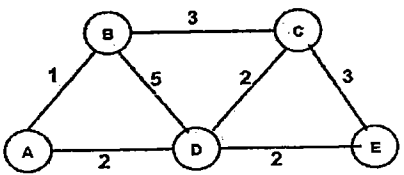
END SEMESTER ASSESSMENT (ESA) MCA III SEMESTER- Nov. 2016

UC15MC502- COMPUTER NETWORKS

Time: 3 Hrs

Answer All Questions

Max Marks: 100

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| 1. | a) | What are access Networks? Briefly explain FTTH technology with neat diagram. | 1+4 |
| | b) | Name and explain the different types of delays that could occur in packet switched networks? | 1+5 |
| | c) | Discuss about the layers of the TCP/IP protocol suite with a neat diagram. | 2+5 |
| | d) | What are the different types of addresses used by different layers of the TCP/IP protocol suite? | 2 |
| 2. | a) | What is an API? Give example. | 2+1 |
| | b) | Briefly Explain the Web client (Browser) with a diagram. | 2+2 |
| | c) | Write the DNS message format and explain. | 3+2 |
| | d) | Explain the architecture of e-mail and its working with a neat diagram. | 3+5 |
| 3. | a) | Explain the stop and Wait protocol with the help of Timeline diagrams. | 4+4 |
| | b) | The following is part of a TCP header dump (contents) in hexadecimal format. E236001700000000100000000500207FF..... (For all the below questions the answer should be in base 10). i) What is the source port and Destination Port numbers? ii) What is the sequence number and acknowledgement number? iii) What is the length of the header? iv) What is the type of the segment? (use flags) | 7 |
| | c) | Consider the following scenario. Host A sends two segments back to back. First segment has sequence number 92 and 8 bytes of data , and the second segment has sequence number 100 and 20 bytes of data . Suppose both the segments arrive at B intact and B sends acknowledgements for each of these segments. What are the acknowledgement numbers? Suppose neither of the acknowledgements arrive at the sender before the timeout for the first segment. What the sender would do? Explain your answer with a timeline diagram. | 5 |
| 4. | a) | Consider the following network Topology. Apply Dijkstra's Algorithm to calculate the shortest path from node B to every other node.  | 5 |
| | b) | Explain the IPv6 header format with the explanation for each field. | 3+3 |
| | c) | An ISP is granted a block 80.70.56.0/21. The ISP need to allocate addresses for two organizations each with 500 addresses, two organizations each with 250 addresses and three organizations each with 50 addresses. i) Find the number and range of addresses in the ISP block. ii) Find the range of addresses for each organization and the range of unallocated addresses . | 9 |

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| 5. | a) | Suppose we want to transmit the message 101011010 and protect it from errors using the divisor polynomial $x^4 + x^2 + x + 1$ | 4+4 |
| | i) | Use polynomial long division to determine the message that should be transmitted. | |
| | ii) | Suppose the leftmost bit of the message is inverted due to noise on the transmission link, What is the result of the receiver's CRC calculation? How does the receiver know that an error has occurred? | |
| | b) | What is CSMA/CD? Discuss Ethernet CSMA/CD algorithm in detail. | 2+4 |
| | c) | Discuss about Taking Turns MAC protocols. | 3+3 |