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| **Mid-Term Examinations – March 2022** | | | | | | | | | | | | | |
| Programme | | | : | **B.Tech. (BCE)** | | Semester | | : | **Winter 2021-22** | | | | |
| Course | | | : | **Computer Networks** | | Code | | : | **CSE3006** | | | | |
| Faculty | | | : | **Mr. Vikas K Jain** | | Slot/ Class No. | | : | **A11+A12+A13/0338** | | | | |
| Time | | | : | **1 ½ hours** | | Max. Marks | | : | **50** | | | | |
| **Answer all the Questions** | | | | | | | | | | | | | |
| **Q.No.** | **Sub. Sec.** | **Question Description** | | | | | | | | **Marks** |  |  |  |
| 1 |  | For each of the following four networks, discuss the consequences if a connection fails.  a. Five devices arranged in a mesh topology  b. Five devices arranged in a star topology (not counting the hub)  c. Five devices arranged in a bus topology  d. Five devices arranged in a ring topology | | | | | | | | **10** |  |  |  |
| 2 |  | In Figure, assume that the communication is between a process running at computer A with port address i and a process running at computer D with port address j. Show the contents of packets and frames at the network, data link, and transport layer for each hop. | | | | | | | | **10** |  |  |  |
| 3 | a | Why does a circuit-switched network need end-to-end addressing during the setup and teardown phases? Why are no addresses needed during the data transfer phase for this type of network? | | | | | | | | **5** |  |  |  |
| 3 | b | Why does a virtual-circuit network need addresses during all three phases? | | | | | | | | **5** |  |  |  |
| 4 |  | A system uses the Stop-and-Wait ARQ Protocol. If each packet carries 1000 bits of data, how long does it take to send 1 million bits of data if the distance between the sender and receiver is 5000 Km and the propagation speed is 2 x 108 m? Transmission, waiting, and processing delays is 10s each respectively. We assume no data or control frame is lost or damaged. | | | | | | | | **10** |  |  |  |
| 5 |  | A bit stream 11011110 is transmitted using the standard CRC method. The generator polynomial is x4+1.What is the actual bit string transmitted?  Suppose the third bit from the left is inverted during transmission. How will receiver detect this error? | | | | | | | | **10** |  |  |  |
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