1. During the communication, how the various layers exchange information in OSI Model. Describe with the help of suitable diagram. [15]

2. Explain the TCP/IP architecture. Show the comparison with the OSI model with the help of schematic diagram. [15]

3. Consider a message D, presented by the following polynomial $x^{19} + x^{17} + x^{16} + x^{13} + x^{12} + x^{11} + x^9 + x^5 + x^2 + 1$, which is transmitted using the standard Cyclic Redundancy Check (CRC) method. The generator polynomial is $x^7 + x^5 + x^4 + x^3 + x^2 + 1$. Find the CRC and show the actual bit string to be transmitted. [15]

4.a) Differentiate between Pure ALOHA and slotted ALOHA protocol.
   b) In a digital system with 8 input links are multiplexed using STDM. Each input source is creating 1024 bits per second. Each frame contains 8 bits from each source and adds 1 bit as a framing bit. Compute the number of frame transmitted per second and the data capacity of the link. [7+8]

5.a) Explain the network service model with a neat sketch.
   b) Explain the format of IPV4 addressing. [8+7]

6. Illustrate in detail about the concept of forwarding and addressing in the internet. [15]

7.a) Discuss about the Round-Trip Time Estimation and Timeout.
   b) Why does UDP exist? Would it not have been enough to just let user processes send raw IP packets? Justify answer. [8+7]

8. Explain the Transport Services Available to Applications. [15]

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