Q1(i) What do you mean by a protocol and standards? Name some Standard organizations? (5)  
(ii) Define the following term in analog signal (sine wave).
  - Amplitude.
  - Period. (5)  
(iii) What are the types of errors? Explain with the help of example? (5)  
(iv) Difference between Plaintext and Cipher text with example? (5)  

SECTION-A

Q2(i) What is a TCP/IP model? Explain its working? (10)  
(ii) Explain the concept of LAN, WAN, MAN? (10)  
Q3(i) What do you mean by Transmission Media? Explain their types? (10)  
(ii) Discuss Time Domain and Frequency Domain representation of a signal? (10)  
Q4(i) What is the difference between Wavelength-division multiplexing & Synchronous Time Division multiplexing? (10)  
(ii) Explain Circuit Switch Network and Datagram Network? (10)  

SECTION-B

Q5. Calculate Minimum Hamming Distance of the coding scheme given below:

<table>
<thead>
<tr>
<th>Data words</th>
<th>Code words</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>000</td>
</tr>
<tr>
<td>01</td>
<td>011</td>
</tr>
<tr>
<td>10</td>
<td>101</td>
</tr>
<tr>
<td>11</td>
<td>110</td>
</tr>
</tbody>
</table>

If the codeword sent by the sender is 1001110 and divisor is 1011. Whether this codeword will be accepted or discarded by the receiver using CRC? Explain? (20)  
Q6. Discuss the term Firewall? What do you mean by Security Services? Explain all types of Security Services available in detail? (20)  
Q7(i) Explain the Architecture of ATM in detail? (10)  
(ii) Briefly explain the term Congestion Control & their types. (10)