

Code No: 155AV

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year I Semester Examinations, February - 2022

DATA COMMUNICATIONS AND NETWORKS

(Electronics and Communication Engineering)

Time: 3 hours

Max. Marks: 75

Answer any five questions  
All questions carry equal marks

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. <https://www.jntuonline.com> [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]