



Bharatiya Vidya Bhavan's
Sardar Patel Institute of Technology
(An Autonomous Institute affiliated to University of Mumbai)
Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai – 400 058, India

End Semester Examination

January 2020

Duration: 3Hrs

Max. Marks: 60

Class: SEMESTER :V

Course Code: IT52 Branch: I.T.

Name of the Course: Computer Network

Qu. No		Marks
1) a)	Explain TCP/IP model with neat diagram.	6
b)	Explain wired transmission media with neat diagram. Diagram 2 marks., Explanation 4 marks	6

- 2) a) Generator polynomial is 101 . Data to send is 110101. Calculate CRC at sender and receiver side . Comment on the result.

6

$$\begin{array}{r}
 11010100 \div 101 = 11101 \\
 \underline{101} \\
 111 \\
 \underline{101} \\
 100 \\
 \underline{101} \\
 110 \\
 \underline{101} \\
 110 \\
 \underline{101} \\
 11 \leftarrow \text{Remainder = CRC checksum}
 \end{array}$$

Quotient (has no function in CRC calculation)

Message with CRC = 11010111

EXAMPLE 3: CHECKING A MESSAGE FOR A CRC ERROR

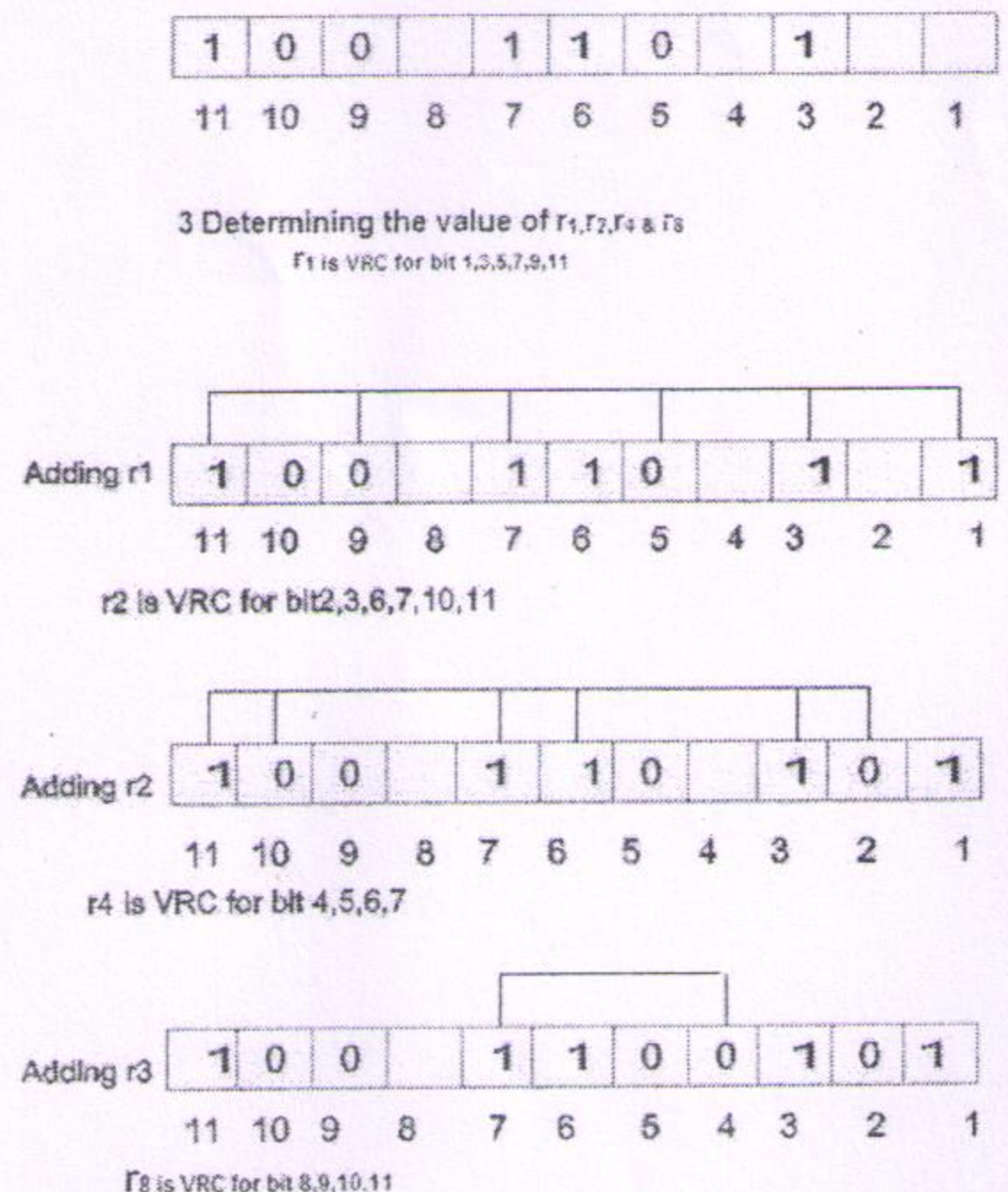
Message with CRC = 11010111
Polynomial = 101

$$\begin{array}{r}
 11010111 \div 101 = 11101 \\
 \underline{101} \\
 111 \\
 \underline{101} \\
 100 \\
 \underline{101} \\
 111 \\
 \underline{101} \\
 101 \\
 \underline{101} \\
 00 \leftarrow \text{Checksum is zero, therefore, no transmission error}
 \end{array}$$

Quotient

OR

Binary data 1001101 is to be transmitted. Implement hamming code for this.



2

Thus data 10011100101 will be transmitted.
 Data received: 10010100101 (seventh bit changed)

b)	Explain CSMA/CD with neat diagram.	6
3) a)	<p>Subnet the Class C IP Address 195.1.1.0 So that you have 10 subnets each with a maximum 12 hosts on each subnet. List the Address on host 1 on subnet 0,1,2.</p> <p>Current mask= 255.255.255.0</p> <p>Bits needs for 10 subnets $= 4 = 2^4 = 16$ possible subnets</p> <p>Bits needs for 12 hosts $= 4 = 2^4 = 16 - 2 = 14$ possible hosts.</p> <p>So our mask in binary = 11110000 = 240 decimal</p> <p>Final Mask = 255.255.255.240</p> <ul style="list-style-type: none"> • <u>Subnet 0</u> host 1 IP address = 195.1.1.1 0000 0001 • <u>Subnet 1</u> host 1 IP address = 195.1.1.17 0001 0001 • <u>Subnet 2</u> host 1 IP address = 195.1.1.33 0010 0001 <p style="text-align: center;">OR</p> <p>Subnet the Class C IP Address 195.1.1.0 So that you have at least 2 subnets each subnet must have room for 48 hosts .</p> <p>What are the two possible subnet masks?</p> <p>Current mask= 255.255.255.0</p> <p>Bits needs for 48 hosts $= 6 = 2^6 = 64 - 2 = 62$ possible hosts.</p> <p>Bits needs for 2 subnets $= 1 = 2^1 = 2$ possible subnets</p> <p>Total of 7 bits needed so therefore we can use either 1 bit or 2 bits for the subnet. So we could have</p> <p>1 bit subnet 7 bits hosts or 2 bits subnet 6 bit host</p> <p>masks are 10000000 and 11000000 = 128 decimal and 192 decimal.</p>	6

	Final possible masks are: 255.255.255.128 and 255.255.255.192	
b)	Explain Distance vector routing in detail.	6
4)a)	Explain 3 way handshaking for connection establishment in TCP with neat diagrams.	6
b)	<p>A TCP connection is using a window size of 10 000 bytes, and the previous acknowledgment number was 22 001. It receives a segment with acknowledgment number 24 001. Draw a diagram to show the situation of the window before and after.</p> <p>The diagram consists of two parts, (a) and (b), each showing a horizontal timeline with tick marks at intervals of 2000, starting from 22000 and ending at 36000. In part (a), labeled 'a. Before acknowledgment', a dark gray bar representing the TCP window starts at 22000 and ends at 32000. In part (b), labeled 'b. After acknowledgment', the dark gray bar has shifted to the right, starting at 24000 and ending at 34000.</p>	6
OR		
<p>The following is a dump of a UDP header in hexadecimal form: 05 32 00 0B 00 1B E2 17. What is the</p> <p>(a) Source port number (b) Destination port number (c) Total length of the UDP (d) Length of the data (e) Considering that an IP frame can have a maximum total length of 65 535 bytes, what is the maximum length of the data in a UDP frame?</p> <p>The UDP header has four parts, each of two bytes. That means we get the following interpretation of the header. (a) Source port number = 0532 = 1280 (b) Destination port number = 000D = 11 (c) Total length = 001B = 27 bytes (d) Since the header is 8 bytes the data length is 28 – 8 = 20 bytes. (e) The IP header is minimum 20 bytes, which gives the maximum payload 65515 bytes. To fit a UDP frame in this with header of 8 bytes we get data 65515–8 = 65507 bytes.</p>		
5) a)	Explain Congestion control in TCP with neat diagram. Diagram 2 marks Slow start, AIMD,DUP ack,Time out each 1 mark	6
b)	Explain TELNET.	6