Pir Mehr Ali Shah
Arid Agriculture University, Rawalpindi

Office of the Controller of Examinations
(TWO LEAVES ANSWER BOOK)

S.No: 058289

No. of Extra Sheets Attached: ....

Student's Name: Muhammad Rafay   Regd. No: 20-arid-802

Name of the Degree/Diploma: BS Software engineering   Morning/Evening

Course No: C.N   Course Title: Computer Networks

Semester (Fall/Spring/Summer): ....   Year: 2022   Date of Examination: 12/Dec/2022

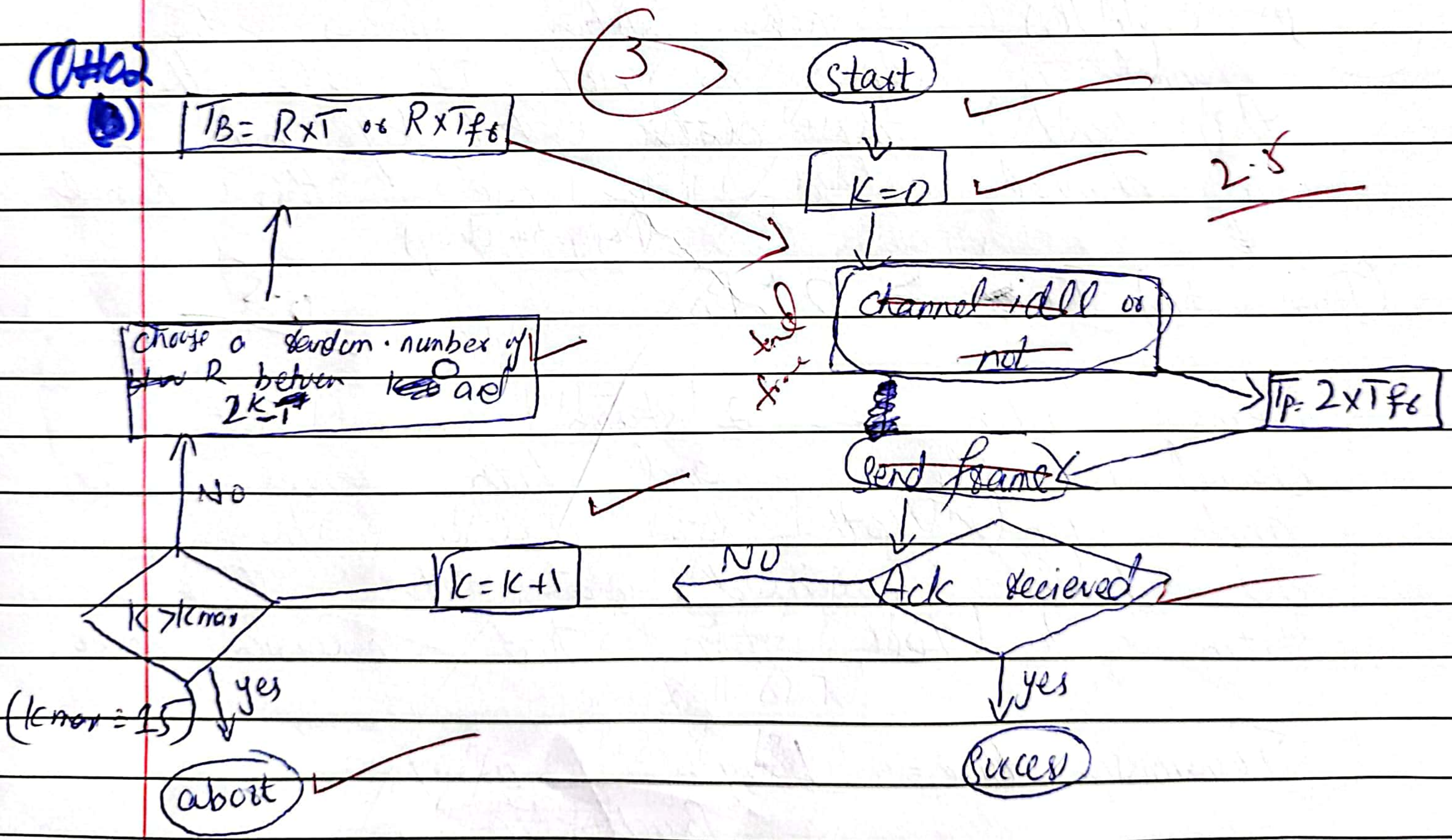
Q.No.	1	2	3	4	5	6	7	8	9	10	Marks Obtained /Total Marks	If Applicable Converted Marks/Total Marks
Marks Obtained	3	3.5	6.5								13.0	13/18

Total Marks in Words: Thirteen only.

Name of the Teacher who taught the course:

Signature of Teacher / Examiner:

Q#02 (b)



when any station sends data they check if channel is idle or not. If channel is idle then its sends frame and wa for acknowledgment and if ack arrived they succes and if no then increment the K value and checks condition if K > Kmax then system abort the process else Choose the random number R between 0 and $2^K - 1$.

12 a) CSMA/CD is actually used in LAN netwo but also used in shared medium net

1 In CSMA/CD each station senses the channel is idle or not. If idle then they send the data bit by bit in channel so we use this formul (Propagation delay)

(Transmission time) $Tt \geq 2 * Pd$ 0.5

Means when 2 station senses that channel is idle and both sends data and when both data collide they send back collided data to each station to tell him that collision occurs.

Transmission time = $\frac{\text{Length of message}}{\text{Bandwidth}}$

Propagation delay = $\frac{\text{Distance}}{\text{Velocity}}$

(a) Router open the header information to check the source and destination address to check whether a packet is correct or false. if source and destination given correct then sends to upper layer else discarded 0.5

Actual characters:

0 1 0 0 1 1 1 1, 0 1 0 1 0 0 0 0, 0 1 0 1 0 0 0 0, 0 1 0 0
1111

3.5

3 by

(Two zero characters are removed from data as a bit stuffing character)

$\Rightarrow 0\times2^7+1\times2^6+0\times2^5+0\times2^4+1\times2^3+1\times2^2+1\times2^1+1\times2^0$ (first 8 bits)

$\Rightarrow 0+64+0+0+8+4+2+1$

$\Rightarrow$ (Remaining in last sheet)

3)

SNR = 3162

B = 300KHZ

6.8

Capacity = $B \log_2(1+SNR)$

$= 300 \times \log_2(1+3162)$

$= 300 \times \log_2(3163)$

$= 300 \times 11.627$

2

Capacity = 3488.1

d) Bit rate ⇒ ~~2 x 16~~ ⇒ ~~32 bits rate~~ or

$C = 2B \log_2 L$

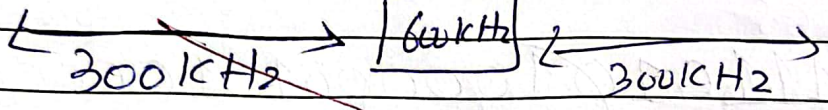
$C = 2B \log_2 2^2$.

$2B \log_2 4$

$C = 2B(2)$

Bitrate = 2.4 Mbps

b) guard



if we put guard bands in all channel then (Total channels − 1) means if total channels are 5 so we need 4 guard bands and 4 channels are adjusted.

(24 channels are arranged in this scenario)

a)

a) 88 MHz to 108 MHz freq in Radio

S.No: .....

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=> 79

=> O

01010000

$0\times2^7+1\times2^6+0\times2^5+1\times2^4+0\times2^3+0\times2^2+0\times2^1+0\times2^0$

$0+64+0+16+0+0+0+0$

=> 80

=> P

=> 01010000

$0\times2^7+1\times2^6+0\times2^5+1\times2^4+0\times2^3+0\times2^2+0\times2^1+0\times2^0$

$+64+16$

=> 80

=> P

01001111

$0\times2^7+1\times2^6+0\times2^5+0\times2^4+1\times2^3+1\times2^2+1\times2^1+1\times2^0$

$+64+0+0+8+4+2+1$

=> 79

=> O

Answer in characters form

=> OPPO

A	65
B	66
C	67
D	68
E	69
F	70
	71
	72
	73
	74
	75
	76
	77
	78
	79