American International University- Bangladesh (AIUB)
Faculty of Engineering

Course Name:	Data Communication	**Course Code:**	COE 3201
Semester:	Spring 2023	**Term:**	Final
Total Marks:	30	**Submission Date:**	26-04-2023
Faculty Name:	Sadman Shahriar Alam	**Assignment:**	02/OBE

Course Outcome Mapping with Questions

Item	COs	POIs	K	P	A	Marks	Obtained Marks
Q1	**CO4**	**P.f.2.C6**	**K7**	**P1, P3, P7**		**30**	
					Total:	**30**	

Student Information:

Student Name: Sirajus Salehin	**Student ID: 21-44543-1**
Section: J	**Department: CSE**

Marking Rubrics (to be filled by Faculty):

Problem	Excellent [15]	Proficient [12]	Good [10]	Acceptable [7]	Unacceptable [5]	No Response [0]	Secured Marks
	Detailed unique response explaining the concept properly and answer is correct with all works clearly shown.	Response with no apparent errors and the answer is correct, but explanation is not adequate/unique.	Response shows understanding of the problem, but the final answer may not be correct	Partial problem is solved; response indicates part of the problem was not understood clearly.	Unable to clarify the understanding of the problem and method of the problem solving was not correct	No Response/(Copied/identical submissions will be graded as 0 for all parties concerned)	
1							
2							
Comment						Total marks (30)	

Use your ID (ID = AB-CDEFG-H)

(For example: If B=1, C=2 and E=1, BCE= 121)

1. A voice channel occupies a bandwidth of BCE kHz. Ten voice channels are multiplexed together using FDM (Frequency Division Multiplexing) with guard bands of DG Hz.

(a) Propose the minimum required Bandwidth for the setup mentioned above.

(b) Design the configuration of multiplexing and demultiplexing process as an illustration using the above voice channels, bandwidth and the guard bands with proper labeling (choose carrier frequency range of your preference according to the Bandwidth).

Theme:

Date: / /

Sat Sun Mon Tue wed Thu Fri

D. com Assignment

21-44543-1
AB-CDEFGH

BCF = 145 KHz channel bandwidth

Guard band = DG = 43 Hz = 0.43 KHz

Number of channels = 10

(a) => The required minimum bandwidth for the 10 multiplexed channel would be:

(No. of voice channels x voice channel bandwidth) + (No. of guard bands x guard band)

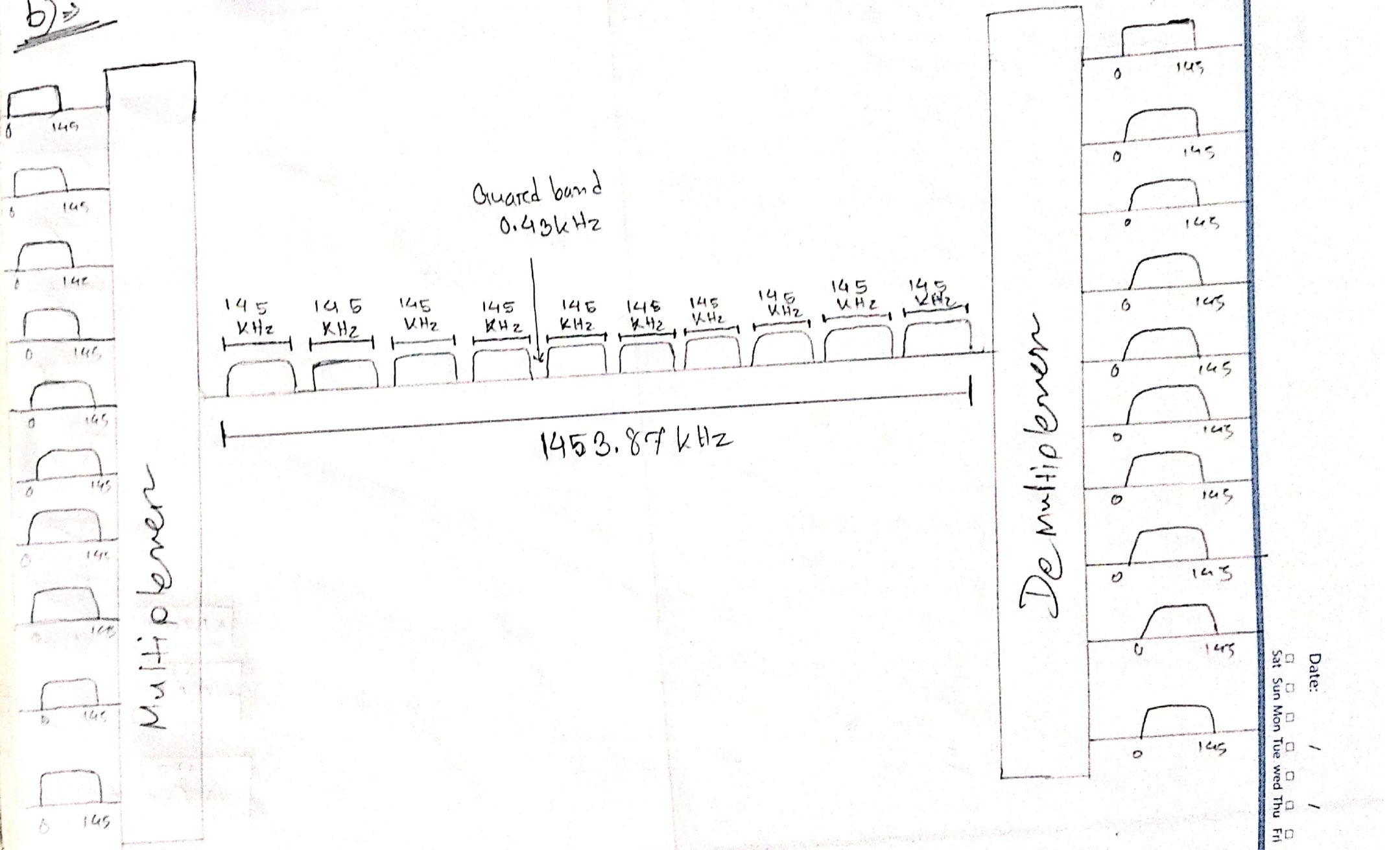
for 10 channels we need at least 9 guard bands.

∴ Bandwidth of setup = (10 x 145) + (9 x 0.43)

= 1453.87 KHz

Ans.

b) ⇒



Theme:

Date: / /

Sat Sun Mon Tue wed Thu Fri