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| AIUB | **American International University- Bangladesh (AIUB)**  **Faculty of Engineering** | | | |
| **Course Name:** | Data Communication | **Course Code:** | COE 3201 | |
| **Semester:** | Fall 2023 | **Term:** | Final | |
| **Total Marks:** | 30 | **Submission Date:** | 23-11-2023 | |
|  |  | **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:**

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| **Student Name:** | **MD. SHAHRIAR PARVEZ SHAMIM** | **Student ID:** | **21-44998-2** |
| **Section:** | **I** | **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. Three voice channels are multiplexed together using

FDM (Frequency Division Multiplexing).

(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).