**AMERICAN INTERNATIONAL UNIVERSITY – BANGLADESH (AIUB)**
**Faculty of Engineering**

**Course Name**: Data Communication **Term**: Mid
**Quiz**: 03 **Total Marks**: 10 Marks **Time**: 30 Minutes

***Write the answers in the box. Your font and font size should be legible***

| | |
|---|---|
| Name: | NAFINUR LEO |
| ID: | 20-42195-1 |

**Instructions:**

- Write **Name**, and **ID** inside the boxes above.
- AB-CDEFG-H represents your ID.
- **You must write your answer inside the box given below each question**.
- Submit your answer script as a **PDF** file named **Quiz 3 Your_ID.pdf** on **VUES** under **Quiz 3 Submission** by **3.30 PM**.

1. Assume we have a digital signal with (E+10)*4 levels and bandwidth is (F+10) kHz. What is the bit rate of the signal? **(5)**

Answer:
Level, L = (E+10)*4 = 44
Bandwidth, BW = (F+10) kHz = 19 KHz = 19000 Hz
Bitrate = 207480 bps

2. Assume SNR of a channel is (E+5)*4 dB and bandiwdth is (G+20) kHz. Can we use that channel to transmit a signal with (E+8)*5 levels? Justify your answer. (5)

Answer:
SNR_dB = (E+5)*4 dB = 24 dB
Bandwidth, BW = (G+20) kHz = 25 KHz = 25000 Hz
Target number of levels = (E+8)*5 = 45
SNR = 251.188
Capacity = 199500 bps
Signal transmitted = 275000 bps
Here, Signal transmitted > Capacity
So, we can't use this channel to transmit a signal with 45 levels.