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| **Department of Electrical Engineering**  **Mid-term Assignment**  **Date: 24/08/2020**  **Course Details** | | | |
| **Course Title:** | Digital Signal Processing | **Module:** | 6th |
| **Instructor:** | Dr. Rafiq Mansoor | **Total Marks:** | 30 |
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**Student Details**

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| Q1. | (a) | Consider the following analog signal   1. Determine the minimum sampling rate required to avoid aliasing. 2. Suppose that the signal is sampled at the rate . What is the discrete-time signal obtained after sampling? Also explain the effect of this sampling rate on the newly generated discrete time signal. 3. What is the analog signal we can reconstruct from the samples if we use ideal interpolation? | Marks 5 |
| CLO 1 |
| (b) | Consider a discrete time signal which is given by  This is signal is sampled at the rate .   1. Draw the sampled signal. 2. The samples of the signals are intended to carry 3 bits per sample. Determine the quantization level and quantization resolution to quantized the sampled signal achieved in part i . 3. Perform the process of truncation and rounding off on all the values of the sampled signal and find the quantization error for each of the sampled data. Express your answer in tabular form. | Marks 5 |
| CLO 1 |
| Q2. |  | Compute the convolution y(n) of the following signal | Marks 10 |
| CLO 2 |
| Q3. |  | Determine the z- transform of the following signals and also sketch its Region of Convergence (ROC). | Marks 10 |
| CLO 2 |

















