GATE Assignment 3

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Download all latex codes from

https://github.com/sujal100/EE3900/blob/main/Gate3/Gate3.tex

1 Problem

(GATE EC 2004 - Q60) A 1 kHz sinusoidal signal is ideally sampled at 1500 samples/sec and the sampled signal is passed through an ideal low pass filter with cut off frequency 800 Hz. The output signal has the frequency.

(a) zero Hz
(b) 0.75 Hz
(c) 0.5 Hz
(d) 0.25 Hz

2 Solution

Given f_s = 1500 Hz and f_m = 1 kHz.
Available frequency components = $nf_s \pm f_m$ The sampled frequency is 1 kHz, 2.5 kHz, 0.5 kHz, But cut off frequency is 800 Hz or 0.8 kHz. Therefore only 0.5 kHz will pass.