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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

T-1 EXAMINATION) - Feb-2020

B. Tech. VIII Semester, ECE

COURSE CODE: 18B11EC835 MAX. MARKS: 15

COURSE NAME: Digital Filters: Analysis, Design, and Signal Processing Applications

COURSE CREDITS: 03 MAX. TIME: 1 Hrs

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.

Q.1 Plot the magnitude and phase response of a filter, whose output is represented by **(05)**

$$y(n) = \frac{[x(n) + x(n-2)]}{2}$$

Q.2 Find the impulse response of an ideal low pass and high pass filters. **(05)**

Q.3 An IIR filter is represented by difference equation **(05)**

$y(n) + a_1 y(n-1) + a_2 y(n-2) + a_3 y(n-3) = b_0 x(n) + b_1 x(n-1) + b_2 x(n-2) + b_3 x(n-3)$, where $x(n) and\ y(n)$ are input and output respectively. Find the frequency response. For what values of b_i will the magnitude response is constant for all values of ω ?