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JAYPEE UNIVERSITY OF INFORMATRION TECHNOLOGY, WAKNAGHAT

TEST -3, EXAMINATIONS- December, 2017

B. Tech, ECE, VII Semester

COURSE CODE: 17B1WEC731 **MAX. MARKS: 35**

COURSE NAME: Time-Frequency Analysis and Its Application

COURSE CREDITS: 03 **MAX. TIME: 2 HRs**

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

Q.1. Explain the Bartlet, Welch, and Blackman tuckey method for power spectrum analysis. 07

Q.2. Explain the role of time-frequency tools for spectrum sensing in cognitive radio network. 06

Q.3. Explain the following time-frequency distribution methods: 04

(a) The Born-Jordan distribution

(b) The Zhao-Atlas-Marks distribution

(c) Stockwell transform

(d) Uncertainty principle for Time-frequency analysis.

Q.4 Explain the short time Fourier transform based algorithm for the localization of periodicity-3 in a sequence with block diagram in detail. 06

Q.5 Explain the S-transform based algorithm for tandem repeats detection in DNA data with block diagram in detail. 06

Q.6 Derive the mathematical expression of received signal for the rotation of helicopter blades. Also draw its time-frequency signatures. 06