

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST-3 EXAMINATION- May 2018
M.Tech(CSE) IV Semester

COURSE CODE: 15M1WCI432

MAX. MARKS: 35

COURSE NAME: Advanced Computational Techniques in Engineering

COURSE CREDITS: 3

MAX. TIME: 2Hrs

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

Use of Calculator is permitted.

Q.1. [8 Marks. Each part is 1 mark]

- a) Define PDF of exponential distribution.
- b) Define Flop Count. What is the Flop Count of Matrix Matrix multiplication algorithm?
- c) Compare and contrast Wavelet and Fourier transforms.
- d) What is intended to be done in solution of least square problem?
- e) What is SVD decomposition?
- f) What is Condition Number?
- g) Define rate of convergence? What is rate of convergence of power series method?
- h) What is a Standard Normal Variate?

Q.2. [7 Marks] In a manufacturing unit randomly selected 20 sheets were examined for flaws and following was observed

No of Flaws	0	1	2	3	4	5	6
Frequency	4	3	5	2	4	1	1

What is the probability of finding a sheet chosen at random with 3 or more flaws?

Q.3. [7 Marks] Find and sketch the fourier transform for the following function:

$$f(t) = \begin{cases} 1 & -T \leq t \leq T \\ 0 & t < -T \text{ or } t > T \end{cases}$$

Q.4. [7 Marks] Consider the matrix A below.

$$A = \begin{bmatrix} 1 & 2 & 4 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$$

Find PA=LU facorisation. Describe the method to solve the linear system Ax=b, using this factorization.

Q.5. [6 Marks] Write short notes on the following

- a) Normal distribution.
- b) Eigenvalues and Eigenvectors.
- c) Matrix Matrix multiplication by partitioning.