Dr SP. Ghrera

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -1 EXAMINATION- Feb 2019
Ph D and M.Tech(CSE) II and IV Semester

COURSE CODE: 15M1WCI432 **MAX. MARKS: 15**
COURSE NAME: Advanced Computational Techniques in Engineering
COURSE CREDITS: 3 **MAX. TIME: 1 HR**

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

Q.1. [4 Marks. Each part is 1 mark]

a) What is a positive definite system?
b) Compute the complexity of Strassen's Algorithm?
c) Write the algorithm for Column Oriented forward substitution.
d) Write the Matrix vector multiplication algorithm.

Q.2. [6 marks] Solve the linear system by decomposing matrix into triangular matrices.

$$\begin{bmatrix} 16 & 4 & 8 & 4 \\ 4 & 10 & 8 & 4 \\ 8 & 8 & 12 & 10 \\ 4 & 4 & 10 & 12 \end{bmatrix} * \begin{bmatrix} x1 \\ x2 \\ x3 \\ x4 \end{bmatrix} = \begin{bmatrix} 32 \\ 26 \\ 38 \\ 30 \end{bmatrix}$$

Q.3. [5 marks] Write a block partitioned matrix matrix multiplication algorithm. Using the algorithm solve the following.

If $A = \begin{bmatrix} 1 & 3 & 2 \\ 2 & 1 & 1 \\ -1 & 0 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 0 & 1 \\ 2 & 1 & 1 \\ -1 & 2 & 0 \end{bmatrix}$ find A*B with matrix block partitioning method.