Dr. Saurav.

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -2 EXAMINATION- OCT- 2018
M.TECH 1ST Sem

COURSE CODE: Modelling, Simulations and Computer Applications MAX. MARKS: **25**

COURSE NAME: 11M1WCE114

COURSE CREDITS: 3 MAX. TIME: **1.5Hrs**

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

Q1. What are slack Variables? Explain the difference between basic variables and non basic variables. Draw a flow chart to explain the steps involved in simplex method. **[5, CO2]**

Q2. The Cannon Hill furniture Company produces tables and chairs. Each table takes four hours of labor from the carpentry department and two hours of labor from the finishing department. Each chair requires three hours of carpentry and one hour of finishing. During the current week, 240 hours of carpentry time are available and 100 hours of finishing time. Each table produced gives a profit of $70 and each chair a profit of $50. How many chairs and tables should be made?

[7,CO3]

Q3. A manufacturer produces two types of models M_1 & M_2. Each model of type M_1 requires 4 hr of grinding and 2 hr of polishing whereas model M_2 requires 2 hr of grinding and 5 hr of polishing. The manufacturer has 2 grinders and 3 polishers. Each grinder works 60 hr a week and each polisher works 50 hr a week. Profit on model M_1 is Rs 4.00 and on model M_2 is Rs 5.00. How should the manufacturer allocate his production capacity to the two types of models, so that he may make the maximum profit in a weak? Formulate it as linear programming problem.

[2,CO3]

Q4. Solve the following LPP using Simplex method **[7,CO2]**

Maximize $Z= 4X_1+ 10X_2$

Subjected to $2X_1+X_2\leq10$, $2X_1+5X_2\leq20$, $2X_1+3X_2\leq18$

$X_1, X_2 \geq0$

Q5. Solve the following LPP using graphical method **[4, CO2]**

Maximize $Z= 25X_1+ 20X_2$

Subjected to $16X_1+ 12X_2\leq100$, $8X_1+16X_2\leq80$ $X_1, X_2 \geq0$