[Summary]

[Constrained   Optimization]

Subject:	Business Economics
Course:	B. A. (Hons.), 6th Semester, Undergraduate
Paper No. & Title:	Paper – 631 Advanced Mathematical Techniques
Unit No. & Title:	Unit – 2 Function of Two Variables
Lecture No. & Title:	4 (Four) Constrained Optimization

Summary:

➤ Use Lagrange's Multiplier method for optimizing non-linear programming problem with equality constraint/s.

➤ If number of equality constraints is less than that of the number of variables, for establishing sufficient conditions, compute Hessian matrix of order $(n+1)$ with the help of partial derivatives of the constraint and second order partial derivative of Lagrangian function at the extreme point.

➤ If determinant of principal minors are of alternate signs, then the extreme point is point of maxima.

➤ If determinant of principal minors are of same signs and negative, then the extreme point is point of minima.

➤ For the non-linear programming problem with inequality constraints use Kuhn-Tucker conditions.

➤ If all the conditions are satisfied, we get the feasible solution.

➤ Kuhn-Tucker conditions are necessary and sufficient both.

➤ If all $\lambda_i \geq 0$, the objective function is maximized and if all $\lambda_i \leq 0$, the objective function is minimized.

➤ Any of the Lagrangian multiplier is zero when a corresponding constraint does not contribute in the value of the objective function. This constraint is said to be silent / inactive constraint.