Full Marks : 20
Time : As in the Programme
The figures in the right hand margin indicate marks.

Answer any one **[20×1]**

1. Explain the main features and basic assumptions of input output analysis, and comment on the statement that basically the input-ouput analysis constant is nothing more complicated than the solution of a set of n-simultaneous linear equations in n-variables.

2. Find the minimum o the function

   a) $L = f(x, y) = 2x^3 + 3y^2$

   b) $m = f(x, y, z) = x^3 + 3y^2 + 5z^2$

3. Given the production function:

   $P = AL^{\alpha} K^{\beta}$

   Where P is product ; L is Labour; K is capital; & A, α, β are constant. Find dp

4. Find the total differential of the following functions:

   a) $z = x^2 + 3x^2 y + 6xy^2 = 2y^3$

   b) $z = x^5 y^4 - x^4 y^5$

5. Find the maximum, minimum & inflexion values of the following functions and state the corresponding values of x:

   a) $y = x^3 - 6x^2 + 9x$

   b) $y = x^3 + x - x^2 + 1$

6. Find the point which maximizes or minimizes the function $U = x^2 + xy + y^2 = 3z^2$, subject to $x + 2y + 4z = 60$

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