THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1.   Answer the following short questions.   **(6x5=30)**

I.   Define higher order difference equations.

II.   Solve Bernoulli equation: $\frac{dy}{dt} + \frac{1}{2}y = \frac{1}{2}(t+1)y^3$

III.   Find the general solution: $\frac{dy}{dt} + 3ty = 0$

IV.   Find the roots of the characteristic equation: $2x^2 + x + 10 = 0$

V.   Explain difference between imaginary and complex numbers

VI.   If $MC = 250 + 30Q - 9Q^2$ and $FC = 66$ find total cost function.

Answer the following questions.   **(3x10=30)**

Q. 2. Solve by using 4-step procedure: $t^2\,dy + 3y\,dt = 0$

Q. 3. Solve the cobweb model: $Q_{d,t} = 20 - 6P_t$ and $Q_{s,t} = -5 + 6P_{t-1}$

Q. 4. Solve the model: $X_{t+1} + \frac{1}{2}y_{t+1} - \frac{1}{7}y_t = 2$, using Schur Theorem.