Assignment # 02

Q1:- $(D^3+D)y = 2x^2+4\sin x$

Q2:- $(D^3-7D^2+10D)y = e^{2x}\sin x$

Q3. Solve using method of undermined coefficient

$(2D^2+3D+1)y = x^2+3\sin x$

Q4:- Solve the Cauchy Euler equation

(i) $x^3\frac{d^3y}{dx^3} + 3x^2\frac{d^2y}{dx^2} + x\frac{dy}{dx} = x^3\log x$

(ii) $x^2y'' + 2xy' - 6y = 10x^2$; $y(1)=1, y'(1)=-6$

Q5:-

Solve by Reduction of order

(i) $x^2D^2y - (x^2+2x)Dy + (x+2)y = x^2e^x$

(ii) $D^2y - 2\tan x\,Dy + 3y = 2\sec x$

$y = \sin x$ is a solution of associated homogenous equation.

Q6:- Solve by method of Variation of Parameters.

(i) $D^2y - 2Dy + 5y = e^x\tan 2x$

(ii) $D^3y - 2Dy - 4y = e^{-x}\tan x$.