**NAME: ZOHAIB**

**ID: 14821**

**SUBJECT: THEORY OF STRUCTURE**

# Assignment : 1

Solution:-

$R = 3n$

$4 = 3(1)$

$4 > 3$

Indeterminate by 1°

Solution:-

$R = 3n$

$3 = 3(1)$

$3 = 3$

Determinate Structure

# 1: Assignment (2)

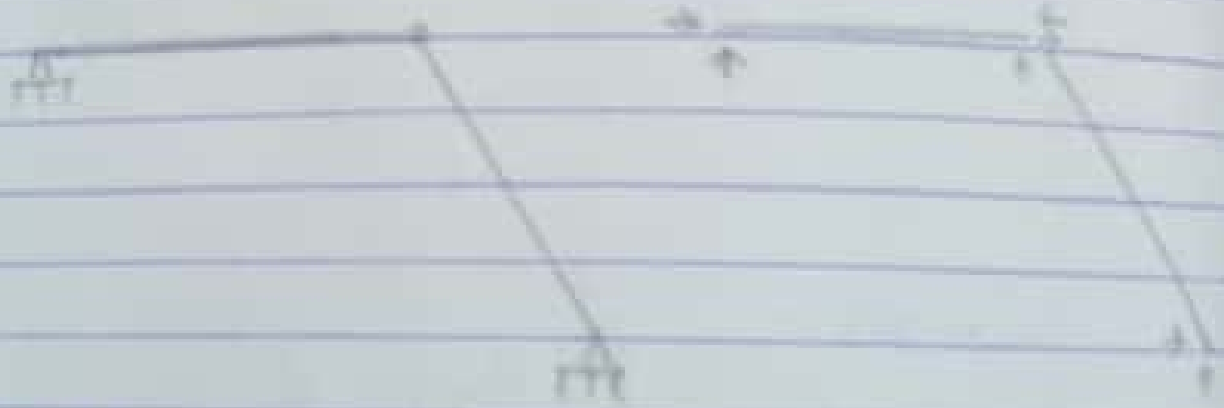
Solution:-

$R = 3n$

$3 = 3(1)$

$3 = 3$

Determinate Structure



Solution:-

$R = 3n$

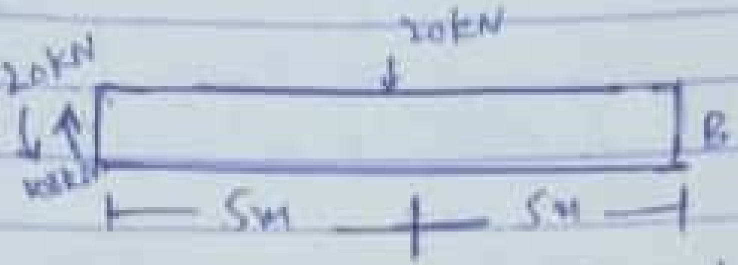
$6 = 3(2)$

$6 = 6$

Determinate Structure

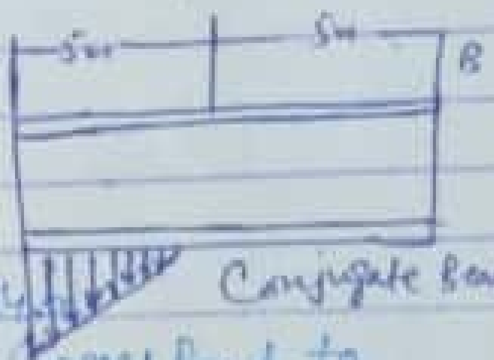
# Assignment : (3)

Deter The Slope and deflection at Point B of the Steel beam Shown in fig 8.240 the reaction have been Computed. E=200 GPa. I=475(10⁶) mm⁴




Solution

Conjugate Beam:-




Conjugate Beam

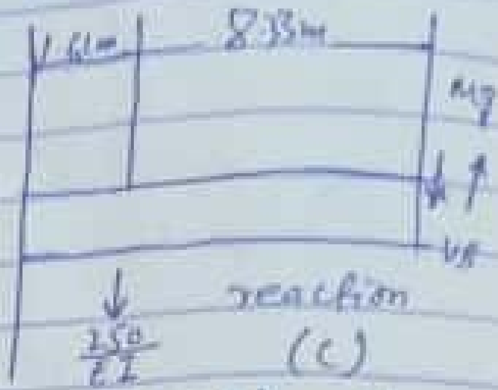
The Conjugat beam is Show in fig 8-24 The Supports at A' and B' Correspond to Support A and B on the real Beam - Table 8-2. it is important to under Stand why this is so the M/EI diagram is negative. So the distributed.

load acts down words. i.e away from the beam.

Equilibrium: Since $\theta_B$ and $\Delta_B$ are to be determined, we must Compute $V_B$ and $M_B$ in the Conjugate beam. Fig 8-24C.

[illegible]

$$-\frac{250\ kN\cdot m^2}{EI} - V_B' = 0$$



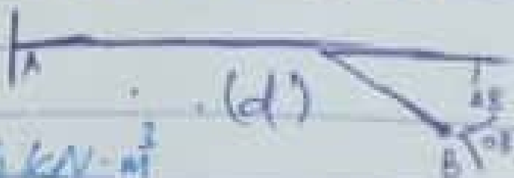

$+\uparrow \Sigma F_y = 0;$

$$\theta_B = V_B' = -\frac{250\ kN\cdot m^2}{EI}$$

$$= \frac{-250\ kN\cdot m^2}{[200(10^6)\ kN/m^2][475(10^6)(10^{-12})\ m^4]}$$

$$= 0.00263\ rad \quad \text{Ans}$$

$\circlearrowleft + \Sigma M_B' = 0; \quad \frac{250\ kN\cdot m^2}{EI}(8.33\ m) + M_B' = 0$




$$\Delta_B = M_B' = -\frac{2083\ kN\cdot m^3}{EI}$$

$$= \frac{-2083\ kN\cdot m^3}{[200(10^6)\ kN/m^2][475(10^6)(10^{-12})\ m^4]}$$

$$= -0.0219\ m = -21.9\ mm \quad \text{Ans}$$

The negitive signn indicate the slope of the beam is measured clock wise and the displacement is down, Fig 8-24 d.