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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- FEB- 2020

B.TECH 8TH / M.Tech II Semester

COURSE CODE: **12M1WCE231** MAX. MARKS: **15**

COURSE NAME: **Prestressed Concrete Design**

COURSE CREDITS: 3 MAX. TIME: **1 Hr**

Note: *All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means. Assume any suitable data if needed.*

Q1. A Prestressed Cantilever beam 8m Long and 750mm deep carries a dead load of 8kN/m and a Live load of 25kN/m. Find the value of prestressing force required to balance full dead load and half live load? Take e= 1/25 of length of beam and profile of tendon is parabolic. **[4, CO2]**

Q2. A rectangular concrete beam 100mm×250mm spanning over 8m is prestressed by a straight cable carrying an effective prestressing force of 250kN located at an eccentricity of 40mm. If the beam supports a live load of 1.2 kN/m calculate **[5, CO2]**

i) Resultant stresses at the central cross section of the beam

ii) Find the magnitude of the prestressing force with an eccentricity of 40mm which can balance the stress due to dead load and live loads at the bottom fibre of the section at the centre of the span.

Q3. Write short notes **[2×3=6,CO1]**

i) Hoyer's long line system of prestressing

ii) Prestressed concrete has improved resistance to shearing resistance when compared to conventional RCC.