COURSE CODE (CREDITS): 12M1WCE231 (3)   MAX. MARKS: 15

COURSE NAME: PRESTRESSED CONCREE DESIGN

COURSE INSTRUCTORS: DR. SAURAV   MAX. TIME: 1 Hour

Note: All questions are compulsory. Marks are indicated against each question in square brackets.

Q1. A simply supported unsymmetrical I beam of span 20m and overall depth 1000mm is subjected to live load of 12kN/m. Determine the stresses in beam at different stages of loading using following data. Also draw the resultant stress diagrams.   [6, CO2]

Top flange: 500mm×150mm

Bottom flange: 300×200mm

Web: 150mm×650mm.

Loss: 15%

Area of steel. 1385.44mm^2

Initial prestressing force: 1100N/mm^2

Q2. Determine the profile of a load balancing cable for a beam of 8m simply supported span carrying a live load of 60kN/m (excluding self weight). Prestressing force is 1500kN. Use the beam section as given in Q1.   [4, CO2]

Q3. Elaborate in detail the advantages and disadvantages of prestressed concrete over conventional RCC. Discuss allowable compressive stress in concrete as per IS 1343: 1980

[5, CO1]