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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST-3 EXAMINATION- December -2018

B.Tech VII Semester

COURSE CODE: 12M1WCE231 MAX. MARKS: 35

COURSE NAME: PRESTRESSED CONCRETE STRCUTRES

COURSE CREDITS: 03 MAX. TIME: 2 HRS

Note: *All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.*

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1. A number of tendons are provided in a post tensional member and are tightened one after the other. How do you determine the loss of stress in the individual tendons? (7)

2. A straight post tensioned concrete member 15 m long with a cross-section of 400 mm x 400 mm is prestressed with 900 mm^2 of steel wires. This steel is made of four tendons with 225 mm^2 per tendon. The tendons are tensioned to a stress of 1050 N/mm^2. Determine the loss of prestress in each tendon due to elastic shortening of concrete. Find also the average percentage loss of prestress. If it is desired that after the last tendon is tightened a stress of 1050 N/mm^2 be maintained in each tendon, compute the actual stresses to which the individual tendons should be tightened. Take m = 6. (10)

3. A prestressed concrete beam of uniform rectangular cross-section and span 15 m support a total distributed load 272 kN excluding the weight of beam. Determine the suitable dimensions of the beam and calculate the area of the tendons and their position. The permissible stresses are 14 N/mm^2 for concrete and 1050 N/mm^2 for the tendons. (10)

4. Describe the terms: Initial stress, prestress at transfer, effective prestress and cracking load as applied to prestressed concrete beam. (5)

5. Describe the various methods of prestressing by Gifford Udall system. (3)