Dr Sawai

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

MID TERM TEST

SUMMER SEMESTER - JUNE 2018

B.Tech 8th Semester

COURSE CODE: 12M1WCE231 MAX. MARKS: 50

COURSE NAME: PRESTRESSED CONCRETE DESIGN

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.*

Q1. A prestressed concrete beam of span 5m has 150mm width and 300mm depth. P= 225kN e= 50mm, udl= 7.2kN/m (including self weight). If modulus of rapture of concrete is 5N/mm^2, calculate load factor against cracking. **(5)**

Q2. A prestressed concrete beam as shown in Fig 1. Determine the stresses in beam at support and at mid span section using **(10)**

a) Stress concept method

b) Load balancing concept

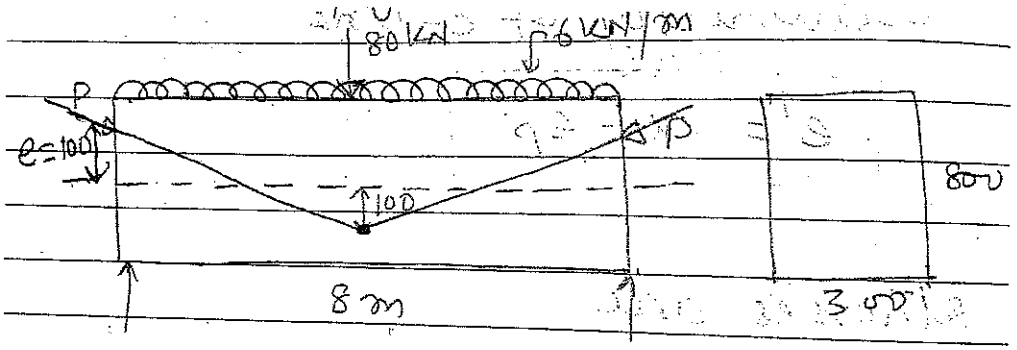

Fig. 1

Q3. Elaborate on the classification of prestress. **(7)**

Q4. How a prestressed concrete is different with reinforced concrete. Write its merits and demerits **(10)**

Q5. Discuss pressure line and cable line in case of prestressed concrete beam. **(5)**

PTO.....

Q6. A prestressed concrete beam of size 300mm×600mm is 12m long. It carries a live load of 12kN/m in addition to its self weight. It is prestressed with 2000mm^2 high tensile steel located at 175mm from soffit. Cable profile is straight. Determine the location of thrust line at ends and at mid span section. Assume m= 6 and P_s= 800N/mm^2 **(7)**

Q7. Fig 2 shows a prestressed concrete beam provided with a tendon having a parabolic profile. If the external load on the beam is 35kN/m on the whole span. Find the extreme fiber stresses at mid span section by load balancing method. P= 1000kN. **(6)**

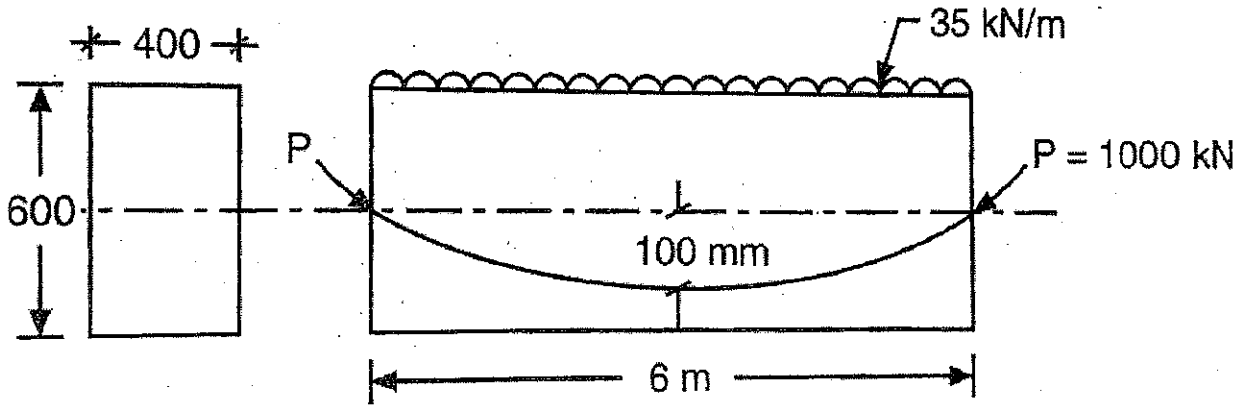

Fig. 2