

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST-3 EXAMINATION- JUNE -2016

B.Tech - IV Semester

COURSE CODE: 10B11CE413

MAX. MARKS: 35

COURSE NAME: STRUCTURE ANALYSIS

COURSE CREDITS: 04

MAX. TIME: 2 HRS

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

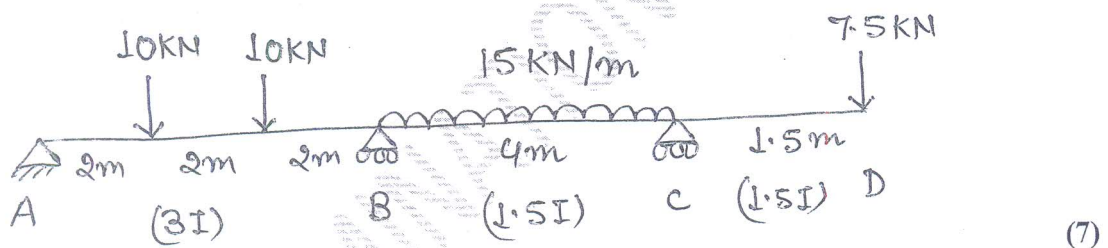
Q.1. (i) Derive the Slope Deflection Equation.

(ii) Why arches are preferred over beam for long span structures?

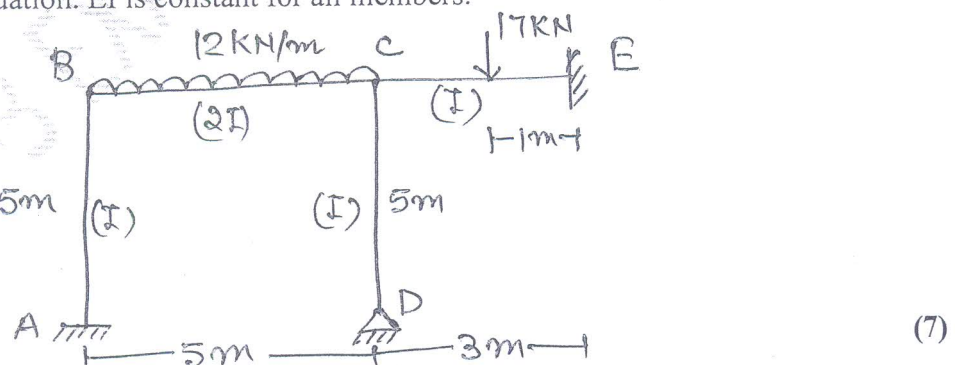
(iii) Explain different types of cracks.

(4+1+2)

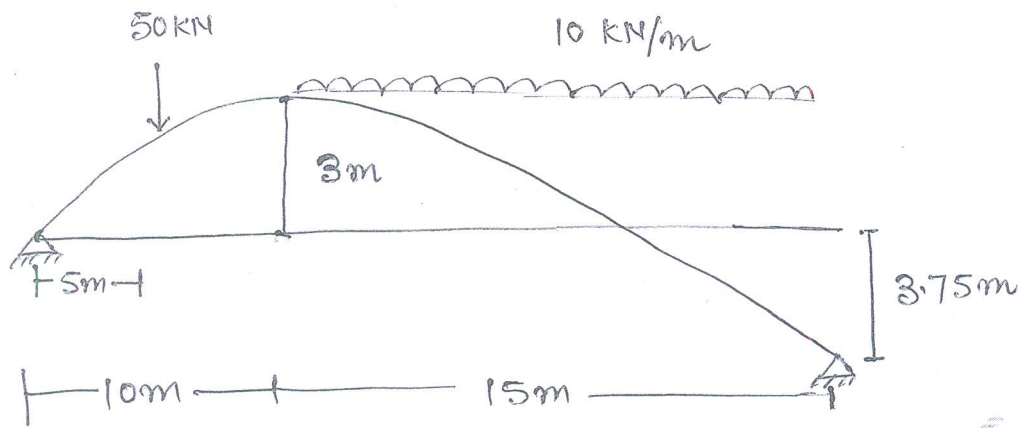
Q.2. Solve the given beam by Moment Distribution Method and draw bending moment diagram.



Q.3. Find all support reaction and draw bending moment diagram of the frame shown below by Slope Deflection Equation. EI is constant for all members.



Q.4. A three-hinged parabolic arch of constant cross section is subjected to a uniformly distributed load over a part of its span and a concentrated load of 50 kN, as shown below. Evaluate the horizontal thrust and the maximum bending moment in the arch.



(7)

Q.5. Solve the given frame by Slope Deflection Equation. Joint B is attached with a spring perpendicular to member AB having  $K = 30 \text{ kN/m}$ . Find elongation in spring. Support D settles by 10mm. for all members  $E = 200 \text{ GPa}$  and  $I = 210 \times 10^6 \text{ mm}^4$ . (7)

