

Registration No. :

--	--	--	--	--	--	--	--	--	--

Total number of printed pages – 2

B. Tech  
PCCI 4304

**Sixth Semester Back Examination – 2015**

**STRUCTURAL ANALYSIS - II**

**BRANCH : CIVIL**

**QUESTION CODE : M 129**

**Full Marks – 70**

**Time : 3 Hours**



*Answer Question No. 1 which is compulsory and any five from the rest.  
The figures in the right-hand margin indicate marks.*

1. Answer the following questions :

2×10

- (a) Write the shape factor for a rectangular beam of width  $b$  and depth  $d$ .
- (b) State upper bound theorem.
- (c) Find the value of collapse load for a fixed beam subjected to a point load at the centre.
- (d) Define rotation factor.
- (e) State distribution theorem.
- (f) Define flexibility.
- (g) Define degree of redundancy.
- (h) Define ductility.
- (i) What is a plastic hinge ?
- (j) Define Dip.

P.T.O.

2. A continuous beam ABC consists of spans AB and BC of lengths 6 m and 8m respectively. The span AB carries a uniformly distributed load of 30 KN/m while span BC carries a udl of 45 KN/m. The ends A and C are simply supported. Find the support moments and Draw the bending moment diagram using slope deflection method. 10
3. A continuous beam ABC is simply supported at A and C. AB = 6 m, BC = 4 m. A load of 120 KN is acting in the centre of AB. On BC a load of 90 KN is acting at 1 m from B. find the support moments and draw B.M and S.F. diagrams for the continuous beam using moment distribution method. AB : BC = 2I : I. 10
4. Determine the support moments at A, B, C and D for the continuous beam ABCD whose end A and D are fixed. AB = 4 m, BC = 5 m, CD = 6 m. At 1 m from A a point load of 10 KN is acting. On BC a point load act at the centre. On CD a load of 9 KN act at 2m from D. AB : BC : CD = 1 : 2 : 1. Draw the BMD, using Kani's method. 10
5. The two hinged girders of a suspension bridge have a span of 120 m, the dip of the supporting cables being 12 m. If the girder is subjected to two point loads 180 KN and 300 Kn at distance 24 m and 96m from the left end, find the shear force and bending moment for the girdwer at 30m from left. Find also the maximum tension in the cable. 10
6. Find the shape factor for an Isosceles triangle. 10
7. A two hinged parabolic arch of span 30 m and rise 8 m carries a point load of 70 KN at a distance of 10m from the right support. Find the horizontal thrust at each support. Find also the maximum bending moment. 10
8. Write notes on : 5×2
- (a) Stiffness
- (b) Two hinged arch.