Hall Ticket Number :										

R-14

Code: 4G643

II B.Tech. II Semester Supplementary Examinations February 2022

Structural Analysis-I

(Civil Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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		Marks	CO	Blooms Level

UNIT–I

1. Derive the Equation for a Fixed beam carrying a Point load at the centre of the beam with neat sketch. 14M

OR

2. a) List out the different types of beams with neat sketches 7M

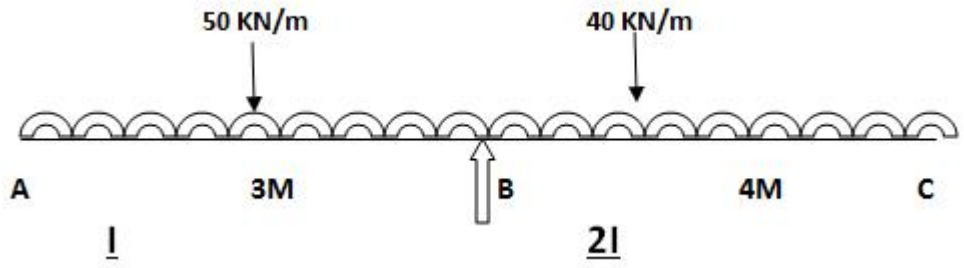
   b) A fixed beam of length 5m carries a UDL of 9KN/m runs over entire span. If I= $4.5*10^{-4}$ m^4 and E = $1*10^7$ KN/m^2. Find the fixing moments at the ends and the deflection at the centre. 7M

UNIT–II

3. A continuous beam ABCD of length 15m rests on four supports covering 3 equal spans and carries a UDL of 1.5KN/m length. Calculate the moments and reactions at the supports. 14M

OR

4. A Continuous beam ABC consists of span AB & BC of lengths 3m and 4m respectively, the ends , the ends A & C being simply supported. If the spans AB & BC carrying UDL of 50KN/m & 40KN/m respectively. Determine the support moments at A, B, C . Draw S.F & B.M. The Moment of Inertia for AB & BC are I & 2I respectively.



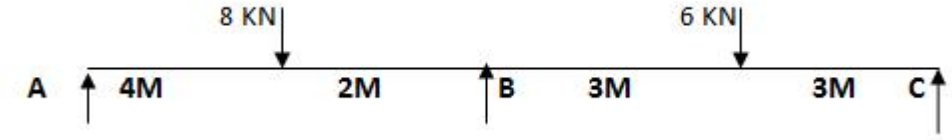
14M

UNIT–III

5. Explain step by step procedure of Slope Deflection method with suitable example. 14M

OR

6. A Beam ABC 12m long Simply supported at the ends A and C and loaded as shown in figure, using slope deflection method, compute the end moments and plot B.M diagram.



14M

UNIT–IV

7. a) Two wheel loads 80KN and 200KN spaced apart and they move on a girder of span 16m. Find the maximum positive and negative shear force at a section 4m from the left end. Any wheel load can lead the other. 7M

   b) Two wheel loads of 60KN and 200kn spaced 4m apart move on the span of a girder AB from the left to right. Let any of the two wheel loads could lead the other. Find the vertical reaction at B. 7M

OR

8. Derive the Influence line diagram for reactions and bending moment at any section of a simply supported beam, using the influence line diagram determine the support reactions and find bending moment at 2.5m, 4.5m and 6.5m for simply supported beam of span 9m subjected to three point loads of 15KN, 25KN and 5KN placed at 1m, 4.5m and 6.5m respectively. 14M

UNIT–V

9. Derive the strain energy stored in the beam due to Axial load with neat sketch. 14M

OR

10. A Simply supported beam carries a point load P eccentrically on the span. Find the deflection under the load. Assume uniform flexural rigidity. 14M

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