

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER- IV (Old) EXAMINATION – WINTER 2019****Subject Code: 140603****Date: 14/11/2019****Subject Name: Structural Analysis-II****Time: 02:30 PM TO 05:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Write advantages and disadvantages of indeterminate structures. **07**
(b) Explain Castigliano's 1st and 2nd theorems. **07**
- Q.2** (a) Calculate central deflection for a simply supported beam subjected to udl throughout its entire span by Castigliano's 1st theorem. **07**
(b) Derive the equation of fixed end moment developed due to UDL of intensity 'w' on a fixed beam AB of length 'L'. **07**
- OR**
- (b) What is fictitious load method? How it is used to determine unknown deflection? **07**
- Q.3** (a) Using Castigliano's 2nd theorem, find the vertical reaction at point C for the frame shown in figure-1 and plot BMD for it. Take EI=Constant. **07**
(b) Analyze the beam shown in figure-2 by slope deflection method. Also draw SFD and BMD. **07**
- OR**
- Q.3** (a) Write the differences between a normal and Conjugate beam. **07**
(b) Analyze the beam shown in figure-2 by moment distribution method. Also draw SFD and BMD. **07**
- Q.4** (a) What is an influence line diagram? Explain its importance in structural analysis? **07**
(b) Analyse the beam shown in figure-2 by Kani's method. **07**
- OR**
- Q.4** (a) State and explain Muller Breslau principle **07**
(b) Draw influence line diagram for support reactions V_a and V_b for a propped cantilever beam of 10m length. **07**
- Q.5** (a) Analyze the propped cantilever beam shown in figure-3 by Consistent deformation method. **07**
(b) Write the advantages and disadvantages of prestressed concrete. **07**
- OR**
- Q.5** (a) Explain methods of pre-tensioning and post-tensioning. **07**
(b) Define 1) Relative stiffness, 2) carryover factor and 3) distribution factor **07**

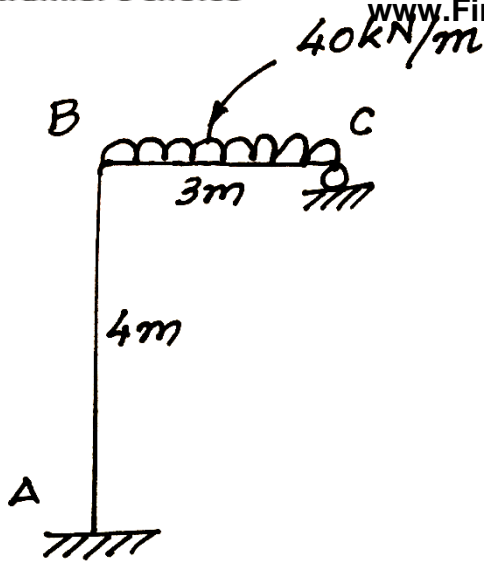


FIGURE - 1

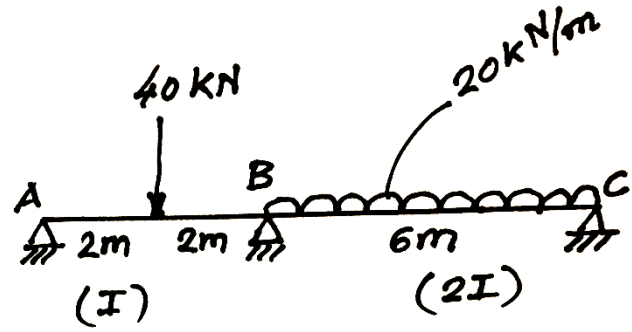


FIGURE - 2

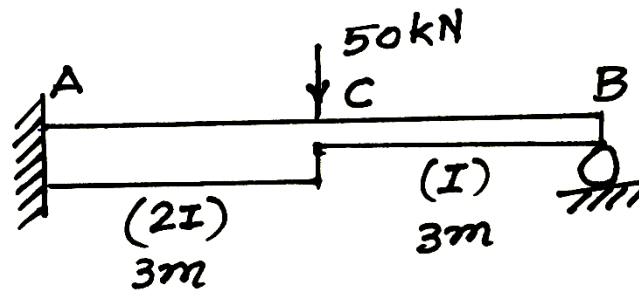


FIGURE - 3
