

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-V (NEW) - EXAMINATION – SUMMER 2016

Subject Code:2150608

Date:11/05/2016

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** Analyse the beam shown in figure (1), by stiffness matrix method **14**
- Q.2 (a)** Discuss the Castigliano's theorem. How it will be useful for the analysis of truss? **07**
- (b)** Explain the Muller Breslau's principle. How it will be useful for the indeterminate beam? **07**
- OR**
- (b)** Compute the ordinates of ILD for reaction at A for the figure (2). **07**
- Q.3** Analyse and draw BMD for portal frame shown in the figure (3), by using moment distribution method. **14**
- OR**
- Q.3 (a)** Explain the term: Distribution factor, carry over factor, carry over moment and stiffness. **04**
- (b)** Analyze and draw the BMD for the beam shown in figure (4) by moment distribution method. **10**
- Q.4** Analyse and draw BMD for portal frame shown in the figure (5), by using slope deflection method. **14**
- OR**
- Q.4** Determine the support reactions at support D of the given portal frame of figure (6), by using flexibility matrix method. **14**
- Q.5 (a)** Compute the vertical deflection of point D of the truss as shown in figure (7). The cross sectional area of member DE and AD are 1500 mm^2 and other members are 1000 mm^2 . $E = 200 \text{ kN/mm}^2$. **10**
- (b)** Differentiate the influence line diagram for BM at any section and normal BM diagram. Explain this with taking simple example. **04**
- OR**
- Q.5** Five wheel loads as shown in figure (8), crosses a simply supported beam of span 24 m from left to right. Calculate the maximum positive and negative SF at the center of the span and absolute maximum BM anywhere in the span. **14**

