



Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)



V SEMESTER B.TECH (CIVIL ENGINEERING)

END SEMESTER EXAMINATIONS, NOV/DEC 2015

SUBJECT: ADVANCED STRUCTURAL ANALYSIS [CIE 321]

REVISED CREDIT SYSTEM

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- ✤ Answer ANY FIVE FULL the questions.
- ✤ Missing data may be suitable assumed.

| 1. | Draw the I.L for the forces in members CJ,CI,CD and BH of the Deck type bridge truss shown in Fig. Q1. | 10 |
|-----|---|----|
| 2. | Find the support reactions for the continuous beam loaded as shown in Fig q2, if the support B sinks by 10mm. use Kani's method. Take E=200 GPa, I= 80×10^6 mm ⁴ | 10 |
| 3. | Using force method of analysis obtain the moments at the ends of the members for the frame shown In Fig Q3. Assume constant EI | 10 |
| 4. | Using displacement method (stiffness method), analyse for end moments of the frame shown in Fig Q4. Assume constant EI and neglect axial strain | 10 |
| 5A. | Find the collapse load for the fixed beam shown in Fig.Q5(A). | 5 |
| 5B. | Design the continuous beam shown in Fig. Q5(B) using plastic analysis. Assume load factor = 1.5, shape factor = 1.14, $\sigma_y = 250$ MPa. Provide uniform cross – section throughout. | 5 |
| 6A. | Generate flexibility matrix for the same shown in Fig Q6(A). assume constant EI | 5 |
| 6B. | Determine the displacement of the joint A of pin jointed plane frame shown in Fig. Q6(B). All members having the same cross sectional area. | 5 |



