



Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)



IV SEMESTER B.TECH (CIVIL ENGINEERING)

END SEMESTER EXAMINATIONS, JULY 2016

SUBJECT: ANALYSIS OF INDETERMINATE STRUCTURES [CIE 2202]

REVISED CREDIT SYSTEM

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

✤ Answer ALL the questions.

✤ Missing data may be suitable assumed.

1A.	A two hinged arch of span 30 m and central rise of 6 m, is loaded with UDL of 10 kN/m , on its left half-span. Determine normal thrust and radial shear at 5 m from left support.	04
1B.	Analyze the continuous beam shown in the Fig. 1B , using Clapeyron's Three moment theorem, when support B sinks by 8 mm. Take $EI=4000 \text{ kN/m}^2$. Draw FBD.	06
2A.	A fixed beam AB of span 6 m carries point loads 150kN and 200kN at distances 2m and 4m from the left end. If the left and right supports sink by 15mm and 7mm respectively, find the moments at the supports. Also draw the FBD and BMD for the beam. Take $EI = 6000 \text{ kN-m}^2$.	04
2B.	Using the Moment Distribution method, determine the end moments for the continuous beam shown in Fig. 2B . Draw the FBD.	06
3A.	Using Castigliano's second theorem, analyze the propped cantilever of span 4m, carrying an UDL of 24kN/m throughout the span. Plot the SFD and BMD.	04
3B.	Using Slope deflection method, obtain the end moments for the beam shown in Fig. 3B . EI is constant throughout.	06
4A.	Draw ILD for the chords, U1L2, L1L2, U4U5 and U3L3 of the through type truss shown in the Fig. 4A .	04
4B.	Using Kani's method, analyze the frame shown in Fig. 4B. Draw FBD & BMD.	06
5A.	Draw the influence lines for the moment at A for the propped cantilever beam shown in Fig. 5A . Compute the ordinates at 1.25 m intervals.	04
5B.	Find the collapse load for the frame shown in Fig. 5B .	06

