



Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)



IV SEMESTER B.TECH (CIVIL ENGINEERING)

END SEMESTER EXAMINATIONS, MAY 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.

1 A .	A two hinged arch, having a span of 24 m and a central rise of 6 m, is loaded with UDL of intensity 5 kN/m on its left-half span and a concentrated load of 50 kN on its crown. Determine normal thrust and radial shear at 6 m from the right support. Also, determine the magnitude and position of maximum hogging (-ve) Bending Moment in the arch.	06
1B.	Analyze the beam shown in the Fig. 1B using Clapeyron's Three Moment Theorem. Draw FBD.	04
2A.	Calculate the end moments, and plot FBD & BMD for a fixed beam is as shown in Fig. 2A .	04
2B.	Using Moment Distribution method, determine the end moments and draw FBD for the beam shown in Fig. 2B. Support A settles by 10 mm, B settles by 30 mm and C settles by 20 mm. Take $EI = 480 \text{ kN-m}^2$.	06
3A.	Analyze the propped cantilever of span 6m, carrying an UDL 10kN/m throughout and a concentrated load of 60kN at 3m from fixed support. Plot FBD.	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 chords, U_1U_2 , L_0L_1 , U_3L_3 and L_0U_1 of the truss shown in Fig. 4A .	04
4B.	Analyze the frame shown in the Fig.4B using Kani's method. Draw FBD.	06
5A.	Using Muller Breslau's principle, determine the influence line for reaction at A for the continuous beam shown in Fig. 5A . Compute the ordinates at every 1 m interval.	03
5B.	Determine the collapse load for the frame shown in Fig. 5B. M_P is same for all members.	07



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