Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL

(A constituent institution of MAHE, Manipal)

IV SEMESTER B.TECH. (CIVIL ENGINEERING)

END SEMESTER EXAMINATIONS, APRIL/MAY 2018

SUBJECT: ANALYSIS OF INDETERMINATE STRUCTURES [CIE 2202]

REVISED CREDIT SYSTEM

(19/ 04/ 2018)

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

Answer ALL the questions. Missing data may be suitably assumed.

Q.No		Marks	CO
1A.	A two hinged parabolic arch of span 30 m and rise 6 m carries a UDL of 25 kN/m over the right half of its span. Determine the magnitude and location of maximum positive and maximum negative bending moments.	**5**	**CO1**
1B.	Determine the fixed end moments for the beam AB loaded as shown in Fig.1B, if the right hand support rotates anticlockwise by 0.2°. Given, EI = $12x10^6$ $N.m^2$.	**5**	**CO1**
2A.	For the continuous beam ABCD loaded as shown in Fig.2A, determine the support moments using three moment theorem. Draw BMD.	**5**	**CO1**
2B.	Using Castigliano's second theorem, determine the support reactions for the propped cantilever AB loaded as shown in Fig. Q2B.	**5**	**CO1**
3A.	Analyze the beam shown in Fig.3A, using slope-deflection method. PLOT BMD.	**5**	**CO1**
3B.	Analyze the frame shown in Fig. Q3B, using moment distribution method.	**5**	**CO1**
4A.	Derive the slope deflection equation for fixed beam.	**3**	**CO1**
4B.	Analyze the frame shown in Fig.Q4B using Kani's method. Draw FBD.	**7**	**CO1**
5A.	A propped cantilever beam of span 6m having fixed end at A and hinge at B subjected to two downward point loads 30KN and 50kN at 2m and 4m from A respectively. Plot ILD ordinates at 1m intervals for reaction at B and also calculate the reaction at B.	**6**	**CO2**
5B.	Determine shape factor about horizontal axis for the symmetrical I section having flange 400x20 and web of size 10x400.	**4**	**CO3**

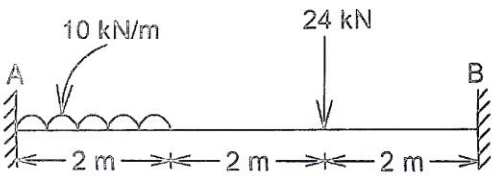

Fig. 1B

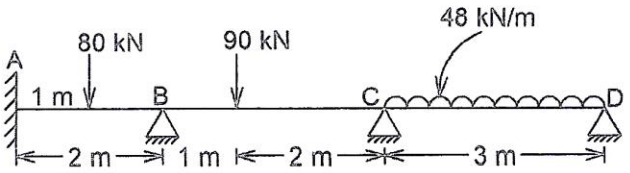

Fig. 2A

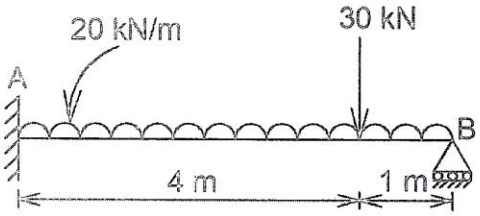

Fig. 2B

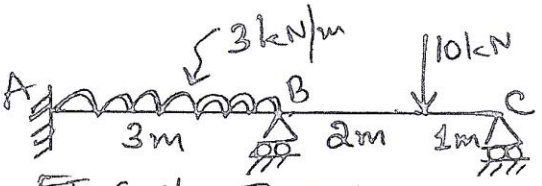

Fig. 3A

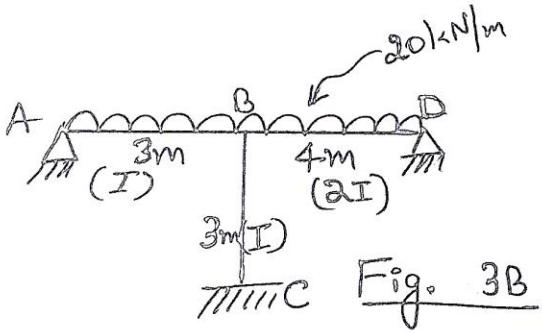

Fig. 3B

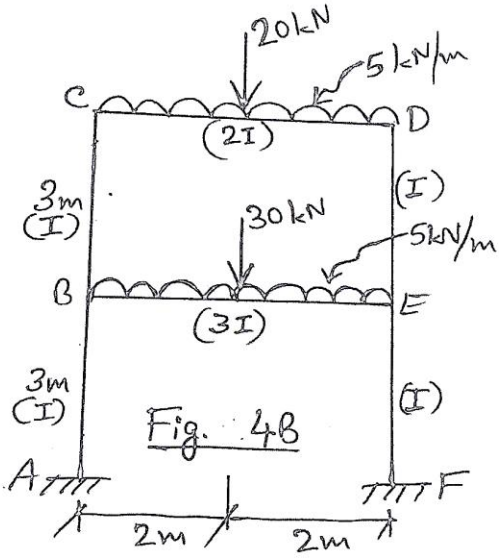

Fig. 4B