Reg. No.									

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

IV SEMESTER B.TECH (CIVIL) END SEMESTER EXAMINATIONS

JUNE 2019

SUBJECT: ANALYSIS OF INDETERMINATE STRUCTURES [CIE 2202]

Date of Exam: **/06/2019** Time of Exam: **2:00 PM to 5:00 PM** Max. Marks: **50**

Instructions to Candidates:

- Answer ALL the questions & missing data may be suitably assumed

Q. No	Questions	Marks	CO
1A	A two hinged arch of span 20 m and rise 5 m is loaded with a UDL of 20 kN/m on left half span and a point load of 50 kN is applied at 4 m from right support. Determine normal thrust and radial shear at a distance of 5 m from left support.	5	CO1
1B	A fixed beam of span 4 m is loaded with UDL of 20 kN/m on right half span only, due to which the right support sinks by 3 mm. Determine the end moments in the beam. Take EI = 5500 kN/m^2.	3	CO2
1C	A propped cantilever beam of span 6 m is loaded with 10 kN/m throughout. Determine the reaction at the roller support using Castigliano's second theorem.	2	CO2
2A	Determine the support moments for the beam shown in **Fig.Q2A** using Clapeyron's theorem. EI is constant throughout.	5	CO2
2B	Determine the support moments for the continuous beam shown in **Fig.Q2B** by slope – deflection method, if support B sinks by 20 mm. Take EI = 2.5 × 10^4 kN.m^2 throughout. Draw BMD.	5	CO2
3A	Determine the support moments for the frame shown in **Fig.Q3A** by moment distribution method.	6	CO3
3B	Determine the support moments for the continuous beam shown in **Fig.Q3B** by Kani's rotation method.	4	CO2
4A	Draw ILD for chords, U_0L_0, L_1L_2 and U_1L_2 of the truss shown in **Fig.Q4A.**	6	CO4
4B	Draw ILD for support moment at fixed support for a propped cantilever beam of span 9 m considering interval of 1.5 m.	4	CO4
5A	Determine the collapse load for the frame shown in **Fig.Q5A.** M_P is same for all members.	6	CO5
5B	Determine the shape factor for T section shown in **Fig.Q5B.**	4	CO5

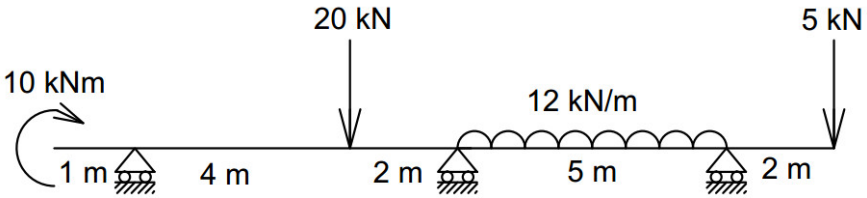

Fig.Q2A

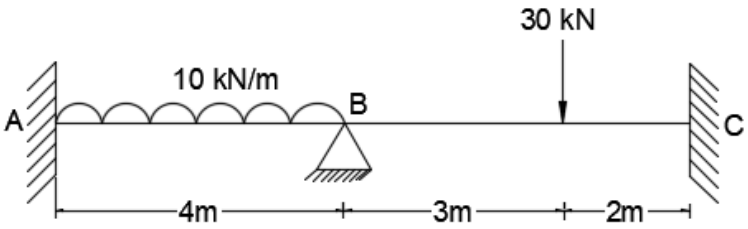

Fig.Q2B

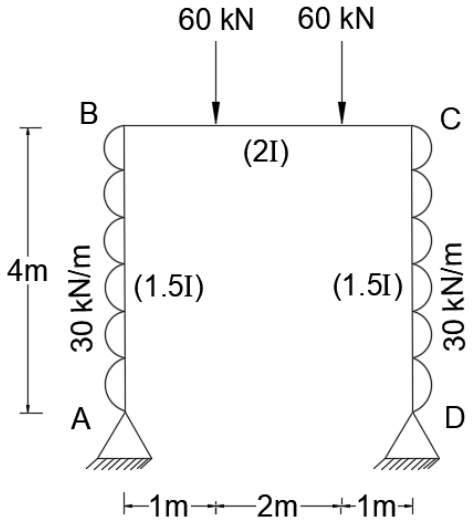

Fig.Q3A

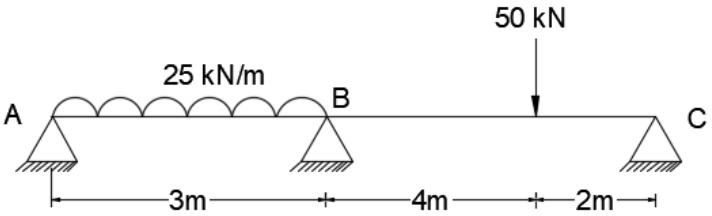

Fig.Q3B

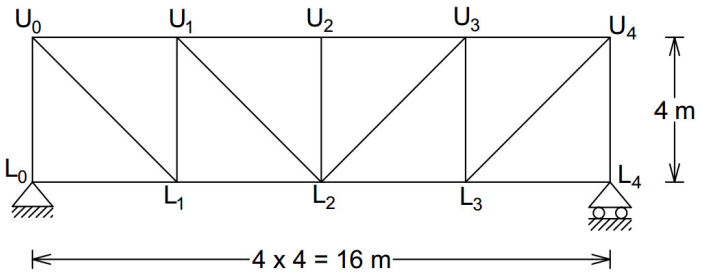

Fig.Q4A

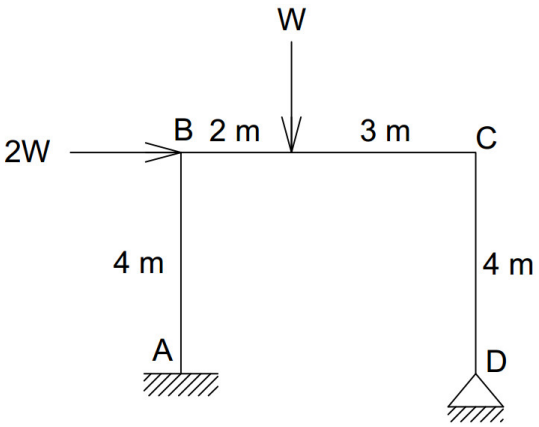

Fig.Q5A

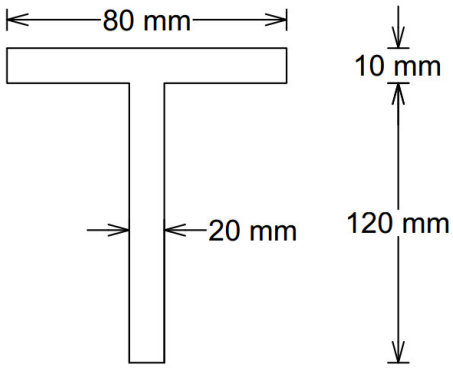

Fig.Q5B