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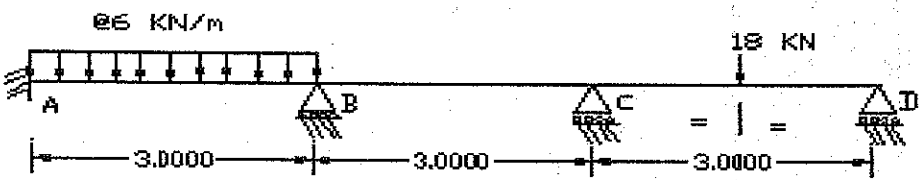
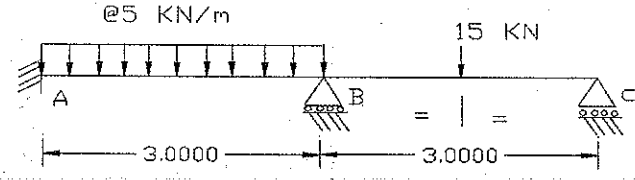
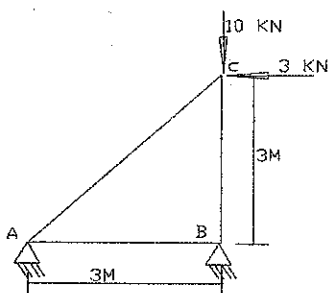
Ref. No. : Ex/CE/5/T/402/2019 (Old)

Name of the Examinations: BACHELOR OF ENGINEERING (CIVIL ENGINEERING) FOURTH YEAR FIRST SEMESTER (Old) - 2019

Subject : THEORY OF STRUCTURES-III

Time :3 hr

Full Marks :100

No. of Question		Marks
1	<p style="text-align: center;">Answer any four question.</p> <p>i) Explain 'Flexibility Matrix' & 'Stiffness Matrix'.</p> <p>ii) A cantilever beam AB having length L is subjected to force P1 (vertical force) & p2 (moment) at free end. The corresponding displacement is denoted by D1 & D2. Proof that the multiplication of flexibility matrix & stiffness matrix is unit matrix.</p> <p>iii) Find out joint load matrix and stiffness matrix in structure oriented system for continuous beam. EI is constant for the whole span.(Fig-1)</p>  <p style="text-align: center;">Fig-1</p>	5+10+10=25
2	<p>Compute the reaction forces and moment using 'flexibility method' for the continuous beam. (fig-2) Also find the member end forces for span AB. EI is constant for the whole span.</p>  <p style="text-align: center;">Fig-2</p>	25
3	<p>Compute the support reaction and member force using 'Stiffness method' of the truss shown fig-3. EA is constant for all members</p>  <p style="text-align: center;">Fig-3</p>	25

4

Draw I.L. for R_A , R_B , & B.M at mid-point of AB of a two span continuous beam ABC having length L of each span (fig-2) Also find out maximum reaction at A & B due to two wheel loads 10t and 5t spaced 1m apart (passage from A to B). Considering length of span is 5m ($L=5m$).

25

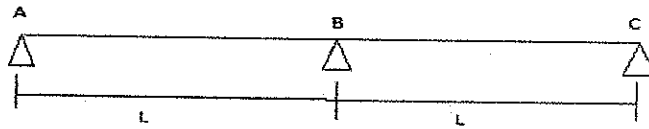


Fig-4

5

a) Determine the component of reactions at A & E and shape for the cable shown in Fig-5 for which dip at B is known.

12+13=25

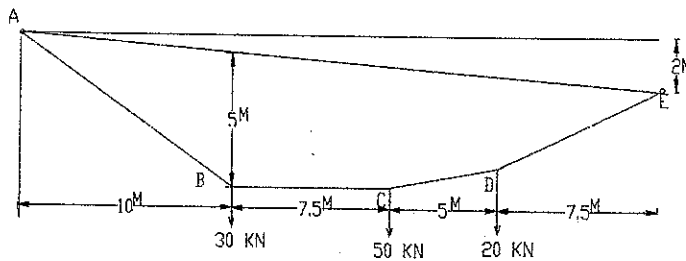


FIG-5

b) The cables of a suspension bridge have a span of 60m and central dip of 7.5m. Each cable is stiffened by hinged at the end and also at the middle so as retain a parabolic shape for the cable. The girder is subjected to a dead load of 10 KN/m & a concentrated load of 50 KN is place at a distance 20 m from the right support. Find the maximum tension in the cable and draw S.F. & B.M. diagram for the girder.