

Code No: R22016

R10
SET - 1
II B. Tech II Semester Supplementary Examinations, November-2017
STRUCTURAL ANALYSIS – I

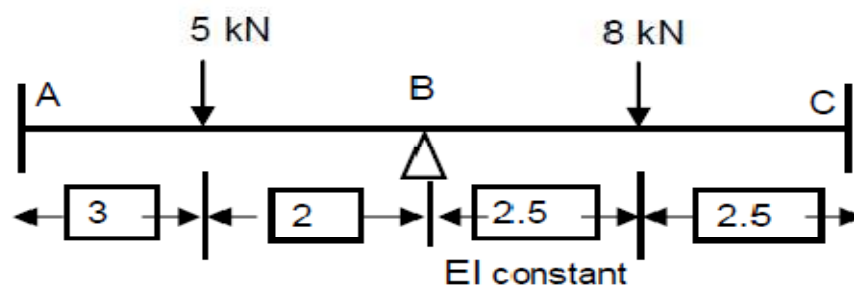
(Civil Engineering)

Time: 3 hours

Max. Marks: 75

 Answer any **FIVE** Questions
 All Questions carry **Equal** Marks
 ~~~~~

1. Analyze the prop cantilever beam of span  $L$  subjected to udl  $w/m$  (15M)  
throughout the span and draw S.F.D. and B.M.D.
2. Find the fixed end moments for a fixed beam of span 8 m subjected to a (15M)  
concentrated clockwise moment of 20 kNm at 3 m from the left end.
3. A two span continuous beam ABC is fixed at A and C and is continuous over B. (15M)  
The span  $AB=4.3m$  and span  $BC=5.7m$ . The span AB carries a UDL of  $55kN/m$   
and span BC carries a central point load of 42 kN. EI is constant for the whole  
beam. Find the moments and reactions at all supports and draw the bending  
moment diagram using Clapeyron's theorem.
4. A beam ABC, 10m long, fixed at ends A and B is continuous over joint B and is (15M)  
loaded as shown in Fig. Using the slope deflection method, compute the end  
moments and plot the bending moment diagram. Also, sketch the deflected shape  
of the beam. The beam has constant EI for both the spans



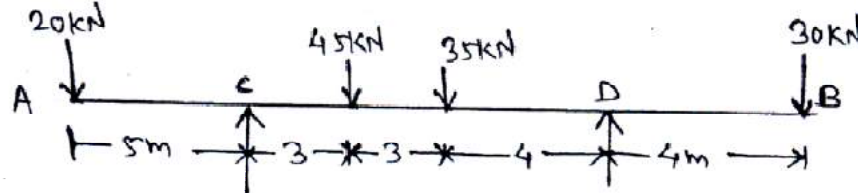
5. A portal frame ABCD is fixed at supports A&D. The span  $AD=4.5m$  and the (15M)  
height  $AB=CD=3.5m$ . It carries a UDL of  $25 kN/m$  on BC. Analyze the frame by  
strain energy method and draw bending moment diagram. Take  $EI=1$
6. A simply supported beam of span 10m carries a udl of 20 kN/m over its central 4m (15M)  
length. With the help of influence line diagram, find the shear force at 3m from the  
left support

Code No: R22016

**R10**

**SET - 1**

7. A beam ACDB is as shown in fig. Find the reaction at support, S.F at 4 m from support C and B.M. at 4 m from support c using ILD (15M)



8. Find the horizontal deflection of the joint D of the truss shown in the figure. The sectional areas of the members are as follows. (15M)

Horizontal members -  $1000 \text{ mm}^2$   
Vertical members -  $1200 \text{ mm}^2$   
Inclined member -  $2000 \text{ mm}^2$   
Take  $E = 200 \text{ kN/mm}^2$

