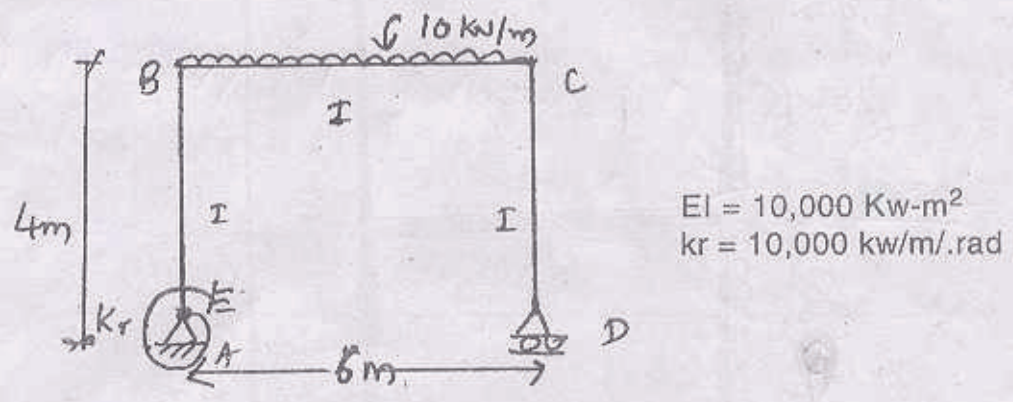


- N.B. : (1) Question No. 1 is compulsory.  
 (2) Attempt any four questions out of remaining six questions.  
 (3) Assume suitable data if required and state it clearly.  
 (4) Figures to right indicate full marks.

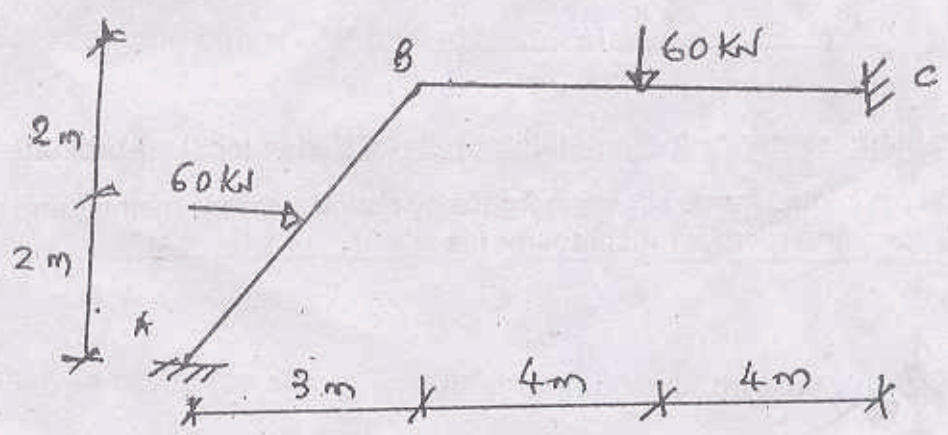
Master

B.E (C) III Old/Rev Advanced St. Analysis - 3/1/08

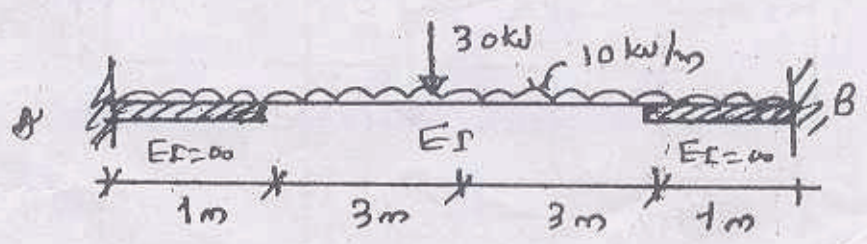
1. (a) Answer the following :-  
 (i) Distinguish clearly between flexibility and stiffness method of analysis. 4  
 (ii) Is elastic centre method is force method or displacement method ? Explain with proper reasons. 3  
 (iii) Distinguish clearly between plane rigid jointed frame and rigid jointed space frame in terms of their structured behaviour, internal stresses, dof etc. 4  
 (b) Analyse the frame shown in figure and draw BMD and SFD. Note that support A is supported an elastic support with rotational stiffness of 10,000 kN-m/rad. 9



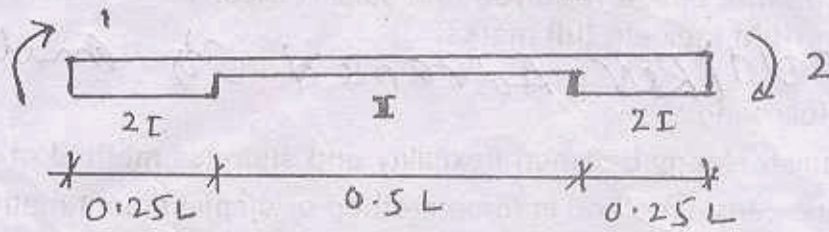
2. Analyse the frame shown in figure by elastic centre method and draw SFD, BMD. 20



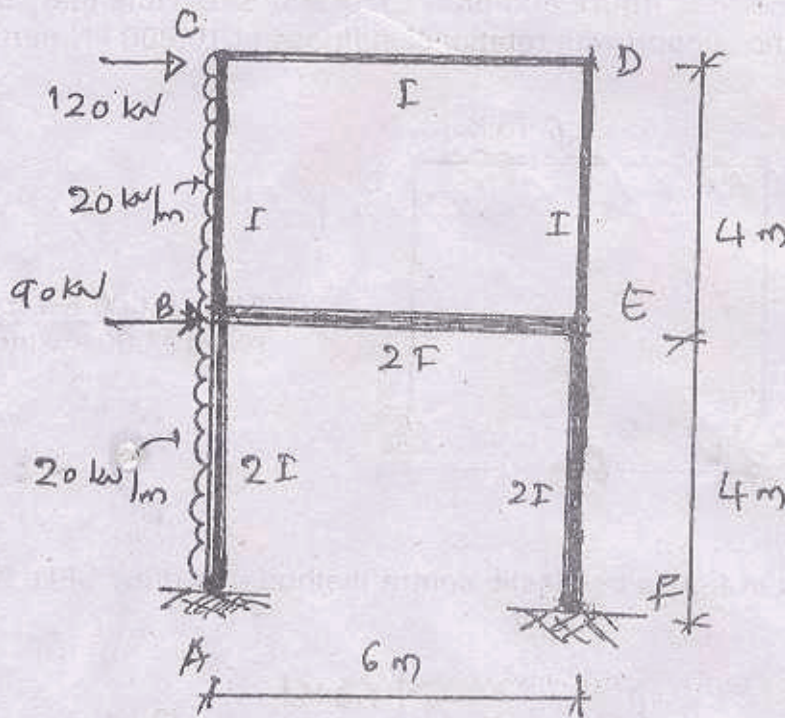
3. (a) Analyse the beam shown in figure by column Analogy method and draw SFD & BMD. 10



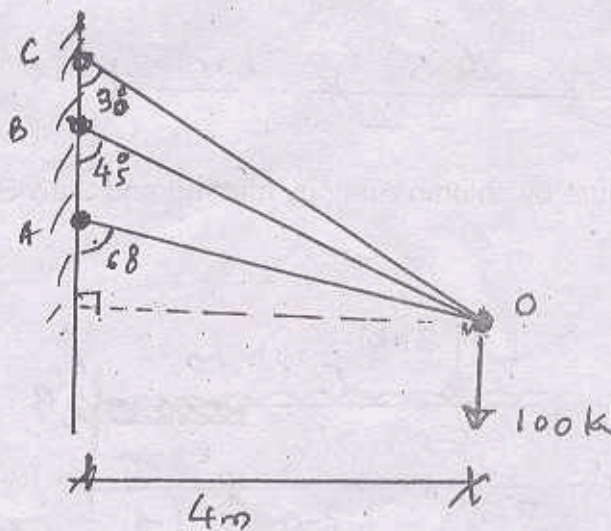
- (b) For the non prismatic beam element shown in figure, calculate ke stiffness coefficients  $k_{11}$  and  $k_{21}$ . Also calculate COF from B to A. 10



4. Analyse the frame shown in figure by modified moment distribution method and draw SFD, BMD & deflected shapes. 20

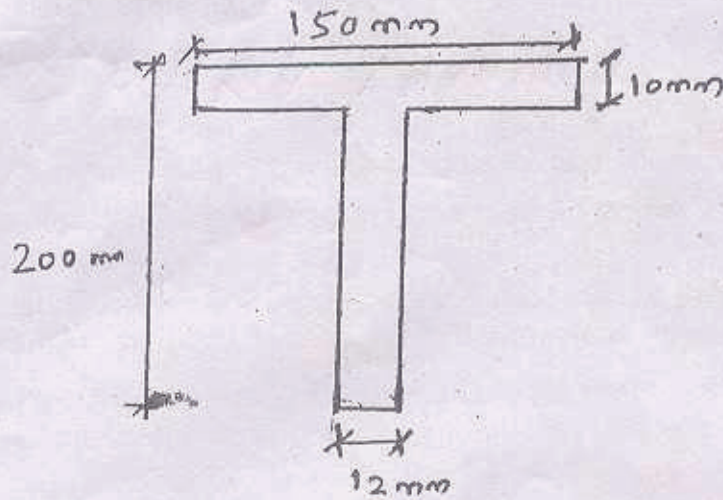


5. (a) Derive the stiffness matrix for a member of plane grid in local co-ordinate system. 8  
 (b) Analyse the pin jointed frame shown in figure by matrix stiffness method and calculate member forces and member displacements. 12

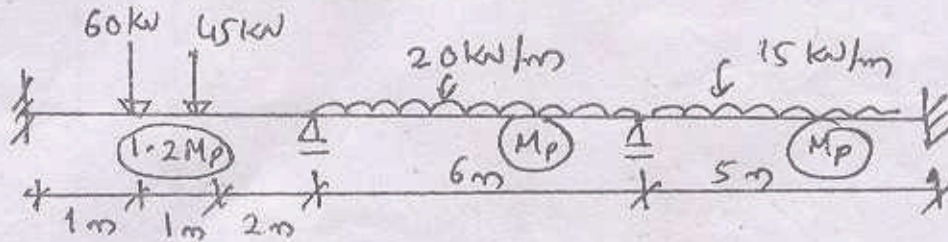


$$E = 2 \times 10^5 \text{ N/mm}^2$$

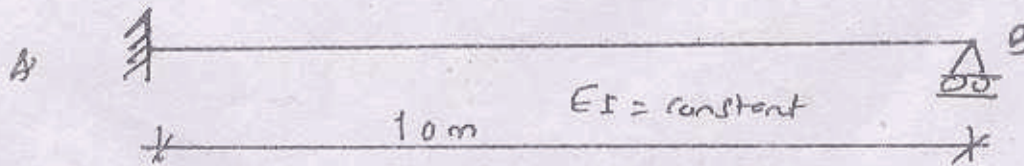
- B.E. CC VII R10 ADM. 5
6. (a) For the section shown in figure, calculate the shape factor. If  $\sigma_y = 250 \text{ N/mm}^2$ , calculate  $M_p$  for the section. 8



- (b) A continuous beam is subjected to the working loads as shown in figure. If  $M_p$  value is 120 Kn-m, calculate the load factor. 12



7. (a) For the beam shown in figure - Construct ILD for :  
 (i) Reaction  $R_c$   
 (ii) Moment  $M_A$   
 Calculate the ordinate of ILD at 2 m intervals. 8



- (b) Analyse the frame shown in figure by cantilever method and draw BMD. 12

