

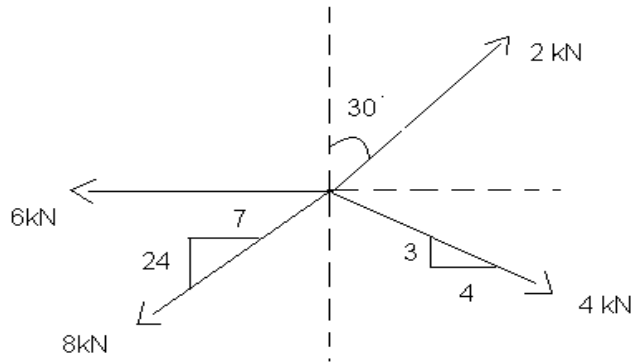
(GTU)  
 A.D. Patel Institute of Technology  
 Internal Test  
 Mechanics of Solids

Date: 23/09/08

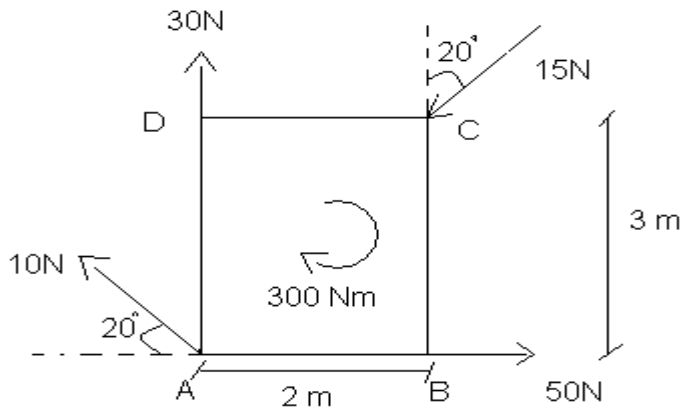
Time: 8:00 am to 9:00 am

Total Marks: 20

Q.1(A) Determine the resultant of given concurrent forces system. (03)



(B) Determine the resultant of given Non-concurrent forces system. & find the position with respect to A (04)

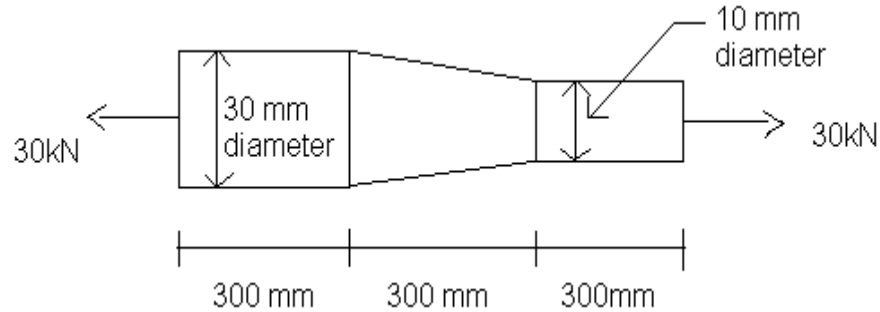


(C) Find support reaction of given simply supported beam. (03)



Q.2(A) Define the following terms (any two) (02)  
Modulus of elasticity, hook's law, principle of superposition, Poisson's ratio

(B) A circular bar is subjected to a tensile load of 30kN, (04)  
made up of three parts as shown in diagram. Find the total extension of the bar. take  $E=2 \times 10^5$  MPa



(C) A load of 200kN applied on a short concrete column (02)  
having size 500mm x 500mm, The column is reinforced  
with 4 steel bar of 10mm diameter, one in each corner.  
Find out the stress in steel & concrete  
take  $E_s = 2.1 \times 10^5$  MPa &  $E_c = 1.4 \times 10^5$  MPa.

OR

(C) A rectangular block 200mm x 150mm x 50mm is  
subjected to axial load as follow  
1. 300kN compression force in 150mm x 50mm face  
2. 500kN tension force in 200mm x 50mm face  
3. 200kN tension force in 200mm x 150mm face  
So find change in volume of the block.  
Take  $E = 2 \times 10^5$  MPa & Poisson's ratio is 0.35.