ENGINEERING MECHANICS – ASSIGNMENT 1 (17th Jan,2021) – Last Date (23rd Jan, 2021)

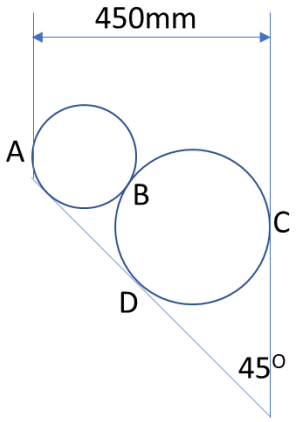
Q1) Explain the following terms: Continuum, Rigid Body, Particle

Q2) State and explain parallelogram law of forces. From this derive triangle and polygonal laws of forces.

Q3) Explain term 'Force' and list its characteristics

Q4) Explain term concurrent and non-concurrent force systems; planar and non-planar system of forces.

Q5) Cylinder 1 of diameter 200 mm and cylinder 2 of diameter 300 mm are placed in a trough as shown in Fig. If cylinder 1 weighs 800 N and cylinder 2 weighs 1200 N, determine the reactions developed at contact surfaces A, B, C and D. Assume all contact are smooth.



Q6) The resultant of two forces one of which is 3 times the other force is 300 N. When the smaller force is reversed the resultant is 200 N. Determine the two forces and the angle between them.

Q7) If a solid double arrow depicts the axis of rotation of a couple moment Find sum of the forces, sum of couples and moments , and find the moment of entire system about axis C-C having direction cosines $\alpha_x = 62.6129^o$; $\alpha_y = 52.4105^o$; passing through point A as shown.