



SHANTILAL SHAH ENGINEERING COLLEGE, BHAVNAGAR
APPLIED MECHANICS DEPARTMENT

Assignment No:

Date:

Sub Code

Introduction, Fundamentals of Statics

Title of Subject

#	Questions
1.	Differentiate between Scalar and Vector quantity. Write S.I. units of following quantities and categorize it as a scalar or vector. 1) Density, 2) Velocity. 3) Volume, 4) Momentum, 5) Work
2.	Force is defined by its magnitude and other parameters. Name them.
3.	Define the following terms: (a) Statics (b) Dynamics (c) Kinetics (d) Kinematics (e) Rigid body (f) Deformable body (g) Particles
4.	Explain the law of parallelogram of forces and derive the equation for magnitude & direction of resultant force.
5.	Determine magnitude and direction of resultant force of the force system shown in Figure - 1 .
6.	A cord supported at A and B carries a load of 20 kN at D and a load of W at C as shown in Figure - 2 . Find the value of W so that CD remains horizontal.
7.	Find magnitude, direction and location of resultant of force system with respect to point 'A' shown in Figure - 3 .

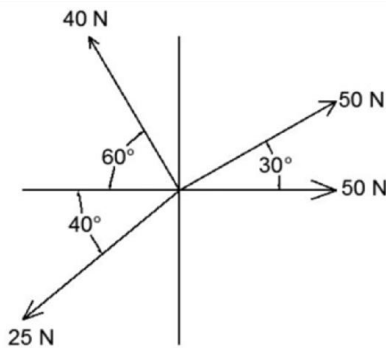


Figure - 1

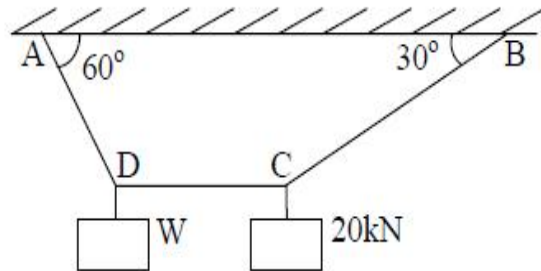


Figure - 2



Figure - 3

DUE DATE FOR PRODUCTION ENGINEERING (DIV-A) IS 14/08/2018



SHANTILAL SHAH ENGINEERING COLLEGE, BHAVNAGAR
APPLIED MECHANICS DEPARTMENT

Assignment No: 02

Date: 02/08/2018

Sub Code 2130003

Application of Fundamentals of Statics

Title of Subject Mechanics Of Solids

#	Questions
1	Discuss the various types of supports, beams, and load acting on the beam with symbolic sketches
2	Derive the relation between SF and BM in a beam subjected to general loading.
3	Explain the sign convention taken to compute shear force (SF) and bending moment (BM).
4	Find the reactions at supports for a beam loaded as shown in FIGURE - 1 .
5	Draws shear force and bending moment diagrams for beam shown in FIGURE - 2 . Giving values at all important points

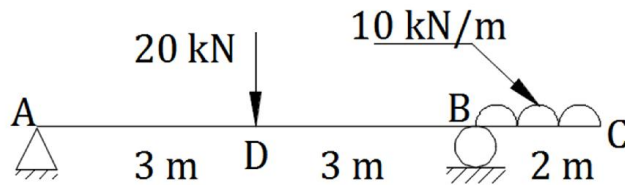


Figure - 1

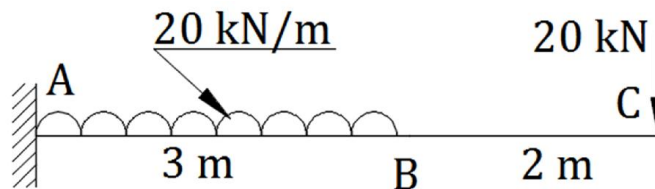


Figure - 2

DUE DATE FOR PRODUCTION ENGINEERING (DIV-A) IS 14/08/2018



SHANTILAL SHAH ENGINEERING COLLEGE, BHAVNAGAR
APPLIED MECHANICS DEPARTMENT

Assignment No: 03

Date: 02/08/2018

CENTRE OF GRAVITY & MOMENT OF INERTIA

Sub Code 2130003

Title of Subject Mechanics Of Solids

#	Questions
1.	State Pappus Guldinus theorem for surface of revolution. Also state Parallel and Perpendicular axis theorem
2.	Derive expression of moment of inertia of rectangular section by first principal.
3.	Determine the centroid of wire; bent as shown in Figure - 1 .
4.	Determine the location of centroid and moment of inertia of the given lamina in Figure - 2 about centroidal X axis.
5.	Find center of gravity and moment of inertia of a lamina shown in the Figure - 3 .

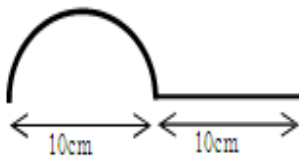


FIGURE - 1

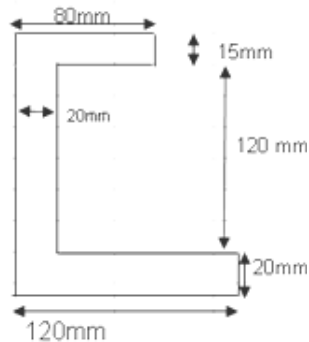


FIGURE - 2

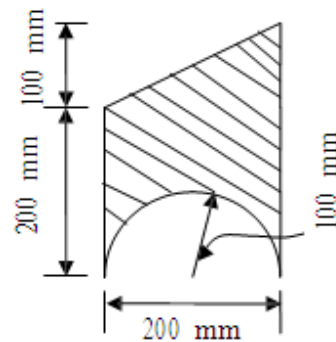


FIGURE - 3

DUE DATE FOR PRODUCTION ENGINEERING (DIV-A) IS 28/08/2018



SHANTILAL SHAH ENGINEERING COLLEGE, BHAVNAGAR
APPLIED MECHANICS DEPARTMENT

Assignment No: 04

Date: 02/08/2018

Sub Code 2130003

Title of Subject Mechanics Of Solids

Friction

#	Questions
1	Define Friction, Coefficient of friction and angle of repose.
2	Equilibrium of block is maintained by a pull P as shown in Figure - 1 . The coefficient of friction between block and surface is 0.3. Determine the values of P for which the block remains in equilibrium.
3	A 130 N force acts as shown in Figure - 2 on a 500 N block placed on an inclined plane. The static and kinetic coefficients of friction between the block and the plane are 0.20 and 0.30 respectively. Determine whether the block is in equilibrium, and find the value of the friction force.
4	A block weighing 250 N rest against wall as shown in Figure - 3 . A wedge is placed under it. Find out minimum force 'P' required to lift the block. The coefficient of friction at all contacting surfaces is 0.25. Neglect self weight of wedge.
5	A uniform ladder AB weighing 250 N and 4 m long, is supported by vertical wall at top end B and by horizontal floor at bottom end A as shown in Figure - 4 . A man weighing 500 N stood at the top of the ladder. Determine minimum angle θ of ladder AB with floor for the stability of ladder. Take co-efficient of friction between ladder and wall as $1/3$ and between ladder and floor as $1/4$.

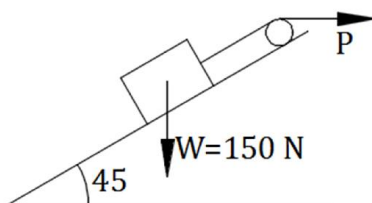


Figure - 1

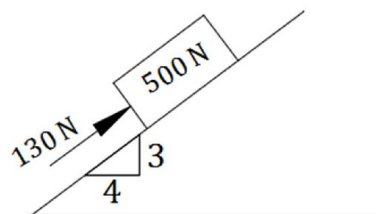


Figure - 2

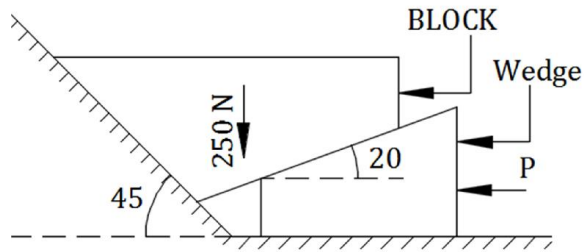


Figure - 3

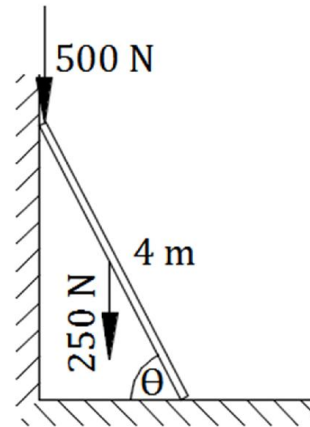


Figure - 4

DUE DATE FOR PRODUCTION ENGINEERING (DIV-A) IS 28/08/2018