# Civil Engineering

**Vision: "To impart quality technical education beneficial to industry and the society in the field of Civil Engineering."**.

**Mission:**

- To arrange academic and technical expertise**.**
- To improve the practical knowledge of the student as per current scenario of industry.
- To make the students socially and ethically responsible.

**Course Title: - Applied Mechanics (22203)** **Date :-**

**Course Outcome:- CO 203a**

**Chapter Name:-** Mechanics & Force System

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## Assignment No:- 1

**1. Define statics & Dynamics.**

**2. Define scalar quantity & vector quantity.**

**3. State characteristics of force.**

**4. State effects of force on a body.**

**5. Write classification of force system & explain in detail.**

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**Assign By: - Mr. Jitesh Mane**

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**Course Title :- Applied Mechanics (22203)** **Date :-**

**Course Outcome:- CO 203b**

**Chapter Name:-** Simple Lifting Machines

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## Assignment No:- 2

1. **Define self locking machine & state the condition for it.**
2. **State ideal machine & write its characteristics.**
3. **State V.R. of geared pully block.**
4. **Define Mechanical Advantage & velocity Ratio.**
5. **Explain law of machine & use.**
6. **In a simple lifting machine, a load of 1400N is lifted by 50N effort. While load moves up by 0.2m the point of application of effort moves by 6m.Find MA,VR, efficiency, ideal effort.**
7. **Calculate effort lost in friction & load lost in friction, it machine lift a load of 100N by effort 8N at an efficiency of 60%.**
8. **In a differential axle & wheel, the diameter of the wheel is 40cm & that of axles are 10cm & 8cm.If an effort of 50N can lift a load of 1500N.Fine the efficiency of the machine.**
9. **Calculate load lifted by differential axle & wheel if the diameter of wheel is 36cm & that of axles are 9cm & 6cm.The efficiency of the machine is 80% & an effort is of 100N.**

10. **In a worm & worm wheel the no. of teeth on the worm wheel is 120.The diameter of effort wheel is 100mm & that of loading drum is 150mm.This worm& worm wheel lifts a load of 205KN by appying 100N effort.Calculate efficiency & effort lost in friction.**

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**Course Title :- Applied Mechanics (22203)** **Date :-**

**Course Outcome:- CO 203c**

**Chapter Name:-** Resolution & Composition Of Force

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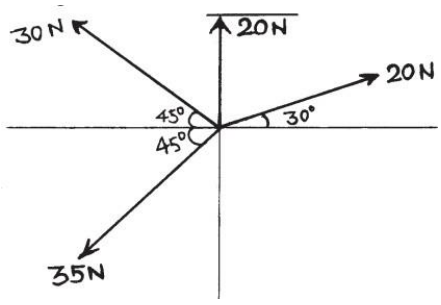
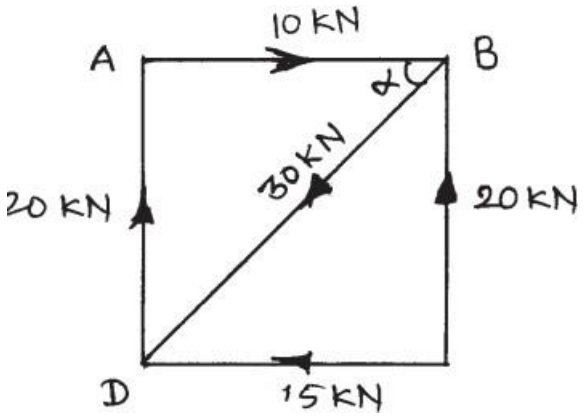
## Assignment No:- 3

1) **State law of polygon of forces.**
2) **State law of parallelogram of forces.**
3) **Define resolution of a force.**
4) **State Varignon's theorem of moment.**
5) **State properties of couple.**
6) **State triangle law of forces with sketch & state its use.**
7) **Calculate the resultant of two concurrent forces of magnitudes of 25KN & 50KN included angle of $55^0$**
8) **Find the magnitude & direction of the resultant force as shown in fig.**



9) **A square ABCD of 2m side is subjected to forces as shown in fig. Find the magnitude ,direction & position of the resultant with respect to A.**

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**Course Title :- Applied Mechanics (22203)** **Date :-**

**Course Outcome:- CO 203d**

**Chapter Name:-** Equilibrium

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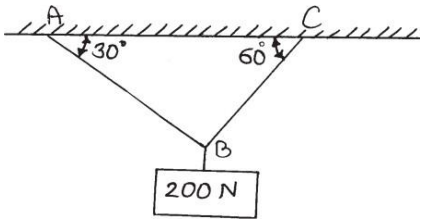
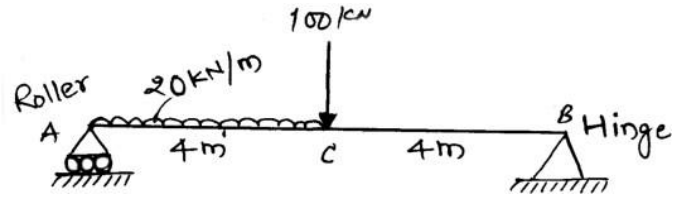
## Assignment No:- 4

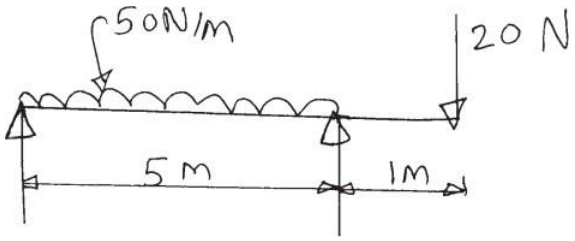
1) **Define & limitations of Lamis theorem.**
2) **State the types of beam with sketch.**
3) **State analytical conditions of equilibrium of concurrent force system.**
4) **Calculate tension in the strings AB & BC if a weight of 200N is attachted by two strings as shown in fig.**




5) **Calculate reaction at roller & hinge support by analytical method.**



**6) Calculate the reactions of beam loaded as shown in fig by analytical method**

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**Course Title :- Applied Mechanics (22203)** **Date :-**

**Course Outcome:- CO 203e**

**Chapter Name:-** Friction

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## Assignment No:- 5

1) **State FBD of ladder in friction.**
2) **State advantages of friction.**
3) **Define coefficient of friction & angle of repose.**
4) **State laws of static friction.**
5) **Calculate coefficient of friction if a block weighing 600N resting on a rough horizontal plane can be moved by a force of 150N applied at an angle of 60*with the horizontal.**
6) **A block weighing 100N on a 30* inclined rough plane.If coefficient of friction is 0.25.Calculate force required to be applied parallel to plane to make the block slide downward.**
7) **A push of 30N applied at 30* to horizontal just a move the block of weight 'W' N if angle of friction is 16*.Find coefficient of friction total reaction & weight of block**

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**Course Title :- Applied Mechanics (22203)** **Date :-**

**Course Outcome:- CO 203f**

**Chapter Name:-** Centroid & Centre Of Gravity

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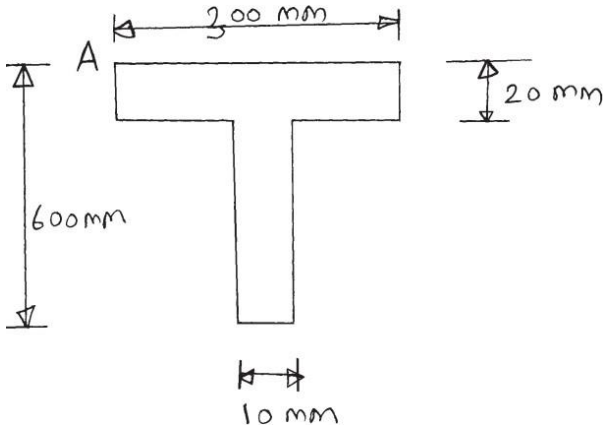
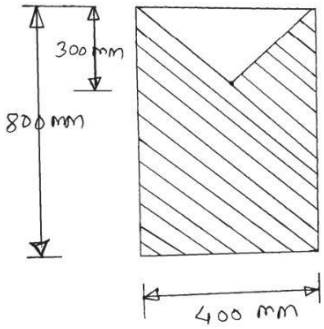
## Assignment No:- 6

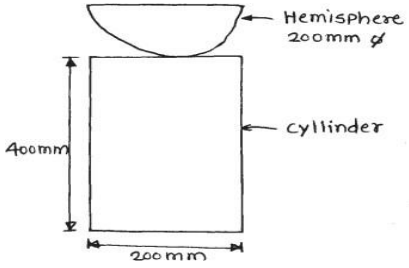
1) **Define centroid & centre of gravity.**
2) **State the centroid of different shapes & show it on the sketch.**
3) **Calculate position of centroid for 'T' section as shown in fig with respect to 'A'**



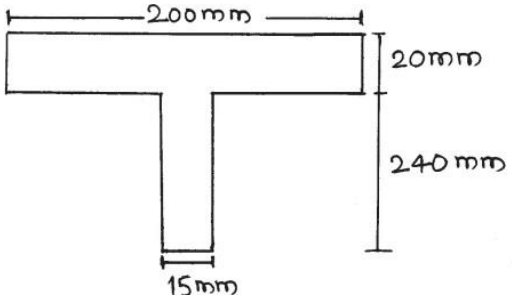
**4) Calculate position of centroid of show in fig**




**5) Find the centre of gravity for the solid shown.**




**6) Calculate position of centroid fot 'T ' section as shown in fig**

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