SYNERGY SCHOOL OF ENGINEERING,DHENKANAL

LESSONPLAN

Session(2024-2025)

Discipline: Mechanical Engineering	**Semester:** 2nd, Summer/2025	Nameofthe Teaching **Faculty:** Mr G.C. Swain EmailID:
Subject: EngineeringMechanics,Theory-4(b)	**No.ofDays/Week:**04	StartDate:04/02/2025 EndDate:17/05/2025

Week	ClassDay	Theory Topics
1st	1st	Significance and relevance of Mechanics, Applied mechanics. Statics, Dynamics. Space, time, mass, particle, flexible body and rigid body
	2nd	Scalar and vector quantity, Units of measurement (SI units) - Fundamental units and derived units.
	3rd	Force – unit, representation as a vector and by Bow's notation, characteristics and effects of a force, Principle of transmissibility of force. Force system and its classification.
	4th	Composition of forces – Resultant, analytical method for determination of resultant for concurrent,Coplannar force system by parallelogram laws
2nd	1st	Solve numericals
	2nd	Resolution of a force - Orthogonal components of a force,solve the numericals
	3rd	Finding resultant by graphical method applying triangle law and polygon law of forces.
	4th	Define moment of a force &Varignon's Theorem
3rd	1st	Finding resultant of non-concurrent co-planar forces systems & solve numericals
	2nd	Finding resultant of parallel coplannaar forces & solve numericals.
	3rd	Solve numericals based on unit-1
	4th	Equilibrium and Equilibrant, Free body and Free body diagram. Analytical and graphical methods of analysing equilibrium
4th	1st	Lami's Theorem – statement and explanation. & solve numericals
	2nd	Types of beam, supports (simple, hinged, roller and fixed) and loads acting on beam (vertical and inclined point load, uniformly distributed load, couple)
	3rd	Beam reaction for cantilever beam with or without overhang – subjected to combination of Point load and uniformly distributed load.
	4th	Beam reaction for simply supported beam with or without overhang – subjected to combination of Point load and uniformly distributed load& combined load.
5th	1st	Solve numericals
	2nd	Beam reaction graphically for simply supported beam subjected to vertical point loads only& Solve numericals
	3rd	Friction and its relevance in engineering, types and laws of friction, limiting equilibrium, limiting friction, co-efficient of friction
	4th	Angle of friction, angle of repose, relation between co-efficient of friction and angle of friction & Solve numericals
6th	1st	Equilibrium of bodies on level surface subjected to force parallel to plane.
	2nd	Solve Numericals
	3rd	Equilibrium of bodies on level surface subjected to inclined to plane.
	4th	Solve Numericals

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7th	1st	Equilibrium of bodies on inclined plane subje ed to force parallel to the plane only
	2nd	Solve Numericals
	3rd	Surprise test
	4th	Centroid Definition,Centroid of geometrical plane figu s (square, rectangle, triangle, circle, semi-circle, quarter circle)
8th	1st	Centroid of composite figures composed of not more than three geometrical figures
	2nd	Centroid of composite figures composed of not more than three geometrical figures
	3rd	Centroid of composite figures composed of not more than three geometrical figures
	4th	Centre of Gravity of simple solids (Cube, cuboid, cone, cylinder, sphere, hemisphere).
9th	1st	Centre of Gravity of composite solids composed of not more than two simple solids
	2nd	Centre of Gravity of composite solids composed of not more than two simple solids
	3rd	Centre of Gravity of composite solids composed of not more than two simple solids
	4th	Doubt Clearing Class
10th	1st	Simple lifting machine, load, effort, mechanical advantage, applications and advantages.
	2nd	Velocity ratio, efficiency of machines, law of machine & Solve numericals
	3rd	Solve Numericals
	4th	Ideal machine, friction in machine, maximum Mechanical advantage and efficiency & solve numericals
11th	1st	reversible and non-reversible machines, conditions for reversibility ,solve numericals
	2nd	DoubtClearingclass
	3rd	Velocity ratio of simple & differential axle & wheel
	4th	Solve numericals
12th	1st	Worm & worm wheel , single purchase crab winch
	2nd	Solve numericals
	3rd	Double purchase crab winch, simple screw jack
	4th	Solve numericals
13th	1st	Westons ' differential pulley block, geared pully block
	2nd	Solve numericals
	3rd	Classtest/Assignment-02
	4th	QuizTest
14th	1st	SemesterQuestion Discussion
	2nd	SemesterQuestion Discussion
	3rd	SemesterQuestion Discussion
	4th	SemesterQuestion Discussion
15th	1st	SemesterQuestion Discussion
	2nd	SemesterQuestion Discussion
	3rd	SemesterQuestion Discussion
	4th	SemesterQuestion Discussion

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