

JHARSUGUDA ENGINEERING SCHOOL, JHARSUGUDA
Department of Mechanical Engineering

Name of the Faculty: Kanjishree Pradhan Himalaya Meher Swagat Deshpande	Session: 2022-23
Course code.: Th4	Course Name: Th.3
Programme: Diploma	Department: Math and Science Deptt.
Semester: 1st	Section: A, B, C
Branch: Civil, Mechanical	

Week	Periods	Unit	Hours	Topic to be Covered
1	1	1	16	Introduction to Engineering Mechanics Fundamentals Definitions of Mechanics, Statics, Dynamics, Rigid Bodies
	2			Force Force System. Definition, Classification of force system according to plane & line of action
	3			Characteristics of Force & effect of Force. Principles of Transmissibility & Principles of Superposition
	4			Action & Reaction Forces
2	5			concept of Free Body Diagram
	6			Resolution of a Force. Definition, Method of Resolution
	7			Types of Component forces, Perpendicular components & non-perpendicular components
	8			Analytical Method such as Law of Parallelogram of forces
3	9			Problems on Law of Parallelogram of forces
	10			Analytical Method such as method of resolution
	11			Graphical Method Introduction, Space diagram, Vector diagram, Polygon law of forces
	12			Resultant of concurrent, non-concurrent force system by Analytical & Graphical Method
4	13			Resultant of parallel force system by Analytical & Graphical Method
	14			Moment of Force. Definition, Geometrical meaning of moment of a force
	15			measurement of moment of a force & its S.I units. Classification of moments according to direction of rotation, sign convention, Law of moments
	16			Varignon's Theorem, Couple – Definition, S.I. units, measurement of couple, properties of couple.
5	17	2	6	Definition, condition of equilibrium
	18			Analytical & Graphical conditions of equilibrium for concurrent, non-concurrent & Free Body Diagram
5	19			Analytical & Graphical conditions of equilibrium for concurrent, non-concurrent & Free Body Diagram
	20			Lami's Theorem – Statement and conditions
	21			Application for solving various engineering problems.
	22			solving more engineering problems on Lami's theorem
	23			Definition of friction, Frictional forces

6	24	3	10	Limiting frictional force, Coefficient of Friction		
	25			Angle of Friction & Repose, Laws of Friction		
	26			Advantages & Disadvantages of Friction		
	27			Equilibrium of bodies on level plane – Force applied on horizontal		
7	28			Equilibrium of bodies on level plane -Force applied on inclined plane (up &down)		
	29			Ladder friction		
	30			Problems on ladder friction		
8	32			Wedge Friction		
	33	4	9	Centroid – Definition, Moment of an area about an axis		
	34			centroid of geometrical figures such as squares, rectangles		
	35			centroid of geometrical figures such as triangles, circles, semicircles & quarter circles		
9	36			centroid of composite figures		
	37			Moment of Inertia – Definition, Parallel axis		
	38			Moment of Inertia by Perpendicular axis Theorems		
10	40			M.I. of plane lamina		
	39			M.I. of different engineering sections		
11	41			Solving more problems		
	42			5	9	Definition of simple machine, velocity ratio of simple and compound gear train
11	43					explain simple & compound lifting machine
	44	define M.A, V.R. & Efficiency & State the relation between them				
	45	State Law of Machine, Reversibility of Machine, Self Locking Machine				
	46	Study of simple machines – simple axle & wheel				
12	47	single purchase crab winch & double purchase crab winch				
	48	Study of simple machines – Worm & Worm Wheel, Screw Jack.				
	49	Solve simple problems				
13	50	Practice more problems				
	51	6	10	Types of hoisting machine like derricks etc, Their use and working principle		
13	52			Introduction to Kinematics & Kinetics, Principles of Dynamics		
	53			Newton's Laws of Motion, Motion of Particle acted upon by a constant force		
	54			Equations of motion, DeAlembert's Principle		
14	55			Work, Power, Energy & its Engineering Applications		
	56			Kinetic & Potential energy & its application		
	57			Momentum & impulse		
	58			conservation of energy & linear momentum,		
	59			collision of elastic bodies, and Coefficient of Restitution.		
15	60			Problem Solving		

Sribedi Kartikeyacham Himalaya meher
Signature of the faculty

Phule
Signature of i/c HOD

Sas
Sr. Lect. (M/Sc)
Engg. School
Jharsuguda