Badriprasad Institute of Technology, Sambalpur

Lesson plan for Theory -2, Strength of Material

Semester & Branch : 3rd Sem Mechanical Engineering **Total Periods- 60**

Name of the faculty : Mr Sunit Gourav Mohanty **No of periods /week- 4**

Week	Class	Topic
1	1	Introduction to SOM
	2	Types of load, stresses & strains,(Axial and tangential) Hooke's law
	3	Young's modulus, bulk modulus, modulus of rigidity, Poisson's ratio, relation between three elastic constants
	4	Principle of super position, stresses in composite section
2	5	Temperature stress, determine the temperature stress in composite bar (single core)
	6	Numerical on above topic
	7	Numerical on above topic
	8	Strain energy and resilience, Stress due to gradually applied, suddenly applied and impact load
3	9	revision and doubt clearing.
	10	Class test
	11	Introduction to thin cylinders and pressure vessels
	12	Definition of hoop and longitudinal stress, strain
4	13	Derivation of hoop stress, longitudinal stress
	14	hoop strain, longitudinal strain and volumetric strain
	15	Computation of the change in length, diameter and volume
	16	Numerical on Hoop stress and Longitudinal stress
5	17	Numerical on Strain for thin cylinders
	18	revision and doubt clearing.
	19	Introduction of Two dimensional stress systems
	20	Determination of normal stress on oblique plane
6	21	Determination of shear stress on oblique plane
	22	Determination of resultant stress on oblique plane
	23	Introduction of Principal plane and principal stresses in biaxial stress system
	24	Location of principal plane and computation of principal stress
7	25	Introduction of Mohr's circle and assumptions
	26	Location of principal plane and computation of principal stress and Maximum shear stress using Mohr's circle- continue
	27	Numerical on Principal plane and Principal stress
	28	Numerical on Mohr's circle
8	29	Introduction of Bending moment& shear force
	30	Types of beam and load
	31	Concepts of Shear force
	32	Concepts of bending moment

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9	33	Shear Force and Bending moment diagram and its salient features
	34	illustration in cantilever beam, simply supported beam and over hanging beam under point load
	35	illustration in cantilever beam, simply supported beam and over hanging beam under uniformly distributed load
	36	Numerical on simply supported beam
10	37	Numerical on cantilever beam
	38	Numerical on over hanging beam
	39	revision and doubt clearing.
	40	Class test
11	41	Introduction of Theory of simple bending
	42	Assumptions in the theory of bending and Bending equation
	43	Moment of resistance, Section modulus& neutral axis
	44	Numerical on above topic
12	45	revision and doubt clearing.
	46	Inroduction of columns
	47	Moment of resistance, Section modulus& neutral axis
	48	Direct stresses, Bending stresses in columns
13	49	Maximum& Minimum stresses
	50	Numerical problems on above topic
	51	Buckling load computation using Euler's formula (no derivation) in Columns with various end conditions
	52	revision and doubt clearing.
14	53	Numerical on columns
	54	Class test
	55	Inroduction of Torsion
	56	Assumption of pure torsion
15	57	The torsion equation for solid and hollow circular shaft
	58	Comparison between solid and hollow shaft subjected to pure torsion
	59	Numerical on torsion
	60	Revision and doubt clearing.

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