BIT POLYTECHNIC, BALASORE

LESSON PLAN, Winter-2025

Department: MECHANICAL ENGINEERING
Semester:-5Th
Name of the Faculty: Jagajyoti Sahu HOD(Mech.)
Subject: DESIGNE OF MACHINE ELEMENT
No of Periods per week allotted=03

WEEK	Period	MODULE	TOPIC	Remark
1ST	1ST	1.1	Introduction of Machine design. Classification of Machine design.	
	2rd	1.2	Different Mechanical Engineering material with their use.	
	3th	1.2	Mechanical and physical property of material.	
2nd	1st	1.3	Define working stress, yield stress, ultimate stress and factor of safety. Stress, strain curve for MS and CI.	
	2nd	1.4	Modes of failure by elastic deflection.	
	3rd	1.4	Modes of failure by general yielding and fracture.	
3rd	1st	1.5	State the factors governing of machine element.	
	2nd	1.6	General considerations in machine design. General procedure in machine design.	
	3rd	1.6	Unit of (fundamental and derive unit).	
4th	1st	2.1	What is joint and type of joint. Classification of joint.	
	2nd	2.2	State type of welding joint.	
	3rd	2.3	State advantage of welded joint over other joints.	
5th	1st	2.4	Design of welded joint and symbol. Derivation on eccentric load.	
	2nd	2.5	State type of riveted joint and type of rivet.	
	3rd	2.6	Describe failure of riveted joints.	
6th	1st	2.7	Determine strength and efficiency of riveted joint. Numerical on strength and efficiency of riveted joints.	
	2nd	2.8	Design riveted joints for pressure vessel.	
	3rd	2.9	Numerical on welding joint and riveted joints.	
7th	1st	3.1 3.2 3.3	State function of shafts. State material for shaft and design of hollow and solid shaft.	
	2nd	3.3	Design of solid and hollow shaft to transmit a given power at given rpm based on.	
	3rd	3.3	(a)strength, (b)rigidity.	
8th	1st	3.4 3.5	State standard size of shaft as per IS. State function of key, type of key & material of key.	
	2nd	3.6 3.7	Describe failure of key and effect of key way. Design of rectangular sunk key by using empirical re relation for given diameter of shaft.	
	3rd	3.8	Design of rectangular sunk key of shear and crushing stress.	

	1st	3.9	State specification of parallel key, gib head key, taper key as per IS.	
	2nd	3.10	Numerical on key design.	
9th	3rd	3.10	Numerical on failure of key effect of key way.	
10th	1st	4.1 4.2	Design of shaft coupling. Requirement of good shaft coupling.	
	2nd	4.3	Type of coupling.	
	3rd	4.4	Design of sleeve or muff-coupling.	
11th	1st	4.4	Numerical on sleeve and muff-coupling.	
	2nd	4.5	Design of clamp or compression coupling.	
	3rd	4.5	Numerical on clamper compression coupling. Flange coupling.	
12th	1st	4.5	Numerical on flange coupling.	
	2nd	4.5	Design of flexible coupling. Numerical on flexible coupling.	
	3rd	4.6	Numerical on coupling.	
13th	1st	5.1	Material used for helical spring. Application of spring and type of spring.	
	2nd	5.2	Standard size spring wire (SWG).	
	3rd	5.3	Term used in compression spring.	
14th	1st	5.3	End connection for compression helical springs.	
	2nd	5.4	Stress on helical spring of circular wire. Numerical on stress on helical spring of a circular wire.	
	3rd	5.5	Deflection of helical spring on circular wire.	
15th	1st	5.5	Numerical on deflection of helical spring on circular wire.	
	2nd	5.6	Surge in spring. Numerical on surge spring.	
	3rd	5.7	Solve numerical on design of closed coil helical compression spring.	
16th	1st	2.7, 2.9	Numerical Problems	
	2nd	3.10, 4.4	Numerical Problems	
	3rd	4.5, 4.6	Numerical Problems	
17th	1st	5.4, 5.5	Numerical Problems	
	2nd	5.6	Numerical Problems	
	3rd	5.7	Numerical Problems	