GOVERNMENT POLYTECHNIC, BALASORE

Government of Odisha

ସରକାରୀ କନ୍ୟୁକ୍ତି ଅନୁଷ୍ଠାନ, ବାଲେଶ୍ୱର

ACADEMIC LESSON PLAN FOR WINTER – 2022

Dept. of Mechanical Engineering, Govt. Polytechnic, Balasore

Name of the Faculty: Janmejay Rout

Subject: Design of Machine Elements

Theory : 4P/W

Internal Assessment :20 Marks

Total Periods : 60P/Sem

End Semestar Exam :80 Marks

Examination : 3 Hours

Total Marks :100 Marks

Sem : 5th, ME

Start of Class :15.09.2022

WEEK	CLASS DAY	MODULE	THEORY/PRACTICAL TOPIC	DATE
1ST	1ST	1.1	Introduction of Machine design.	
	2nd	1.1	Classification of Machine design.	
	3rd	1.2	Different Mechanical Engineering material with their use.	
	4th	1.2	Mechanical and physical property of material.	
2nd	1st	1.3	Define working stress, yield stress, ultimate stress and factor of safety.	
		1.3	Stress, strain curve for MS and CI.	
		1.4	Modes of failure by elastic deflection.	
		1.4	Modes of failure by general yielding and fracture.	
3rd		1.5	State the factors governing of machine element.	
		1.6	General considerations in machine design.	
		1.6	General procedure in machine design.	
		1.6	Class test of Chapter 1	
4th		2.1	What is joint and type of joint.	
		2.1	Classification of joint.	
		2.2	State type of welding joint.	
		2.3	State advantage of welded joint over other joints.	
5th		2.4	Design of welded joint and symbol.	
		2.4	Derivation on eccentric load.	
		2.5	State type of riveted joint and type of rivet.	
		2.6	Describe failure of riveted joints.	
6th		2.7	Determine strength and efficiency of riveted joint.	
		2.7	Numerical on strength and efficiency of riveted joints.	
		2.8	Design riveted joints for pressure vessel.	
		2.9	Numerical on welding joint and riveted joints.	
7th		3.1	State function of shafts.	
		3.2,3.3	State material for shaft and design of hollow and solid shaft.	
		3.3	Design of solid and hollow shaft to transmit a given	

			power at given rpm based on.	
		3.3	(a)strength, (b)rigidity.	
8th		3.4	State standard size of shaft as per IS.	
		3.5	State function of key, type of key & material of key.	
		3.6	Describe failure of key and effect of key way.	
		3.7	Design of rectangular sunk key by using empirical re relation for given diameter of shaft.	
		3.8	Design of rectangular sunk key of shear and crushing stress.	
		3.9	State specification of parallel key, gib head key, taper key as per IS.	
		3.10	Numerical on key design.	
9th		3.10	Numerical on failure of key effect of key way.	
10th		4.1	Design of shaft coupling.	
		4.2	Requirement of good shaft coupling.	
		4.3	Type of coupling.	
		4.4	Design of sleeve or muff-coupling.	
11th		4.4	Numerical on sleeve and muff-coupling.	
		4.5	Design of clamp or compression coupling.	
		4.5	Numerical on clamper compression coupling.	
		4.5	Flange coupling.	
12th		4.5	Numerical on flange coupling.	
		4.5	Design of flexible coupling.	
		4.5	Numerical on flexible coupling.	
		4.6	Numerical on coupling.	
13th		5.1	Material used for helical spring.	
		5.1	Application of spring and type of spring.	
		5.2	Standard size spring wire (SWG).	
		5.3	Term used in compression spring.	
14th		5.3	End connection for compression helical springs.	
		5.4	Stress on helical spring of circular wire.	
		5.4	Numerical on stress on helical spring of a circular wire.	
		5.5	Deflection of helical spring on circular wire.	
15th		5.5	Numerical on deflection of helical spring on circular wire.	
		5.6	Surge in spring.	
		5.6	Numerical on surge spring.	
		5.7	Solve numerical on design of closed coil helical compression spring.	

Jaymejay Rout