

**PNS SCHOOL OF ENGG. & TECH., MARSHAGHAI**

**DEPARTMENT OF MECHANICAL ENGINEERING**

**LESSON PLAN**

**SUBJECT: DESIGN OF MACHINE ELEMENTS (5TH SEM)**

**NAME OF THE LECTURER: Er. RAMESH CHANDRA PRADHAN**

CHAPTER	MONTH	DATE	TOPIC TO BE COVERED
<b>INTRODUCTION</b>	<b>SEP</b>	15.09.22	INTRODUCTION TO MACHINE DESIGN AND ITS CLASSIFICATION.
		16.09.22	DIFFERENT MECHANICAL ENGINEERING MATERIALS USED IN DESIGN WITH THEIR USES
		19.09.22	PHYSICAL AND MECHANICAL PROPERTIES OF ENGINEERING MATERIALS
		20.09.22	WORKING STRESS, YIELD STRESS, ULTIMATE STRESS & FACTOR OF SAFETY
		21.09.22	NUMERICALS ON WORKING, YIELD AND ULTIMATE STRESS.
		22.09.22	STRESS –STRAIN CURVE FOR M.S & C.I AND SALIENT POINTS
		23.09.22	MODES OF FAILURE BY ELASTIC DEFLECTION
		24.09.22	MODES OF FAILURE BY GENERAL YIELDING
		26.09.22	MODES OF FAILURE BY FRACTURE
		27.09.22	FAILURE OF MACHINE ELEMENTS DUE TO FATIGUE AND CREEP.
		28.09.22	FACTORS GOVERNING THE DESIGN OF MACHINE ELEMENTS.
		29.09.22	DESIGN PROCEDURE
30.09.22	DOUBT CLEARING		
<b>DESIGN OF FASTENING ELEMENTS</b>	<b>OCT</b>	10.10.22	JOINTS AND THEIR CLASSIFICATION.
		11.10.22	TYPES OF WELDED JOINTS .
		12.10.22	ADVANTAGES OF WELDED JOINTS OVER OTHER JOINTS.
		13.10.22	DESIGN OF WELDED JOINTS FOR NORMAL LOADS.
		14.10.22	DESIGN OF WELDED JOINTS FOR ECCENTRIC LOADS.
		15.10.22	NUMERICALS ON DESIGN OF WELDED JOINTS
		18.10.22	CLASS TEST
		19.10.22	TYPES OF RIVETED JOINTS AND TYPES OF RIVETS.
		20.10.22	FAILURE OF RIVETED JOINTS
		21.10.22	STRENGTH & EFFICIENCY OF RIVETED JOINTS.
		22.10.22	NUMERICALS ON DESIGN OF RIVETED JOINTS
		26.10.22	DESIGN OF RIVETED JOINTS FOR PRESSURE VESSEL.
		27.10.22	NUMERICALS ON DESIGN OF RIVETED JOINTS
		28.10.22	NUMERICALS ON DESIGN OF RIVETED JOINTS
		29.10.22	NUMERICALS ON DESIGN OF PRESSURE VESSEL
31.10.22	DOUBT CLEARING		
<b>DESIGN OF SHAFTS &amp; KEYS</b>	<b>NOV</b>	01.11.22	FUNCTION OF SHAFTS.
		02.11.22	MATERIALS OF SHAFTS
		03.11.22	DESIGN SOLID & HOLLOW SHAFTS TO TRANSMIT A GIVEN POWER AT GIVEN RPM BASED ON STRENGTH
		04.11.22	NUMERICALS ON DESIGN OF SOLID SHAFTS AND HOLLOW SHAFTS BASED ON STRENGTH
		05.11.22	DESIGN SOLID & HOLLOW SHAFTS TO TRANSMIT A GIVEN POWER AT GIVEN RPM BASED ON RIGIDITY
		09.11.22	NUMERICALS ON DESIGN OF SOLID SHAFTS AND HOLLOW SHAFTS BASED ON RIGIDITY, STANDARD SIZE OF SHAFT AS PER I.S.
		10.11.22	NUMERICAL ON DESIGN OF SHAFTS
		11.11.22	FUNCTION OF KEYS, TYPES OF KEYS & MATERIAL OF KEYS.
		12.11.22	FAILURE OF KEY, EFFECT OF KEY WAY
		14.11.22	DESIGN OF RECTANGULAR SUNK KEY CONSIDERING ITS FAILURE AGAINST SHEAR & CRUSHING AND NUMERICALS
		15.11.22	CLASS TEST
		17.11.22	DESIGN RECTANGULAR SUNK KEY BY USING EMPIRICAL RELATION FOR GIVEN DIAMETER OF SHAFT AND NUMERICALS
		18.11.22	SPECIFICATION OF PARALLEL KEY, GIB-HEAD KEY, TAPER KEY AS PER I.S.
		19.11.22	NUMERICAL ON KEYS

<b>DESIGN OF COUPLING</b>	<b>NOV</b>	22.11.22	SHAFT COUPLING, DIFFERENCE BETWEEN CLUTCH AND COUPLING	
		23.11.22	REQUIREMENTS OF A GOOD SHAFT COUPLING	
		24.11.22	ADVANTAGES OF USING SHAFT COUPLINGS	
		25.11.22	TYPES OF COUPLING.	
		26.11.22	DESIGN OF SLEEVE OR MUFF-COUPLING.	
		28.11.22	NUMERICALS ON DESIGN OF SLEEVE COUPLING	
		29.11.22	NUMERICALS ON DESIGN OF SLEEVE COUPLING	
		30.11.22	DESIGN OF CLAMP OR COMPRESSION COUPLING	
		<b>DEC</b>	01.12.22	NUMERICALS ON CLAMP COUPLING
			02.12.22	NUMERICALS ON CLAMP COUPLING
03.12.22	DOUBT CLEARING			
<b>DESIGN A CLOSED COIL HELICAL SPRING</b>	<b>DEC</b>	05.12.22	MATERIALS USED FOR HELICAL SPRING.	
		06.12.22	STANDARD SIZE SPRING WIRE. (SWG).	
		07.12.22	TERMS USED IN COMPRESSION SPRING	
		08.12.22	STRESS IN HELICAL SPRING OF A CIRCULAR WIRE.	
		09.12.22	NUMERICALS OF STRESS ON HELICAL SPRINGS OF CIRCULAR WIRE.	
		10.12.22	NUMERICALS OF STRESS ON HELICAL SPRINGS OF CIRCULAR WIRE.	
		12.12.22	DEFLECTION OF HELICAL SPRING OF CIRCULAR WIRE.	
		13.12.22	NUMERICALS ON DEFLECTION OF SPRINGS	
		14.12.22	NUMERICALS ON DEFLECTION OF SPRINGS	
		15.12.22	SURGE IN SPRING.	
		16.12.22	NUMERICAL ON DESIGN OF HELICAL SPRING	
		17.12.22	NUMERICAL ON DESIGN OF HELICAL SPRING	
		19.12.22	DOUBT CLEARING	
		20.12.22	CLASS TEST	
		21.12.22	PREVIOUS SEMESTER QUESTION DISCUSSION	
22.12.22	PREVIOUS SEMESTER QUESTION DISCUSSION			

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