Lesson Plan

Name of the Faculty : Sh. Munish Kumar Jain

Discipline : Mechanical Engineering

Semester : 6th (Section A & B)

Subject : **PLANT MAINTENANCE & MATERAIL HANDLING**

Lesson Plan duration : 15 weeks (from 22nd March, 2021 to 2nd July, 2021)

Work load per week : Lecture – 04, Practical – 00

Week	Theory	
	Lecture Day	Topic (Including assessment/test)
1st	1st	**1. Introduction:** Necessity and advantages of testing, repair and maintenance,
	2nd	common instruments required for testing
	3rd	significance of B-T curve in life span of machine tool, Acceptance test for machine tools
	4th	Economic aspects, manpower planning and materials management
2nd	5th	Fits and tolerances – common fits and tolerances used for various machine parts
	6th	**2. Plant Layout, Erection and Commissioning of Machines (Installation):** Location, layout of machines in Plant Layout
	7th	Principles of Plant layout,
	8th	types of plant layout and positioning of machines
3rd	9th	Grouping of machines. Foundation – types of foundation,
	10th	Various considerations for machine foundations
	11th	Foundation plan, types of foundation bolts
	12th	Erection and leveling,
4th	13th	Grouting, Vibration, damping.
	14th	Vibration isolation – methods of isolation, anti vibration mounts
	15th	**3. Testing of Machines:** Testing equipment – dial gauge, mandrel

	16th	Spirit level, straight edge, auto collimator
5th	17th	Recalibration of measurement instruments like vernier calliper
	18th	Testing methods : alignment or geometrical test
	19th	Performance test, testing under load
	20th	Run test, vibrations, noise
6th	21st	**1st sessional test (Tentative)**.
	22nd	**Assessment**
	23rd	**4. Maintenance:** Definition advantages, limitations functions and types of maintenance organisation
	24th	Types of maintenance viz. emergency, preventive, breakdown /corrective, predictive
7th	25th	Introduction to computerized maintenance record like facility register, maintenance request.
	26th	ISO standards for maintenance documentation
	27th	Introduction to machine history card – purpose and advantages
	28th	Preparation of scheduled yearly plan for preventive maintenance,
8th	29th	Difference of work content of servicing
	30th	Repairs and overhauling
	31st	MTBF and MTTR. Maintainability
	32nd	Spare parts- Need of frequently needed spare parts inventory
9th	33rd	Make provision of spares for parts not available in market
	34th	**4. Repairing:** Common parts which are prone to failure, reasons of failure
	35th	Repair schedule
	36th	Parts that commonly need repair such as belts,
10th	37th	Couplings, nuts, and bolts
	38th	repairing the engines compressors and boilers
	39th	**2nd sessional test (Tentative)**.
	40th	**Assessment**

11th	41st	**6. Lubrication Systems:** Lubrication methods
	42nd	Periodical lubrication chart for various machines (daily, weekly, monthly)
	43rd	Handling and storage of lubricants
	44th	Lubricants conditioning and disposal
12th	45th	Lubricant and their grades needed for specific components such as gears, bearings and chains
	46th	Purpose and procedure of changing oil periodically (like gear box oil)
	47th	**7.Material Handling Systems:** Basic principles of material handling
	48th	Basic types of material handling equipments and its characteristic,
13th	49th	Basic types of material handling equipments and its characteristic, Uses and limitations,
	50th	forklift trucks
	51st	Selection of material handling equipment
	52nd	Unit load: pallet sizing and loading. Conveyor models
14th	53rd	AGV Systems
	54th	Automated Storage & Retrieval System (ASRS), Carousels
	55th	**3rd sessional test (Tentative)**.
	56th	**Assessment**
15th	57th	Revision
	58th	Revision
	59th	Revision
	60th	Revision