

# Lesson Plan

**Name of the faculty:** Sh. Amit Kumar Vats, Lecturer in Mechanical Engg.

**Discipline:** Mechanical

**Semester:** 6<sup>th</sup> Mechanical A

**Subject :** PLANT MAINTENANCE AND MATERIAL HANDLING

**Lesson Plan Duration:** 15 weeks (From March, 2022 to June, 2022)

**\*\*Work Load (Lecture/ Practical) per week (in hours):** Theory-03

Week	Theory		Practical	
	Lecture day	Topic ( including assignment / test)	Practical Day	Topic
1 <sup>st</sup>	1 <sup>st</sup>	Necessity and advantages of testing, repair and maintenance, common instruments required for testing		
	2 <sup>nd</sup>	significance of B-T curve in life span of machine tool, Acceptance test for machine tools		
	3 <sup>rd</sup>	Revision		
	4 <sup>th</sup>	Revision		
2 <sup>nd</sup>	1 <sup>st</sup>	Economic aspects, manpower planning and materials management		
	2 <sup>nd</sup>	Fits and tolerances – common fits and tolerances used for various machine parts		
	3 <sup>rd</sup>	Revision		
	4 <sup>th</sup>	Revision		
3 <sup>rd</sup>	1 <sup>st</sup>	Location, layout of machines in Plant Layout,		

		Principles of Plant layout		
	2 <sup>nd</sup>	types of plant layout and positioning of machines, grouping of machines.		
	3 <sup>rd</sup>	Foundation – types of foundation, various considerations for machine foundations, foundation plan, types of foundation bolts		
	4 <sup>th</sup>	erection and leveling, grouting Vibration, damping, vibration isolation – methods of isolation, anti vibration mounts		
4 <sup>th</sup>	1 <sup>st</sup>	Testing equipment – dial gauge, mandrel, spirit level, straight edge, auto collimator Recalibration of measuring instruments like vernier calliper		
	2 <sup>nd</sup>	Testing methods – geometrical/alignment test, performance test, testing under load, run test, vibrations, noise		
	3 <sup>rd</sup>	Revision		
	4 <sup>th</sup>	Revision		
5 <sup>th</sup>	1 <sup>st</sup>	Definition, advantages, limitations, functions and types of maintenance organisation. Types of maintenance viz. emergency, preventive, breakdown/corrective, predictive		
	2 <sup>nd</sup>	Introduction to computerized maintenance record like facility register, maintenance request		

	3 <sup>rd</sup>	ISO standards for maintenance documentation Introduction to machine history card – purpose and advantages		
		Revision		
6 <sup>th</sup>	1 <sup>st</sup>	Preparation of scheduled yearly plan for preventive maintenance, difference of work content of servicing, repairs and overhauling. MTBF and MTTR. Maintainability		
	2 <sup>nd</sup>	Spare parts- Need of frequently needed spare parts inventory, Make provision of spares for parts not available in market		
	3 <sup>rd</sup>	Common parts which are prone to failure, reasons of failure		
	4 <sup>th</sup>	Revision		
7 <sup>th</sup>	1 <sup>st</sup>	Repair schedule Parts that commonly need repair such as belts		
	2 <sup>nd</sup>	couplings, nuts, and bolts repairing the engines, compressors and boilers.		
	3 <sup>rd</sup>	Revision		
	4 <sup>th</sup>	Revision		
8 <sup>th</sup>	1 <sup>st</sup>	Revision		
	2 <sup>nd</sup>	Revision		
	3 <sup>rd</sup>	Revision		
	4 <sup>th</sup>	Revision		
9 <sup>th</sup>	1 <sup>st</sup>	Revision		
	2 <sup>nd</sup>	Revision		
	3 <sup>rd</sup>	Lubrication methods and periodical lubrication chart for various machines (daily,		

		weekly, monthly )		
	4 <sup>th</sup>	Handling and storage of lubricants Lubricants conditioning and disposal		
10 <sup>th</sup>	1 <sup>st</sup>	Lubricant and their grades needed for specific components such as gears, bearings, and chains		
	2 <sup>nd</sup>	Purpose and procedure of changing oil periodically (like gear box oil)		
	3 <sup>rd</sup>	Revision		
	4 <sup>th</sup>	Revision		
11 <sup>th</sup>	1 <sup>st</sup>	Revision		
	2 <sup>nd</sup>	Revision		
	3 <sup>rd</sup>	Basic principles of material handling, Basic types of material handling equipments and its characteristic		
	4 <sup>th</sup>	Revision		
12 <sup>th</sup>	1 <sup>st</sup>	Uses and limitations, forklift trucks		
	2 <sup>nd</sup>	Selection of material handling equipment		
	3 <sup>rd</sup>	Unit load: pallet sizing and loading		
	4 <sup>th</sup>	Conveyor models, AGV Systems		
13 <sup>th</sup>	1 <sup>st</sup>	Automated Storage & Retrieval System (ASRS)		
	2 <sup>nd</sup>	Carousels,		
	3 <sup>rd</sup>	Revision		
	4 <sup>th</sup>	Revision		
14 <sup>th</sup>	1 <sup>st</sup>	Revision		
	2 <sup>nd</sup>	Revision		
	3 <sup>rd</sup>	Revision		

	4 <sup>th</sup>	Revision		
15 <sup>th</sup>	1 <sup>st</sup>	Revision		
	2 <sup>nd</sup>	Revision		
	3 <sup>rd</sup>	Revision		
	4 <sup>th</sup>	Revision		

## Lesson Plan

**Name of the faculty:** Dr. Sandeep dhandhi, Lecturer in Mechanical Engg. (Theory) & (Practical)

**Discipline:** Mechanical

**Semester:** 6<sup>th</sup> Mechanical A & B

**Subject:** Inspection and Quality Control

**Lesson Plan Duration:** 14 weeks (From March, 2022 to June, 2022)

**\*Work Load (Lecture/ Practical) per week (in hours):** Theory-03 & 02

Week	Theory		Practical	
	Lecture day	Topic ( including assignment / test)	Practical Day	Topic
1 <sup>st</sup>	1 <sup>st</sup>	Introduction units of measurement Standards for measurement and interchangeability	1 <sup>st</sup>	Use of dial indicator for measuring taper.
	2 <sup>nd</sup>	International, national and company standard Line and wavelength standards		
	3 <sup>rd</sup>	When to inspect, Who should inspect, Where to inspect, what to inspect	2 <sup>nd</sup>	Use of dial indicator for measuring taper.
	4 <sup>th</sup>	Types of inspection: remedial, preventive and operative inspection Incoming, in process and final inspection		
2 <sup>nd</sup>	1 <sup>st</sup>	Study of factors influencing the quality of manufacture	1 <sup>st</sup>	Use of combination set, bevel protector and sine bar for measuring taper.
	2 <sup>nd</sup>	Basic principles used in measurement and gauging Mechanical, optical, electrical and electronic		
	3 <sup>rd</sup>	Study of various measuring instruments like: calipers, micrometers, dial indicators, surface plate.	2 <sup>nd</sup>	Use of combination set, bevel protector and sine bar for measuring taper.
	4 <sup>th</sup>	Straight edge, try square, protectors, sine bar, clinometers		
3 <sup>rd</sup>	1 <sup>st</sup>	. Comparators mechanical, electrical and pneumatic	1 <sup>st</sup>	Measurement of thread characteristic using vernier and gauges.
	2 <sup>nd</sup>	Slip gauges, tool room microscope, profile projector		
	3 <sup>rd</sup>	Limit gauges: plug, ring, snap, taper, thread, height, depth, form, feeler, wire	2 <sup>nd</sup>	Measurement of thread characteristic using vernier and gauges.
4 <sup>th</sup>	1 <sup>st</sup>		1 <sup>st</sup>	Use of slip guage in measurement of center distance between two pins.
	2 <sup>nd</sup>			
	3 <sup>rd</sup>		2 <sup>nd</sup>	Use of slip guage in measurement of center distance between two pins.
5 <sup>th</sup>	1 <sup>st</sup>		1 <sup>st</sup>	Use of tool maker's microscope and components
	2 <sup>nd</sup>			
	3 <sup>rd</sup>		2 <sup>nd</sup>	Use of tool maker's microscope and components
6 <sup>th</sup>	1 <sup>st</sup>		1 <sup>st</sup>	Plot frequency distribution for 50 turned components
	2 <sup>nd</sup>			

	3 <sup>rd</sup>	.	2 <sup>nd</sup>	Plot frequency distribution for 50 turned components
7 <sup>th</sup>	1 <sup>st</sup>	Their applications for linear, angular, surface thread and gear measurements, gauge tolerances.	1 <sup>st</sup>	With the help of given data, plot X, R , P and C charts.
	2 <sup>nd</sup>	Geometrical parameters and error: errors and their effect on quality, concept of errors		
	3 <sup>rd</sup>	Measurement of geometrical parameter such as straightness, flatness and parallelism.	2 <sup>nd</sup>	With the help of given data, plot X , R ,P and C charts.
8 <sup>th</sup>	1 <sup>st</sup>	Study of procedure for alignment tests on lathes		
	2 <sup>nd</sup>	Drilling and milling machines		
	3 <sup>rd</sup>	Testing and maintenance of measuring instruments		
9 <sup>th</sup>	1 <sup>st</sup>	Basic statistical concepts.		
	2 <sup>nd</sup>	Empirical distribution and histograms		
	3 <sup>rd</sup>	Frequency, mean, mode, standard deviation, normal distribution.		
10 <sup>th</sup>	1 <sup>st</sup>	Binomial and Poisson, Simple examples		
	2 <sup>nd</sup>	Introduction to control charts, namely X, R, P and C charts.		
	3 <sup>rd</sup>	Their applications		
11 <sup>th</sup>	1 <sup>st</sup>	Sampling plans, selection of sample size.		
	2 <sup>nd</sup>	Method of taking samples, frequency of samples.		
	3 <sup>rd</sup>	Inspection plan format and test reports		
12 <sup>th</sup>	1 <sup>st</sup>	Concept of total quality management(TQM)		
	2 <sup>nd</sup>	National and international Codes		
	3 <sup>rd</sup>	ISO- 9000, concept and its evolution.		
13 <sup>th</sup>	1 <sup>st</sup>	QC tools		
	2 <sup>nd</sup>	Introduction to Kaizen, 5S		
	3 <sup>rd</sup>	Measurement of mechanical quantities such as displacement		
14 <sup>th</sup>	1 <sup>st</sup>	Vibration, frequency, pressure temperature by electro mechanical transducers of resistance		
	2 <sup>nd</sup>	Capacitance type		
	3 <sup>rd</sup>	Inductance type		
15 <sup>th</sup>	1 <sup>st</sup>	Vibration, frequency, pressure temperature by electro mechanical transducers of resistance		
	2 <sup>nd</sup>	Capacitance type		
	3 <sup>rd</sup>	Inductance type		

# Lesson Plan

**Name of the faculty:** Sh. Sukhbir singh

**Discipline:** GFC (Lecturer)

**Semester:** 6<sup>th</sup>

**Subject:** EDM

**Lesson Plan Duration:** 15 weeks (From march 2022 to June, 2022)

**\*\*Work Load (Lecture/ Practical) per week (in hours):** Theory-03 & 03

Week	Theory		Practical	
	Lecture day	Topic ( including assignment / test)	Practical Day	Topic
1 <sup>st</sup>	1 <sup>st</sup>	Concept/Meaning and its need.		
	2 <sup>nd</sup>	Qualities and functions of entrepreneur and barriers in entrepreneurship.		
	3 <sup>rd</sup>	Sole proprietorship and partnership forms of business organizations.		
2 <sup>nd</sup>	1 <sup>st</sup>	Schemes of assistance by entrepreneurial support agencies at National, State District level: NSIC, NRDC.		
	2 <sup>nd</sup>	DC: MSME, SIDBI, NABARD, And Commercial Banks.		
	3 <sup>rd</sup>	SFC's TCO, KVIB, DIC, Technology Business Incubator.		
3 <sup>rd</sup>	1 <sup>st</sup>	Science and Technology Entrepreneur Parks (STEP).		
	2 <sup>nd</sup>	Scanning of business environment. Salient features of National and State industrial policies and resultant business opportunities.		
	3 <sup>rd</sup>	Types and conduct of market survey.		
4 <sup>th</sup>	1 <sup>st</sup>	Assessment of demand and supply in potential areas of growth.		
	2 <sup>nd</sup>	Identifying business opportunity.		
	3 <sup>rd</sup>	Considerations in product selection.		
5 <sup>th</sup>	1 <sup>st</sup>	Preliminary project report.		
	2 <sup>nd</sup>	Preliminary project report.		
	3 <sup>rd</sup>	Detailed project report including technical		
6 <sup>th</sup>	1 <sup>st</sup>	Economic and market feasibility.		
	2 <sup>nd</sup>	Common errors in project report preparations.		
	3 <sup>rd</sup>	Exercises on preparation of project report.		
7 <sup>th</sup>	1 <sup>st</sup>	Definitions and importance of management. Functions of management: Importance and process of planning, organizing, staffing, directing and controlling.		
	2 <sup>nd</sup>	Principles of management (Henri Fayal, F.W. Taylor), Concepts and structure of an organization.		
	3 <sup>rd</sup>	Types of industrial organizations: Line organization, Line and staff organization, Functional Organization.		



8 <sup>th</sup>	1 <sup>st</sup>	Leadership, Definition and Need.		
	2 <sup>nd</sup>	Qualities and Functions of a leader.		
	3 <sup>rd</sup>	Manage Vs leader, Types of leadership.		
9 <sup>th</sup>	1 <sup>st</sup>	Motivation: Definitions and characteristics.		
	2 <sup>nd</sup>	Factors affecting motivation.		
	3 <sup>rd</sup>	Theories of motivation(Maslow, Herzberg, McGregor)		
10 <sup>th</sup>	1 <sup>st</sup>	Human Resources Management. Introduction and objective.		
	2 <sup>nd</sup>	Introduction to Man power planning, recruitment and selection.		
	3 <sup>rd</sup>	Introduction to performance appraisal methods.		
11 <sup>th</sup>	1 <sup>st</sup>	Materials and Store Management: Introduction functions and objectives.		
	2 <sup>nd</sup>	ABC analysis and EOQ.		
	3 <sup>rd</sup>	Marketing and sales: Introduction, importance and its functions		
12 <sup>th</sup>	1 <sup>st</sup>	Physical distribution.		
	2 <sup>nd</sup>	Introduction to promotion mix.		
	3 <sup>rd</sup>	Sales promotion		
13 <sup>th</sup>	1 <sup>st</sup>	Financial Management: Introduction, importance and its functions.		
	2 <sup>nd</sup>	Elementary knowledge of income tax, sales tax, excise duty, custom duty and VAT.		
	3 <sup>rd</sup>	Miscellaneous Topics; Customer Relation Management, Definition and need.		
14 <sup>th</sup>	1 <sup>st</sup>	Types of CRM		
	2 <sup>nd</sup>	Total Quality Management: Statistical process control		
	3 <sup>rd</sup>	Total employees Involvement.		
15 <sup>th</sup>	1 <sup>st</sup>	Just in time(JIT)		
	2 <sup>nd</sup>	Intellectual Property Right (IPR)		
	3 <sup>rd</sup>	Introductions, definition and its importance. Infringement related to patents, copy right trade mark.		

# Lesson Plan

**Name of the faculty:** Sh. Zakir Hussain Sr. Lecturer in Mechanical Engg.

**Discipline:** Mechanical

**Semester:** 6<sup>th</sup> Mechanical A & B

**Subject :** Estimating & Costing

**Lesson Plan Duration:** 15 weeks (From March 2022 to June, 2022)

**\*\*Work Load (Lecture/ Practical) per week (in hours):** Theory-03

Week	Theory		Practical	
	Lecture day	Topic ( including assignment / test)	Practical Day	Topic
1 <sup>st</sup>	1 <sup>st</sup>	Definition of estimation, Importance, aims and functions of estimating; cost accounting, purposes of cost accounting		
	2 <sup>nd</sup>	Comparison of estimating and costing, estimating procedure		
	3 <sup>rd</sup>	Cost estimators and their qualifications, types of estimates, constituents of job estimates.		
2 <sup>nd</sup>	1 <sup>st</sup>	cost of production, selling price, capital investment, rate of return(ROR) on investment		
	2 <sup>nd</sup>	Revision		
	3 <sup>rd</sup>	Revision		
3 <sup>rd</sup>	1 <sup>st</sup>	Practical View Of Estimating		
	2 <sup>nd</sup>	Practical View Of Costing		
	3 <sup>rd</sup>	Definitions, objectives, elements of costs, components of costs		
4 <sup>th</sup>	1 <sup>st</sup>	overhead expenses:: factory expenses, depreciation-causes; methods of calculation of depreciation		
	2 <sup>nd</sup>	obsolescence, interest on capital, idleness costs, repairs and		

		maintenance cost, selling and distribution overheads and methods of allocation of overhead charges, procedure for costing		
	3 <sup>rd</sup>	Practical view of element of costing		
5 <sup>th</sup>	1 <sup>st</sup>	Objectives of cost accounting, difference between financial accounting and cost accounting		
	2 <sup>nd</sup>	advantages of cost accounting, methods of costing		
	3 <sup>rd</sup>	unit costing, batch costing, departmental costing, process costing, multiple and composite costing		
6 <sup>th</sup>	1 <sup>st</sup>	Objectives of cost estimating, functions of cost estimating, organization of estimating department		
	2 <sup>nd</sup>	principal factors in estimating, miscellaneous allowances, estimating procedures, qualities of estimator		
	3 <sup>rd</sup>	Estimation of volumes, weights and cost of material for items like pulley, spindle, lathe centre		
7 <sup>th</sup>	1 <sup>st</sup>	fly wheel, crank shaft and similar items. Simple numericals on the above, budgets and types of budgets		
	2 <sup>nd</sup>	Revision		
	3 <sup>rd</sup>	Revision		
8 <sup>th</sup>	1 <sup>st</sup>	Practical view of Estimation of Material Cost		
	2 <sup>nd</sup>	Practical view of Estimation of Material Cost		
	3 <sup>rd</sup>	Revision		
9 <sup>th</sup>	1 <sup>st</sup>	Set up time, operation time, handling time, machining time, tear down time, allowances; personal, fatigue		
	2 <sup>nd</sup>	tool checking/sharpening/changing,		

		unit operation time, cycle time and total time, full depth of cut		
	3 <sup>rd</sup>	cutting speeds for various operations for different tool materials and product materials		
10 <sup>th</sup>	1 <sup>st</sup>	Revision		
	2 <sup>nd</sup>	Revision		
	3 <sup>rd</sup>	Practical view of Estimation of Machine Shop		
11 <sup>th</sup>	1 <sup>st</sup>	estimation of time for various machining operations - turning, drilling, boring, tapping, shaping, planning, milling and grinding.		
	2 <sup>nd</sup>	Revision		
	3 <sup>rd</sup>	Revision		
12 <sup>th</sup>	1 <sup>st</sup>	Estimation of cost of different products produced in welding		
	2 <sup>nd</sup>	gas and electric welding		
	3 <sup>rd</sup>	forging and foundry shops		
13 <sup>th</sup>	1 <sup>st</sup>	Revision		
	2 <sup>nd</sup>	Revision		
	3 <sup>rd</sup>	Revision		
14 <sup>th</sup>	1 <sup>st</sup>	Students problem discussion		
	2 <sup>nd</sup>	Students problem discussion		
	3 <sup>rd</sup>	Practical view of Estimation of Other Shops		
15 <sup>th</sup>	1 <sup>st</sup>	Revision		
	2 <sup>nd</sup>	Revision		
	3 <sup>rd</sup>	Revision		

# Lesson Plan

**Name of the faculty:** Sh. Vijay Malik, Lecturer in Mechanical Engg.

**Discipline:** Mechanical

**Semester:** 6<sup>th</sup> Mechanical A & B

**Subject:** Automobile Engineering

**Lesson Plan Duration:** 15 weeks (From march 2022 to june 2022)

**\*Work Load (Lecture/ Practical) per week (in hours):** Theory-03 & 02

Week	Theory		Practical	
	Lecture day	Topic ( including assignment / test)	Practical Day	Topic
1 <sup>st</sup>	1 <sup>st</sup>	Automobile and its development	1 <sup>st</sup>	Fault and their remedies in (i) Battery Ignition System (ii) Magnetic Ignition System.
	2 <sup>nd</sup>	Various types of automobiles manufactured in India		
	3 <sup>rd</sup>	Layout of chassis	2 <sup>nd</sup>	Fault and their remedies in (i) Battery Ignition System (ii) Magnetic Ignition System.
2 <sup>nd</sup>	1 <sup>st</sup>	Fuel systems for petrol and diesel engines including multi point fuel injection (MPFI)	1 <sup>st</sup>	Demonstration of (i) Head Light Model (ii) Wiper and Indicators
	2 <sup>nd</sup>	Common rail direct injection (CRD)		
	3 <sup>rd</sup>	Fuel injectors and nozzles	2 <sup>nd</sup>	Demonstration of (i) Head Light Model (ii) Wiper and Indicators
3 <sup>rd</sup>	1 <sup>st</sup>	Comparison of MPFI with carburetor system	1 <sup>st</sup>	Demonstration of (i) AC Pump (ii) SU Pump (iii) Master Cylinders.
	2 <sup>nd</sup>	Concept of double overhead cam		
	3 <sup>rd</sup>	Single overhead cam	2 <sup>nd</sup>	Demonstration of (i) AC Pump (ii) SU Pump (iii) Master Cylinders.
4 <sup>th</sup>	1 <sup>st</sup>	Twin cam 16 valve technology in 4 cylinder engine	1 <sup>st</sup>	Demonstration of (i) rear Axle (ii) Differential (iii) Steering System
	2 <sup>nd</sup>	Clutch- Function, Constructional details of single plate		
	3 <sup>rd</sup>	Multiplate friction clutches, Centrifugal	2 <sup>nd</sup>	Demonstration of (i) rear Axle (ii) Differential (iii) Steering

				System
5 <sup>th</sup>	1 <sup>st</sup>	Semi centrifugal clutch, hydraulic clutch	1 <sup>st</sup>	Fault finding practices on an automobile- four wheelers (petrol/ diesel vehicles)
	2 <sup>nd</sup>	Gear box- function, concept of sliding mesh		
	3 <sup>rd</sup>	Constant mesh and synchromesh gear box, Torque converter and overdrive.	2 <sup>nd</sup>	Fault finding practices on an automobile- four wheelers (petrol/ diesel vehicles)
6 <sup>th</sup>	1 <sup>st</sup>	Types of drives- front wheel, rear wheel, four Wheel.	1 <sup>st</sup>	Tuning of an automobile engine
	2 <sup>nd</sup>	Function of propeller shaft, universal joint		
	3 <sup>rd</sup>	Differential and different types of rear axles and front axles	2 <sup>nd</sup>	Tuning of an automobile engine
7 <sup>th</sup>	1 <sup>st</sup>	Wheels and tyres- types of wheels	1 <sup>st</sup>	Driving practice on a 4-wheeler
	2 <sup>nd</sup>	Types and specifications of tyres used in Indian vehicles		
	3 <sup>rd</sup>	Wheel balancing	2 <sup>nd</sup>	Driving practice on a 4-wheeler
8 <sup>th</sup>	1 <sup>st</sup>	Function and principle of Ackerman.	1 <sup>st</sup>	Charging of an automobile battery and measuring cell voltage and specific gravity of electrolyte
	2 <sup>nd</sup>	Davis steering mechanism		
	3 <sup>rd</sup>	Types of steering gear boxes- Worm and nut	2 <sup>nd</sup>	Charging of an automobile battery and measuring cell voltage and specific gravity of electrolyte
9 <sup>th</sup>	1 <sup>st</sup>	Worm and wheel, worm and roller	1 <sup>st</sup>	Changing of wheels and inflation of tyres, balancing of wheels
	2 <sup>nd</sup>	Rack and opinion, power steering system		
	3 <sup>rd</sup>	Alignment of Wheels- Toe in, toe out, camber, caster, kingpin inclination	2 <sup>nd</sup>	Changing of wheels and inflation of tyres, balancing of wheels
10 <sup>th</sup>	1 <sup>st</sup>	Constructional details and working of mechanical	1 <sup>st</sup>	Checking spark gap and valve clearance.
	2 <sup>nd</sup>	Hydraulic brake		
	3 <sup>rd</sup>	Concept of air and vacuum brake	2 <sup>nd</sup>	Checking spark gap and valve clearance.

11 <sup>th</sup>	1 <sup>st</sup>	Brake adjustment	1 <sup>st</sup>	Cleaning and adjusting a carburetor.
	2 <sup>nd</sup>	Introduction to Anti lock brake system and its working		
	3 <sup>rd</sup>	Function, types, working of coil spring	2 <sup>nd</sup>	Cleaning and adjusting a carburetor.
12 <sup>th</sup>	1 <sup>st</sup>	Leaf spring		
	2 <sup>nd</sup>	Concept of Air suspension		
	3 <sup>rd</sup>	Shock absorber		
13 <sup>th</sup>	1 <sup>st</sup>	Constructional details of lead acid cell battery		
	2 <sup>nd</sup>	Maintenance of batteries		
	3 <sup>rd</sup>	Checking of batteries for voltage		
14 <sup>th</sup>	1 <sup>st</sup>	Specific gravity		
	2 <sup>nd</sup>	Magneto and battery coil ignition system.		
	3 <sup>rd</sup>	Concept of Dynamo		
15 <sup>th</sup>	1 <sup>st</sup>	Alternator- construction and working		
	2 <sup>nd</sup>	Charging of battery by alternator		
	3 <sup>rd</sup>	Regulator.		