

Name of the Faculty
Discipline
Semester
Subject
Lesson Plan Duration
Work Load (Lectures)

Week	Lecture day
1st	1
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2nd	4
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3rd	7
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Specimen of lesson Plan
Sh. VNAVNEET GUPTA
AUTOMOBILE Engg.
Vith
TSPV
March-2023

re/ Practical) per week (in hours): 03 HOURS (Lecture) 03 Hours per Group (PRACTICAL)

Theory	
Topic (including assignment/ test)	
Introduction about 1. Tractor Definition, classification of tractors, main tractor assemblies,	
types of engine used, human factor in tractor design	
applications of tractors, Basics trends in tractor design,	
forces acting on a tractor on move, parallel pull and rolling resistance	
tractive effort, tractor stability, , longitudinal and lateral stability, weight transfer concept.	
Tractor Chassis Types of clutch used in tractors,	
types of transmission boxes used in tractors, , final drive	
Reduction gear, tractor brake systems; operator seat design,	
Supplementary System	
Power take off shaft, draw bar working, double clutch system	
traction control unit: mechanical and hydraulic,	
belt pulley three point linkages, Tractor Wheels and Tyres	
Salient features of wheels, tyres, and wheel base/wheel tracks and ground clearance	
Classification of tractor tyres, Specifications of wheels and tyres	
tread types and their applications,	
dual versus tandem tyres,. differential lock.	
Revision	
1st Sessional Test	
Hydraulic system ,Principle and Functions of hydraulic system, hydraulic system layout	
Various components of hydraulic system and their functions.	
Methods of attaching implements, various control systems	

Depth control, position control, draft control, combination control
Working of hydraulic control levers, other uses of hydraulic control system
Tractor Operation, Maintenance and repair
Common control and safety levers; Tractor indicators
safe tractor operating procedure, maintenance checks before starting the engine,
periodic maintenance procedure of tractor, faults and their rectification, ,
prominent makes of Indian tractors
selection criteria for tractor
2nd Sessional Test
Special Purpose Vehicles
Earth Moving Machinery
Introduction, general layout and classification of earth moving machinery.
Layout, working and applications of Dozer
Loader, Excavator,
Fork Lift Truck,
Tipper and Crane,
Motor Grader.
Revision
3rd Sessional Test
Revision
Revision
Revision
Revision
Revision

Specimen of lesson Plan

Name of the Faculty : **Sh.**
Discipline : **AUTOMOBILE Engg.**
Semester : **Vlth**
Subject : **PE**

Lesson Plan Duration : **March-2023**

Work Load (Lecture/ Practical) per week (in hours): 03 HOURS (Lecture) 03 Hours per Group (PRA)

Week	Theory	
	Lecture day	Topic (including assignment/ test)
1 st	1	Introduction about Subject Productivity, Definition of Production
	2	Types of Production – Job, Batch and Mass production, Assembly Production
	3	Definition of productivity, Difference between production and productivity
	4	Importance of productivity, Factors affecting productivity,
2 nd	5	Measurement of productivity, Causes of decrease in productivity
	6	Assembly System and Line Balancing: The assembly process,
	7	Assembly system, Manual assembly lines,
	8	Line balancing problems – static balancing and dynamic balancing,
3 rd	9	Flexible manual assembly line, Partial automation.
	10	Production Planning and Control, Necessity of planning and control
	11	Functions of production, planning and control department,
	12	Advantages of Production Planning & Control
4 th	13	Preplanning – product development, sales forecasting, Break-even analysis
	14	Process planning, Process planning sheet, calculation of man and machine
	15	Stages of P.P.C - process planning, routing, loading, scheduling,
	16	dispatching, follow up, inspection and evaluation; their purpose and procedure
5 th	17	Machine loading chart, Gantt chart,
	18	Inventory control – need and benefits; ABC and JIT
	19	REVISION
	20	1st Sessional Test
6 th	21	Inspection, Inspection - Need and Planning for Inspection
	22	Modes of inspection – Accuracy testing of machine tools, Part/Product inspection, Process quality control
	23	Types of Inspection – in-coming, in-process and final inspection; remedial, preventive and operative inspection
	24	Methods of inspection – 100% inspection, sampling inspection
7 th	25	Role of Operator and Inspector in Inspection, Quality Control
	26	Quality Control and Quality Assurance - Meaning and Need
	27	Statistical Quality Control Acceptance Sampling
	28	QC tools – cause and effect diagram, check sheet, control chart, Pareto chart, histogram, scatter diagram, flow chart

8 th	29	Control Charts for variables and Attributes
	30	Concept of Six Sigma Concept of Total Quality Management (TQM)
	31	Introduction to 5S and Kaizan technique
	32	Standards and Codes,National and International Codes
9 th	33	Concept, elements, benefits and implementation of Quality Management System (ISO 9000)
	34	environmental Management System (ISO 14000), Quality Circles
	35	Estimating and Costing,Meaning and importance of estimating and costing.
	36	Difference between estimating and costing.
10 th	37	Estimating procedures.
	38	Elements of cost – Material cost – direct and indirect, Labour cost – direct and indirect, Expenses – direct and indirect, overheads.
	39	Profits – Concepts and requirements
	40	2nd Sessional Test
11 th	41	Marketing and Sales
	42	Concept of marketing and sales,
	43	Difference between sales and marketing
	44	Types of marketing – through personal contact, through advertisement, through demonstration, multilevel marketing,
12 th	45	Market research – definition, necessity and objective
	46	Types of sales
	47	Identification of consumers
	48	Effect of consumer behavior on sales
13 th	49	REVISION
	50	REVISION
	51	REVISION
	52	REVISION
14 th	53	REVISION
	54	REVISION
	55	REVISION
	56	REVISION
15 th	57	3rd Sessional Test
	58	REVISION
	59	REVISION
	60	REVISION

*** At least Three Assignment covering substantial portion of syllabus to be given.**

Specimen of lesson Plan

Name of the Faculty : **Sh. RAJNISH GUPTA**
Discipline : **AUTOMOBILE Engg.**
Semester : **VIth**
Subject : **MVATM**
Lesson Plan Duration : **March-2023**

Work Load (Lecture/ Practical) per week (in hours): 03 HOURS (Lecture) 03 Hours per Group (PRACTICAL)

Week	Theory	
	Lecture day	Topic (including assignment/ test)
1 st	1	UNIT-1. Introduction to Motor Vehicle Act
	2	Motor Vehicle Act - Main Provisions
	3	Salient features of Motor Vehicle Act. Requisites and formalities for following
2 nd	4	§ Licensing of drivers and conductors of motor vehicles.
	5	§ Registration of old and new vehicles
	6	§ Control of transport vehicles
3 rd	7	§ Transfer of vehicle - Local and State to State
	8	§ Different forms, application for various uses
	9	Traffic offences, penalties and procedures
4 th	10	Inspection and Fitness of Vehicle
	11	Fitness of vehicle -meaning and purpose, provisions in the act,
	12	2.2. Detailed procedure and requirements for vehicle inspection
5 th	13	2.3 Road Worthiness requirements
	14	Sessional Test-1
	15	. Insurance of Vehicles
6 th	16	Meaning of Insurance and its necessity
	17	Different types - comprehensive and third party insurance
	18	Procedure to get Accidental claim and compensation Surveyor duties
7 th	19	Relation between Insurance company and surveyor
	20	Duties of driver in case of accident and injury to a person, Analysis of accident loss
	21	Principle of driving Driving procedure
8 th	22	Driving in abnormal conditions, like hilly area, night,
	23	Driving in abnormal conditions, like fog
	24	Driving in abnormal conditions, like heavy traffic and rain
9 th	25	Driving License - purpose, importance and requirements
	26	Different types of driving license

	27	Procedure to get driving license
10th	28	Revision
	29	Sessional Test- 2
	30	Road Safety
11th	31	Road Signs/signals
	32	Traffic rules
	33	Duties of Driver, Conductor and Helper towards safety of vehicles/passengers/goods and self
12th	34	Transport Management
	35	History of transport with special reference to road transport in India
	36	Modes of Road transport
13th	37	Organization- Service station and its functions, General layout of modern service station, Spare parts section and dealership service section, Accounts and books, Different types of cards and
	38	Structure of fleet organization
	39	State transport - optimum utilization of fleet, theory of fares/freight
14th	40	Maintenance of logbook, History sheet, Economy of replacement, Assessment of used vehicles for sale and purchase,
	41	High security registration plates
	42	REVISION
15th	43	REVISION
	44	REVISION
	45	Sessional Test-3

Specimen of lesson Plan

Name of the Faculty : **Sh. HS SINDHU**
Discipline : **AUTOMOBILE Engg.**
Semester : **Vith**
Subject : **ENTREPRENEURSHIP DEVELOPMENT AND MANAGEMENT**
Lesson Plan Duration : **March-2023**
Work Load (Lecture/ Practical) per week (in hours): 03 HOURS (Lecture)

Week	Theory	
	Lecture day	Topic (including assignment/ test)
1 st	1	Introduction about subject
	2	Concept /Meaning of Entrepreneurship and its need.
	3	Qualities and functions of entrepreneur and barriers in entrepreneurship.
2 nd	4	Sole proprietorship and partnership forms of business organizations.
	5	Schemes of assistance by entrepreneurial support agencies at National, State, District level: NSIC, NRDC
	6	DC: MSME, SIDBI, NABARD, Commercial Banks, SFC's TCO, KVIB, DIC.
3 rd	7	Technology Business Incubator (TBI) and Science and Technology Entrepreneur Parks (STEP).
	8	Market Survey and Opportunity Identification.
	9	Scanning of business environment, 1st Assignment
4 th	10	Salient features of National and State industrial policies and resultant business opportunities.
	11	Types and conduct of market survey
	12	Assessment of demand and supply in potential areas of growth.
5 th	13	Identifying business opportunity.
	14	Considerations in product selection.
	15	1st Sessional Test
6 th	16	Project report Preparation.
	17	Preliminary project report.
	18	Detailed project report including Technical, economic and market feasibility.
7 th	19	Common errors in project report preparations
	20	Exercises on preparation of project report, 2nd Assignment
	21	Introduction to Management.

Week	Theory	
	Lecture day	Topic (including assignment/ test)
8 th	22	Definitions and importance of management.
	23	Functions of management: Importance and Process of planning, organizing, staffing, directing and controlling.
	24	Principles of management (Henri Fayol, F.W. Taylor).
9 th	25	Concept and structure of an organization.
	26	Types of industrial organizations, Line organization, Line and staff organization, Functional Organization.
	27	Leadership and Motivation, Leadership, Definition and Need
10 th	28	Qualities and functions of a leader, Manager Vs leader, Types of leadership.
	29	Motivation, Definitions and characteristics, Factors affecting motivation, Theories of motivation.
	30	2nd Sessional Test
11 th	31	Management Scope in Different Area, Human Resource Management, Introduction and objective, Introduction to Man power planning, recruitment and selection.
	32	Introduction to performance appraisal methods.
	33	Material and Store Management, Introduction functions, and objectives.
12 th	34	ABC Analysis and EOQ.
	35	Marketing and sales, Introduction, importance, and its functions, Physical distribution.
	36	Introduction to promotion mix, Sales promotion.
13 th	37	Financial Management, Introductions, importance and its functions.
	38	Elementary knowledge of income tax, sales tax.
	39	Excise duty, custom duty and VAT, 3rd Assignment
14 th	40	Miscellaneous Topics, Customer Relation Management (CRM), Definition and need, Types of CRM.
	41	Total Quality Management (TQM) Statistical process control, Total employees Involvement
	42	Just in time (JIT).
15 th	43	Intellectual Property Right (IPR) Introductions, definition and its importance.
	44	Infringement related to patents, copy right, trade mark.
	45	3rd Sessional Test

*** At least Three Assignment covering substantial portion of syllabus to be given.**

Specimen of lesson Plan

Name of the Faculty : Sh.Ravinder Singh/ Sh. Navneet Gupta
Discipline : Automobile Engg.
Semester : IVth
Subject : AED
Lesson Plan Duration : March-2023

Work Load (Lecture/ Practical) per week (in hours): 06 Hours (PRACTICAL)

Week	Theory	
	Lecture day	Topic (including assignment/ test)
1 st	1	Introduction about subject.
	2	Limits and Fits
	3	Limit, tolerance,
	4	Geometrical Tolerance,
2 nd	5	deviation, allowance, fits: clearance,
	6	interference, transition fit,
	7	Hole and shaft basis system.
	8	Joints and Bearings
3 rd	9	Universal joint,
	10	Slip joint
	11	Bush bearing
	12	Plummer block or pedestal bearing
4 th	13	Ball bearing
	14	Roller bearing
	15	Engine Components
	16	Four Stroke Petrol Engine Piston
5 th	17	Diesel Engine Piston
	18	Revision
	19	Revision
	20	1st Sessional Test
6 th	21	Connecting rod
	22	Fuel injector
	23	Crank shaft – 4 cylinder Engine
	24	Crank shaft – 4 cylinder Engine
7 th	25	Cam shaft
	26	Spark Plug
	27	Chassis components

	28	Shock absorber
8th	29	Wheel cylinder
	30	Master Cylinder
	31	Brake drum (assembly)
	32	Single plate clutch
	33	Gears
9th	34	Nomenclature of gears
	35	Profile of spur gear by 'Approximate method'
	36	Profile of spur gear by 'Approximate method'
	37	Revision
10th	38	Revision
	39	Revision
	40	2nd Sessional Test
	41	Cam Profile
11th	42	Different types of cams and followers
	43	Drawing of cam profile for following motion of follower
	44	(a) Uniform velocity motion
	45	(b) Simple harmonic motion (SHM)
12th	46	(c) Uniformly accelerated and retarded motion.
	47	Free hand sketching
	48	Battery ignition system
	49	Magneto ignition system
13th	50	Lighting system
	51	Leaf spring suspension
	52	Overhead and side valve mechanism
	53	Revision
14th	54	Revision
	55	Revision
	56	Revision
	57	3rd Sessional Test
15th	58	Revision
	59	Revision
	60	Revision

Specimen of lesson Plan

Name of the Faculty : **Sh.NAVNEET GUPTA**
Discipline : **Automobile Engg.**
Semester : **IVth**
Subject : **WORKSHOP TECHNOLOGY-II**
Lesson Plan Duration : **March-2023**
Work Load (Lecture/ Practical) per week (in hours): 06 Hours (PRACTICAL)

Week	Theory	
	Lecture day	Topic (including assignment/ test)
1 st	1	Introduction about subject.Cutting Tools and Cutting Materials
	2	Cutting Tools - Various types of single point cutting tools and their uses
	3	Single point cutting tool geometry, tool signature and its effect
	4	Heat produced during cutting and its effect
2 nd	5	Cutting speed, feed and depth of cut and their effect
	6	Cutting Tool Materials - Properties of cutting tool material
	7	Study of various cutting tool materials viz. High-speed steel
	8	tungsten carbide, cobalt steel cemented carbides, stellite, ceramics and diamond
3 rd	9	Drilling
	10	Principle of drilling.
	11	Classification of drilling machines and their description.
	12	Various operation performed on drilling machine – drilling,
4 th	13	spot facing, reaming, boring, counter boring, counter sinking, hole milling, tapping.
	14	Speeds and feeds during drilling, impact of these parameters on
	15	drilling, machining time.
	16	Types of drills and their features, nomenclature of a drill
5 th	17	Drill holding devices.
	18	Types of reamers.
	19	Revision
	20	1st Sessional Test
6 th	21	Lathe
	22	Principle of turning,Description and function of various parts of a lathe
	23	Classification and specification of various types of lathe ,Drives and transmission

	24	Work holding devices
7th	25	Lathe tools: Parameters/Nomenclature and applications
	26	Lathe operations :- Plain and step turning, facing, parting off, taper turning,
	27	eccentric turning, drilling, reaming, boring, threading and knurling, form turning, spinning
	28	Cutting parameters – Speed, feed and depth of cut for various materials and for various operations, machining time.
	29	Speed ratio, preferred numbers of speed selection.
8th	30	Lathe accessories:- Centers, dogs, different types of chucks, collets, face plate, angle plate, mandrel, steady rest,
	31	follower rest, taper turning attachment, tool post grinder, milling attachment, Quick change device for tools.
	32	Brief description of capstan and turret lathe,
	33	comparison of capstan/Turret lathe, work holding and tool guiding devices in capstan and turret lathe.
9th	34	Boring
	35	Principle of boring
	36	Classification of boring machines and their brief description.
	37	Specification of boring machines.
10th	38	Boring tools, boring bars and boring heads.
	39	Description of jig boring machine.
	40	2nd Sessional Test
	41	Shaping and Planing
11th	42	Working principle of shaper and planer ,Type of shapers
	43	Type of planers,Quick return mechanism applied to shaper and planer machine.
	44	Work holding devices used on shaper and planer,Types of tools used and their geometry.
	45	Specification of shaper and planer , Speeds and feeds in above processes.
12th	46	Broaching
	47	Introduction,Types of broaching machines – Single ram and duplex ram horizontal type
	48	vertical type pull up, pull down, push down,Elements of broach tool, broach tooth details – nomenclature, types, and tool material.
	49	Jigs and Fixtures
13th	50	Importance and use of jigs and fixture,Principle of location
	51	Locating devices,Clamping devices

	52	Types of Jigs – Drilling jigs, bushes, template jig, plate jig, channel jig, leaf jig.
14th	53	Fixture for milling, turning, welding, grinding, Advantages of jigs and fixtures
	54	Cutting Fluids and Lubricants
	55	Function of cutting fluid
	56	Types of cutting fluids
15th	57	Difference between cutting fluid and lubricant
	58	Selection of cutting fluids for different materials and operations
	59	Common methods of lubrication of machine tools.
	60	3rd Sessional Test

Specimen of lesson Plan

Name of the Faculty : **Sh. Rajnish Gupta**
Discipline : **Automobile Engg.**
Semester : **IVth**
Subject : **CHASSIS, BODY AND TRANSMISS**
Lesson Plan Duration : **March-2023**
Work Load (Lecture/ Practical) per week (in hours): 03 HOURS (Lecture) 06 Hc

Week	Theory	
	Lecture day	Topic (including assignment/ test)
1 st	1	Introduction about subject.
	2	Definition of automobile, Necessity of automobiles
	3	Classification of automobiles
2 nd	4	Brief history of Automobiles , Leading manufacturers of scooter, motor-cycle, cars, buses & trucks in India
	5	Chassis and Body, Vehicle identification number (VIN)
	6	Layout of chassis & function of its major assemblies
3 rd	7	Types of drives - rear wheel drive, front wheel drive & 4-wheel drive; their merits and demerits
	8	Chassis frame & its types, frame materials
	9	Automobile body & its types, requirement of body, types of car body
4 th	10	Constructional details of car body, body streamlining, body materials
	11	Interior fittings, instrument panel, car accessories, , body upholstery
	12	Materials for frame and body, protective coatings for body
5 th	13	Vehicle air-conditioning – construction and working principle.
	14	1st Sessional Test
	15	Transmission, Introduction to transmission, its necessity and functions
6 th	16	Concept of gear drive – simple, compound and planetary; gear ratio
	17	Classification of gear box, Sliding mesh gear box - Construction and working.
	18	Constant mesh gear box- Construction and working
7 th	19	Synchromesh gear box - Construction and working, principle, construction & working of synchronising unit
	20	Gear selector mechanism,
	21	Epicyclic gear box - Construction and working; over drive,
8 th	22	Torque converter - Construction and working
	23	Over running clutch – Necessity, construction and working, its applications

	24	Transfer gear box - construction and working
9th	25	Automated Manual Transmission, Continuously variable transmission,
	26	Common faults in transmission, their causes and remedies, Final Drive
	27	Universal joint – Function, types and constructional details, constant velocity joints
10th	28	Propeller shaft – Function and constructional details, necessity of slip joint.
	29	REVISION
	30	2nd Sessional Test
11th	31	Differential – principle, functions, construction and working,
	32	Types of final drive – hotchkiss drive, torque tube drive.
	33	Rear axles – semi floating, three quarter floating and fully floating, axle housing.
12th	34	Front Axle, Types of front axles – Dead axle, live axle
	35	Function and constructional details of front axle
	36	Types of Stub axle – Elliot and reverse Elliot, Lamoine and reversed Lamoine type
13th	37	Steering system, Purpose and principle of steering
	38	Definition of link and mechanism, steering system linkages
	39	Ackermann's steering mechanism, Steering gear box – types, construction and working
14th	40	Steering geometry – camber, castor, king pin inclination, toe-in, toe-out
	41	Wheel alignment – Necessity and Procedure
	42	Concepts of steering ratio, turning radius, cornering force, cornering power, self righting torque, over steering and under steering
15th	43	Power steering – necessity & types, construction and working of Hydraulic power steering & Electronic power steering,
	44	Common faults, their causes and remedies in steering system.
	45	3rd Sessional Test

SECTION - I

Hours (PRACTICAL)

Practical
Topic
1. Identification and sketching of major components in the layout of chassis of a scooter/motor cycle/3 wheeler
2. Identification and sketching of major components in layout of chassis of a car/jeep, truck/bus
3. Dismantling, inspection and reassembling of single plate clutch.
4. Dismantling, inspection and reassembling of multi plate clutch.
5. Servicing of clutch linkages, and clutch pedal freeplay adjustment.
6. Servicing of transmission system – gear box, universal joints, propeller shaft, slip joint, differential and axles.
7. Removal of gear box from vehicle and refitting, study of gear shifting mechanism.
8. Dismantling and reassembling of gear box, study of synchronizing unit.

9. Servicing of steering system and steering wheel freeplay adjustment.
10. Wheel alignment using computerised wheel alignment machin
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Specimen of lesson Plan

Name of the Faculty : **Sh. Ravinder Singh**
Discipline : **Automobile Engg.**
Semester : **IVth**
Subject : **AUTO ENGINE - I**
Lesson Plan Duration : **March-2023**
Work Load (Lecture/ Practical) per week (in hours): 03 HOURS (Lecture) 06 Hours (Practical)

Week	Theory	
	Lecture day	Topic (including assignment/ test)
1 st	1	UNIT-I- Introduction Engines; internal and external combustion Engines; Engine terminology including Bore
	2	Stroke, dead centres, swept volume, clearance volume, compression ratio
	3	Engine capacity, Engine torque, Indicated power, Brake power, Friction power
2 nd	4	dead centres, swept volume, clearance volume, compression ratio, Engine capacity
	5	Engine torque, Indicated power, Brake power, Friction power,
	6	Classification of engines as per stroke, cycle, fuel, ignition, cooling,
3 rd	7	speed and arrangement of cylinders, governing, reciprocating and rotary.
	8	a. Concept of 2-stroke and 4- stroke engines and their comparison.
	9	b. Concept of S.I. and C.I. engine and their comparison.
4 th	10	UNIT-II- Engine Components, Construction details, specifications
	11	functions and working of components : cylinder block
	12	head, cylinder liner, piston, piston rings, wrist pin, connecting rod
5 th	13	crankshaft bearing, camshaft, valves and valves mechanisms, flywheel and dampers, Valve timing diagrams.
	14	1st Sessional Test
	15	UNIT-IV- IC Engine Testing, Testing of I.C. engine and determination of Indicated Power Brake Power.
6 th	16	Mechanical Efficiency, Volumetric efficiency, Thermal Efficiency, Relative
	17	Efficiency, Mean Effective Pressure and Specific fuel consumption.

	18	Heat balance sheet, Morse Test, vacuum test and compression test.
7th	19	UNIT-V-Fuel System in spark Ignition Engine
	20	Fuel System: types of fuel feed system : gravity and pump feed system. Fuel injection system
	21	Fuel tank, fuel lines, fuel filters, Carburetion; working of simple carburetor, its function and limitations
8th	22	Working of AC Mechanical fuel pump and electrical fuel pump.
	23	Fuel gauges – working of balanced coil and bi-metallic type,
	24	Air cleaners : construction, working and use of dry and wet type, Intake and exhaust manifold; mufflers.
9th	25	Petrol Injection: Introduction, comparison with carburetor method
	26	Description and working of multipoint fuel injection (MPFI) system,
	27	Advantages and disadvantages of MPFI, Various sensors used in MPFI.
10th	28	Revision
	29	2nd Sessional Test
	30	UNIT-VI- Ignition system, Concept of ignition system, ignition timing
11th	31	types of ignition systems : Battery/coil and magneto ignition system
	32	Function and working of ignition coil, distributors, condenser, Contact breaker Point and gap,
	33	Spark plugs and gaps pertaining to Indian vehicles
12th	34	Distributor less Ignition System and electronic ignition system.
	35	Cooling System, Cooling system: necessity, types (air, water), Pump circulation cooling
	36	Advantages & disadvantages of air cooling & water cooling,
13th	37	Components of water cooling system : radiators, thermostat, water pump,
	38	fan pressure cap, temperature gauge, water jackets
	39	Anti-freeze solution, Trouble shooting and remedies.

14th	40	UNIT-VII-Lubrication System,Necessity of lubrication
	41	Types of Lubrication system: Splash type & Pressure type, wet & dry sump
	42	Components of lubrication system : oil pump, oil lines, oil filters, oil coolers,Crankcase ventilation,
15th	43	Characteristics, classification and service ratings of lubricating oil,
	44	Additives for lubricants, Properties of lubricants.
	45	3rd Sessional Test

(PRACTICAL)

Practical
Topic
Study of an engine block and its basic components like cylinder block, cylinder head, piston, connecting rod and crankshaft.
To study the working of two stroke engine on a working cut section model.
To study the working of four stroke engine on a working cut section model.
Study of conventional and MPFI fuel feed systems.
Study of valve mechanisms and identification of various parts.
To find IHP, BHP and mechanical efficiency of multi-cylinder petrol engine using Morse Test Rig.

Engine using direct injection.
Testing of mechanical fuel feed pump.
Servicing of water cooling system – removal, flushing & testing of radiator; replacement of water hoses
Servicing of lubrication system, changing engine oil and oil filter.
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Name of the Faculty : **Specimen of lesson Plan**
Discipline : **Sh. HS Sindhu**
Semester : **Automobile Engg.**
Subject : **IVth**
Lesson Plan Duration : **MATERIALS AND METALLURGY**
Work Load (Lecture/ Practical) per week (in hours): 03 HOURS (Lecture) 06 Ho **March-2023**

Week	Theory	
	Lecture day	Topic (including assignment/ test)
1 st	1	UNIT-I - Introduction about subject. Material, Engineering materials
	2	History/Timeline of Material Origin, Scope of
	3	Material Science, Overview of different engineering materials and applications
	4	Physical and Mechanical properties of various materials, Present and future needs of materials
2 nd	5	Various issues of Material Usage-Economical, Environment and Social
	6	Overview of Biomaterials and semi-conducting materials.
	7	UNIT-II Crystallography, Fundamentals: Crystalline solid and amorphous solid, Unit Cell,
	8	Space Lattice, Arrangement of atoms in Simple Cubic Crystals, BCC, FCC and HCP Crystals Number of atoms per unit Cell,
3 rd	9	Atomic Packing Factor, coordination number (without derivation)
	10	Defects/Imperfections, types and effects in Solid materials.
	11	Deformation: Overview of deformation behaviour and its mechanisms,
	12	Elastic and Plastic deformation, behaviour of material under load and stress-strain curve.
4 th	13	Failure Mechanisms: Overview of failure modes, fracture, fatigue and creep.
	14	UNIT-III- Metallurgy: Introduction, Cooling curves of pure metals
	15	dendritic solidification of metals, effect of grain size on mechanical properties
	16	Binary alloys Thermal equilibrium diagrams, Lever rule, Solid Solution alloys
5 th	17	Revision
	18	Revision
	19	Revision
	20	1st Sessional Test
6 th	21	UNIT-IV-Metals And Alloys
	22	Ferrous Metals: Different iron ores,
	23	Flow diagram for production of iron and steel allotropic forms of iron
	24	Alpha, Delta, Gamma. Basic process of manufacturing of pig iron and steel-making.

7 th	25	Cast Iron: Properties, types of Cast Iron, manufacture and their use
	26	Steels: Plain carbon Steels and alloy steel, Classification of plain carbon steels
	27	Properties and application of different types of Plain Carbon Steels
	28	Effect of various alloying elements on properties of steel,
8 th	29	Uses of alloy steels (high speed steel stainless steel, silicon steel, spring steel)
	30	UNIT-V- Heat Treatment Definition and objectives of heat treatment
	31	Iron carbon equilibrium diagram different microstructures of iron and steel
	32	Formation and decomposition of Austenite, Martensitic Transformation.
9 th	33	Various heat treatment processes- hardening
	34	tempering, , annealing, normalizing,
	35	surface hardening , carburizing, nitriding
	36	cyaniding. Hardenability of Steels, Types of heat treatment furnaces (only basic idea).
10 th	37	measurement of temperature of furnaces.
	38	Revision
	39	Revision
	40	2nd Sessional Test
11 th	41	UNIT-VI- Plastics-Importance of plastics
	42	Classification-thermoplastic and thermoset, plastic and their uses,
	43	Various trade names of plastics, Plastic coatings, food grade plastics.
	44	Applications of plastics in automobile and domestic use.
12 th	45	Rubber classification - Natural and synthetic. Selection of rubber
	46	UNIT-VII Advanced Materials
	47	Heat Insulating materials- Asbestos, glasswool, thermocole.
	48	Ceramics-Classification, properties, applications
13 th	49	Refractory materials –Dolomite, porcelain.
	50	Glass – Soda lime, borosil.
	51	Joining materials/Adhesives – Classification, properties and applications
	52	Abrasive materials
14 th	53	Composites-Classification, properties, applications
	54	Materials for bearing metals

14	55	Materials for Nuclear Energy
	56	Smart materials- properties and applications.
15th	57	REVISION
	58	REVISION
	59	REVISION
	60	3rd Sessional Test

urs (PRACTICAL)

Practical
Topic
Metals and non metals
Metals and alloys
Ferrous and non ferrous metals
Given a set of specimen of metals and alloys (copper, brass, aluminium, cast iron, HSS, Gun metal); identify and indicate the various properties possessed by them.
a) Study of heat treatment furnace. b) Study of a thermocouple/pyrometer.
Study of a metallurgical microscope and a specimen polishing machine.

To prepare specimens of following materials for microscopic examination and to Examine the microstructure of the specimens of following materials. At least any two)

i) Brass ii) Copper iii) Cast Iron , iv) Mild Steel v) HSS, vi) Aluminium

6. To anneal a given specimen and find out difference in hardness as a result of annealing.

To normalize a given specimen and to find out the difference in hardness as a result of normalizing.

To harden and temper a specimen and to find out the difference in hardness due to tempering.

Revision & Viva

Revision & Viva

Revision & Viva

REVISION & VIVA

Revision & Viva