S-30th May, 2015 AC after Circulars from Circular No.1 & onwards++ - 32 -

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY

CIRCULAR NO.SU/Sci./B.Sc. Syll./31/2015

It is hereby notified for information to all the concerned that, on the recommendation of the various Board of Studies, Ad-hoc Boards & Committees the Hon'ble Vice-Chancellor has accepted the **revised semester-wise syllabi in the Faculty of Science as under** on behalf of the Academic Council under Section-14[7] of the Maharashtra Universities Act, 1994 :-

Sr. No.	Name of the Subject	Semester
[1]	**B.Sc. Automobile Technology IInd Year, [Three Year Degree Course].**	**III & IV**
[2]	**B.Sc. Horticulture IInd Year, [Optional].**	**III & IV**
[3]	**B.Sc. Chemistry IIIrd Year, [Optional].**	**V & VI**
[4]	**B.Sc. Analytical Chemistry IIIrd Year, [Optional].**	**V & VI**
[5]	**B.Sc. Agrochemical & Fertilizer IIIrd Year, [Optional].**	**V & VI**
[6]	**B.Sc. Geology IIIrd Year, [Optional].**	**V & VI**
[7]	**B.Voc. Multimedia & Animation, [Three Year Degree Course].**	**I to IV**
[8]	**B.Voc. [1] Industrial Automation, [2] Automobile & [3] Travel & Tourism, [Three Year Degree Course].**	**I to VI**
[9]	**B.Voc. Jewellery Design & Gemology, IInd Year [Three Year Degree Course].**	**III & IV**
[10]	**Diploma in Industrial Automation for Community College at University Campus.**	

This is effective from the Academic Year 2015-16 & onwards as appended herewith.

All concerned are requested to note the contents of the circular and bring the notice to the students, teachers and staff for their information and necessary action.

University Campus,
Aurangabad-431 004.
REF.NO.ACAD/SU/SCI./
2015/6860-7259
Date:- 08-07-2015.

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Director,
Board of College and
University Development.

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Copy forwarded with compliments to:-

1] The Director, C.V.E.T., Dr. Babasaheb Ambedkar Marathwada University Campus, Aurangabad.

2] The Principals, affiliated concerned colleges,
Dr. Babasaheb Ambedkar Marathwada University

Copy to :-

1] The Controller of Examinations,
2] The Director, [E-Suvidha Kendra], in-front of Registrar's Quarter, Dr. Babasaheb Ambedkar Marathwada University,
3] The Superintendent, [B.Sc. Unit],
4] The Superintendent, [B.C.S. Unit],
5] The Programmer [Computer Unit-1] Examinations,
6] The Programmer [Computer Unit-2] Examinations,
7] The Record Keeper.
Dr. Babasaheb Ambedkar Marathwada University.

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S*/-090715/-

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY, AURANGABAD.

Revised Syllabus of

B.Sc. Automobile Technology

Second Year

Semester III & IV

[Effective from 2015-16 & onwards]

THIRD SEMESTER

Paper no.	Name of Paper	Weekly Teaching Scheme		Scheme of Examinations			Total Mark
		Theory	Practical	Theory	Sessional	Practical	
XV	Production Management	3	--	30	20	--	50
XVI	Mechanical Measurement	3	3	30	20	50	100
XVII	Machine Drawing-1	3	3	30	20	50	100
XVIII	Introduction To Automobile Engineering	3	3	30	20	50	100
XIX	Engine - I	3	3	30	20	50	100
XX	Transmission System I	3	3	30	20	50	100
XXI	Project report based on paper XV	--	3	--	--	50	50
	Total	**18**	**18**	**300**		**300**	**600**

FOURTH SEMESTER

Paper no.	Name of Paper	Weekly Teaching Scheme		Scheme of Examinations			Total Mark
		Theory	Practical	Theory	Sessional	Practical	
XXII	Industrial Organization and Management	3	--	30	20	--	50
XXIII	Electrical Technology	3	3	30	20	50	100
XXIV	Machine Drawing – II	3	3	30	20	50	100
XXV	Automobile tools	3	3	30	20	50	100
XXVI	Engine - II	3	3	30	20	50	100
XXVII	Transmission System - II	3	3	30	20	50	100
XXVIII	Project report based on paper XXII	--	3	--	--	50	50
	Total	**18**	**18**	**300**		**300**	**600**

THIRD SEMESTER

PAPER – XV. PRODUCTION MANAGEMENT

I INTRODUCTION TO MANAGEMENT SCIENCE

Principles & functions of management — Contributions of F.W. Taylor, Henry Fayol, Max Weber and Elton Mayo & Roethlisburger in development of the theories of management science.

.

II PRODUCTION MANAGEMENT PRODUCTION PLANNING**:** Routing – Loading – Scheduling — PRODUCTION CONTROL**:** Expediting – Dispatching — **(10)**

III Factory Planning. (9)

Site selection, plant layout Definition, objective, flow system types of layout.

IV Material Handling. (9)

Need for reduction of material handling, equipment for material handling classification and working, selection of material handling equipments.

V Material Management. (8)

MATERIALS MANAGEMENT OBJECTIVES & FUNCTIONS**:** Purchase function – Stores function — INVENTORY MANAGEMENT**:** ABC analysis

Reference:

1) modern production / operation management – Buffs
2) Industrial Engineering and management – O.P. Lehanna

Practical: Project Report should be submitted on above subject

PAPER – XVI. MECHANICAL EASUREMENTS

I. General configuration of mechanical Measurements- (4)

Introduction functional elements of measuring instruments, static characteristics of instruments, dynamic characteristic .General mathematical of zero order, first order, second order instruments.

II. Pressure, strain and force measurements (12)

Introduction, pressure measuring instruments – Burder pressure gauge, diaphragm, Knudsen gauge, Thermal conductivity gauge. Strain measuring instruments, strain gauge,

types, use of strain gauges on rotating shafts, calibration and testing. Force measurement: Hydraulic, pneumatic and Electrical methods.

III. Temperature Measurement- (12)

Introduction, Thermal expansion methods-bimetallic thermometer, liquid in glass thermometer, thermo electric sensors. Common thermo couples, reference junction consideration.

IV. Measurement of speed: - (12)

Introduction, Angular speed measurement, mechanical and Electrical tachometer, Inductive, capacitive and photoelectric pickup, stroboscope.

Practicals:

1) Study of generalized measurement system with instrument.
2) Force measurement: load cell,
   Spring balance.
3) Study and demonstration of use of thermo couple, Resistance thermometer.

PAPER – XVII. MACHINE DRAWING-I

1. SCREW THREADS: - (5)

Introduction, nomenclature of threads, form of thread – V thread, Square thread, conventional representation of threads

2. SCREWED FASTENING: - (5)

Introduction, types of nuts and bolts, method of preventing Rotation of a bolt while screwing a nut on or off it, locking Arrangement of nut, function of bolt

3. KEYS, COTTER JOINTS, PIN JOINTS: - (10)

Introduction, keys joint, cotter and cotter joint, pin joint

4. RIVETED JOINTS AND WELDED JOINTS: - (10)

Introduction, riveting, forms and proportions of rivet heads, failure Of a riveted joint, types of riveted joints, welded joints, types of Welding process

5. SHAFT COUPLINGS, CLUTCHES AND BRAKES: - (10)

Introduction, classification of couplings, clutches and their types, Brakes and their classification

PRACTICALS

One drawing sheet on each chapter

REFERENCES

1. Machine Drawing by N.D Bhatt
2. Machine Drawing by Vinay Chidri
3. Machine Drawing by P.S.Gill

PAPER -XVIII

INTRODUCTION TO AUTOMOBIL ENGINEERING

1. **Introduction of Automobile** - History and Developments of Automobiles — Classification of Vehicles —— Introduction of IC engine, construction of engine, working, principle of engine
2. **Classification of Automobile Vehicle**- Two, Three, Four wheeler vehicle. Front wheel drive, Rear wheel drive and four wheel drive,.
3. **Chassis and vehicle layout**,. Classification and specifications of Chassis- 2-Wheeler, Passenger car,

Commercial Vehicle.Vehicle layout & its types—2 Wheel Drive- Front Engine Front Wheel Drive, Rear Engine Rear Wheel Drive, Front Engine Rear Wheel Drive &4 Wheel Drive.
Major assemblies – their locations and functions.Various loads acting on chassis frame.
Type of frames, frames construction, and material- 2 wheeler and 4 -

4.

Driving hints, driving safety – SAFETY EQUIPMENTS 9

Active safety: driving safety, conditional safety, perceptibility safety, operating safety, passive safety:exterior safety, interior safety, deformation behaviour of vehicle body Seat belt, regulations, automatic seat belt tightener system, collapsible steering column, tiltable steering wheel, air bags, electronic system for activating air bags, bumper design for safety. Owning a car, buying a new car, buying used car, insurance, warranty, cleaning and waxing, restoring and shining, rust proofing.

5. **CNG, recent researches developed in modern vehicle**, CNG Engine, non conventional power plant, recent trends in combustion chamber, recent research in automobile, advances and development CDI ignition. LPG in automobiles. **(6)**
6. **Technical Details of modern Indian cars** – Types of engine, number of cylinder, capacity, power, torque, types of fuel, wheel base, minimum turning radius, length, width, height, ground clearance. Introduction to additional systems such as air conditioning, central locking, power steering and power windows.

Reference Books

Automobile Engineering – R.B. Gupta
Automobile Engineering – K. M. Gupta.
Automobile Engineering - Kripal singh.
Automobile Engineering - Narang.
Automobile Engineering - Nakra.
Automobile Engineering - Srinivasan

PAPER – XIX .ENGINE -I

Classification of automobile engine, **Engine principles and fundamentals**

1 . Introduction, Basic engine nomenclature.,Classification of automobile engines.,Use of enginesMerits and Demerits of vertical and horizontal engines.,Engine specifications:- definition of TDC, BDC, clearance volume, Swept volume, total volume, stroke length, compression ratio, cubic capacity, displacement, torque, power, work, energy,Four stroke SI and CI engine, Two stroke cycle engine.Comparison of two stroke and four stroke cycle engine Reasons for using single cylinder two stroke and four stroke cycle engine **(8)**

2.Construction details of Automobile engine-

Construction details, specification, function and working of**: —**Cylinder block, cylinder head, cylinder liners.Piston, Piston rings, Piston (Wrist) pin.Crank shaft, Connecting Rod, flywheel, dampers.Valve operating mechanism, side valve, overhead valve (Single and Double)Types of Camshaft drives, Rotary valve, sleeve valve mechanism, Timing Gears.Use of Reed Valve in the two-stroke engine.Inlet and exhaust manifolds.Various types of silencers. Valve timing diagram for 2-stroke and 4-stroke engine**(8)**

3. COMBUSTION AND COMBUSTION CHAMBERS

Introduction.Combustion theory in S.I. Engine.Stages of combustion in S.I. Engines. Effects of engine variables on Ignition lag, flame propagation. Abnormal combustion – Detonation, Pre-ignition, Surface ignition, factors affecting detonation and its control.S.I. Engines combustion chamber. Combustion theory in C.I. Engine.Stages of combustion in C.I. Engines.Air-fuel ratio, Delay Period and variables affecting delay period.Diesel knock and variables affecting diesel knock.C.I. Engines combustion chamber.Difference between knocking phenomena in S.I. and C.I. Engines. **(8)**

5.Automotive fuels

Introduction (Properties of fuels, Heating Value of fuels, Concept of A/F ratio, Theoretical air requirement for complete combustion).S.I. engine fuel.Octane number requirement.Diesel engine fuel.Cetane number.Fuel additives and its effects.

Alternative fuels for IC. engines. L.P.G, CNG, Alcohol & Hydrogen as Automotive fuels.CNG Kit.Comparison between CNG & LPG with gasoline. **(8)**

6.Friction, THEORY OF LUBRICATION

Engine friction: introduction, total engine friction, effect of engine variables on friction, hydrodynamic lubrication, elasto hydrodynamic lubrication, boundary lubrication, bearing lubrication, functions of the lubrication system,. Specific requirements for automotive lubricants, oxidation deterioration and degradation of lubricants,additives and additive mechanism, synthetic lubricants, classification of lubricating oils, properties of lubricating oils, tests on lubricants of lubricating oils and their designation. **(8)**

Reference Books

Automobile Engineering – R.B. Gupta
Automobile Engineering – K. M. Gupta.
Automobile Engineering - Kripal singh.
Automobile Engineering - Narang.
Automobile Engineering - Nakra.
Automobile Engineering - Srinivasan

PAPER – XX. TRANSMISSION SYSTEM -I

1 Clutch –

Requirement of transmission system. Introduction, function, necessity, types of clutches and their working principles, wet and dry clutches , components of clutch system, parts of clutch, operating mechanism of clutch (hydraulic, mechanical, vacuum assisted , air pressure assisted), fluid flywheel, torque converter, **(8)**

2 Transmissions–

Principles of gears function and need of gear box, gear ratio, types of gear, spur, bevel, helical, etc. Types of gear box, sliding, constant, synchromesh. Gear selecting mechanism, parts of gear box, Gear box foundation, over drive, semi and fully automatic transmission, epi cyclic gears, free wheel. **(10)**

3 Propeller Shaft and U Joints –

Use of propeller shaft, material and construction, use and types of U joints, slip joint, universal coupling, hatch kich and torque tube. **(7)**

4 Final Drive and Differential–

Types of drive (front, rear and four wheel), function of final drive types of final drives, types of rear axle,
Function, principle, necessity, construction of differential. **(8)**

5 Wheel and Tyre – (7)

Construction and types of wheel such as wire wheel, disk wheel, spoke wheel. Tyre- Construction of tyre, types of tyre, trade pattern, tyre specification, tyre inflation, factor affecting tyre performance, tyre rotations, tyre remolding and retreading process.

PAPER –XXI. Project Report Based On Paper-XV.

PRACTICAL –BASED ON PAPER –XVI
PRACTCAL LEAST:-

1) Study of generalized measurement system with Instrument.
2) Force measurement: load cell, Spring balance.
3) Study and demonstration of use of thermo couple, Resistance thermometer.

PRACTICAL –BASED ON PAPER –XVII

PRACTCALS:-

One drawing sheet on each chapter.

PRACTICAL –BASED ON PAPER –XVIII
PRACTCAL LEAST:-

01) Study the classification of various automobile vehicles.
02) Study and sketch various layout of automobile vehicles.
03) Study the various recent developments in automobile vehicles.
04) Study the various technical parameters in automobile vehicles.

PRACTICAL –BASED ON PAPER -XIX

PRACTICAL LEAST OF Engine -I

1) Study and sketches of combustion chamber.

2) Study and sketches different types of valve mechanism.

3) Removing cleaning and refitting of air cleaner

4) Removing and refitting of intake manifold

5) Removing and refitting of exhaust manifold

6) Study the lay out of fuel supply system of different types of petrol vehicle.

7) Study the lay out of fuel supply system of different types of Diesel vehicle.

8) Removing, servicing and refitting of carburetor from different types of engine.

9) Removing and refitting of fuel pump, fuel filter,

PRACTICAL –BASED ON PAPER- XX

1) Removing, repairing, refitting and setting of clutch.

2) Removing repairing and refitting various types of gear box.

3) Repairing of gear selecting mechanic

4) Removing and refitting of propeller shaft

5) Servicing of slip joint and universal joint

6) Hub greasing of front type rear axles

7) Removing and refitting of front axles.

8) Removing and refitting of rear axles

9) Removing repairing, and refitting of differential

10) Removing and refitting wheels and tyre.

11) Tyre rotation

12) Visit

FOURTH SEMESTER

PAPER - XXII

INDUSTRIAL ORGANIZATION AND MANAGEMENT

I. Ownership and Entrepreneurship development (10)

Individual, Partnership, joint stock companies, co-operative, public sectors and government undertakings, differences, comparison, merits. Project and feasibility reports, licensing,

Entrepreneurial Development

Definition of entrepreneurship, Characteristics of entrepreneurship, Factors influencing entrepreneurship, Types and Functions of Entrepreneurs.

Need for promotion of entrepreneurship, Entrepreneurial Environment, Govt. policies for setting-up new small enterprises.

Planning a SSI :-What is planning, Types of planning, Importance of planning, Steps in planning.,Steps for starting a small enterprise. ,Commercial Banks and Financial Institutions

II . Finance (9)

Sources, raising of finances, Banks, Financial Institutions leasing institution, Shares debentures, loans, credits, convertible bonds. Cost account and control, Prime cost, elements of cost, Break even chart, budget and budgetary control, Profit and loss account, Balance sheet.

III. Site selection and plant layout (7)

Factors affecting selection economic survey of site selection. Functional layout, product layout mixed layout, advantages and disadvantages.

IV. General functions in industries (8)

Procuring or buying, inspections, storing production material handling, packing and forwarding, marketing, supervision, different systems of the above functions. There advantages and disadvantages equipment necessary to carry out these functions.

V. Act. (6)

Boiler Act, Electricity Act, Factory Act, EST Act, Compensation Act.

References:

1. Industrial Organization and management :- O.P.Khanna

Practical:-

Project Report should be submitted on above subject

PAPER - XXIII
ELECTRICAL TECHNOLOGY

I Basics in electricity (7)

Introduction, flow on current, laws pf electricity, A.C. and D.C., single phase and three phase.

II Transformer: (7)

Introduction, Basic concepts, working principle, construction and application.

III A.C. and D.C. motors: (10)

Introduction, types, construction and working, application.

IV Magnetic circuits (6)

Reluctance, MMf, magnetic field strength, series and parallel magnetic circuits.

V Electrical measuring instruments (10)

Introduction, concepts classification and application.

Practicals:

1. Study of various electrical measuring instruments.
2. Study of A.C. and D.C. Motors.
3. Study of Transformers.
4. Study of magnetism.

References:

1. Electrical Technology. Vol- I & II – B.L.Thereja.
2. Basic Electrical Engineering - J.B.Gupta
3. Basic Electrical Engineering - Thatte V.N.

PAPER - XXIV
MACHINE DRAWING – II

I Pulleys **(8)**

Introduction, classification, C.I. belt pulley, fast and loose pulley, stepped pulley, split pulley, built up pulley, rope pulley, V-belt pulley.

II SPUR GEAR **(8)**

Introduction, nomenclature, tooth proportions, In volute spur gear, approximate construction of teeth profile, cycloid tooth profile.

III ENGINE PARTS **(12)**

Introduction, steam engine, cylinder cover, piston stuffing boxes, cross heads, connecting rod, crank, slide valve, internal combustion engine different parts.

IV ASSEMBLY DRAWINGS **(12)**

Introduction, types of assembly drawing, accepted norms to be observed for assemble drawing sequence of preparing the assembly drawing.

Practical:

One exercise sheets on each topic

References:

1. Machine Drawing - N.D. Bhatt
2. Machine Drawing - Gill
3. Machine Drawing - Vinay Chidri

PAPER – XXV. AUTOMOBILE TOOLS

1) General Tools – (6)

Spanners (Different types like open-ended, ring, box, various types of screw drivers, adjustable spanners, different types of pliers, cutting plier circlip plier, combination plier, different types of wrench, different types of hammer, e.g. Mallet, brass, plastic copper etc. Allen key different types of files, chisel, punches vice grip etc.

2) Special Tools – (6)

Box spanner set, feeler gauge, thread gauge, vernier caliper, micrometer, depth gauge, piston ring compressor and expander, valve spring compressor tester, clutch center guide, spark plug spanner, stud extractor, tap extractor, valve spring lifter's .

Different types of pullers, types of plugs, sliding hammer, magneto pullers, Toeing equipments

3) Different types of Gauges & meters – (4)

Vacuum Gauge, compression gauge, injection pressure gauge, oil pressure gauge, temperature gauge, air pressure gauge, multimeter,
Tachometer, dwell tester, timing light, dial gauge, etc.

4) Automotive Equipments – (12)

Growler machine, engine analyzer for diesel & petrol, Exhaust Gas analyzer for diesel & petrol, hydrometer, Battery high rate discharge tester, voltmeter, ammeter, grease gun, hot patch clamp, chain pulley block arbor press, engine lifter, hydraulic hoist, hydraulic jack, alternator tester, coil and condenser testing machine, spark plug testing and cleaning machine, injector tester, blow lamp, paraffin gun, pneumatic nut and bolt tightened, Suzuki scan tools, Accidental repairs pneumatic equipments

5) Special Purpose Machines – (12)

F.I.P. testing and Calibration Machine, wheel alignment Gauge, wheel balancing machine, portable drilling machine, (hand & power) Battery charger, Crank shaft Grinding machine, block boring machine, cylinder head reface, valve refacing machine, valve seat cutter, connecting rod aligner, Engine test rig, head light alignment set up, car washing machine, riveting machine, Hydraulic press, Teflon coating machinery, Body glazing and buffing machinery.

PAPER – XXVI. ENGINE – II

1 Fuel Supply System–

Types of fuel feed system – gravity and pump feed. Mechanical fuel pump and Electrical fuel pump – working principle, other components of fuel supply system line, dry and wet air cleanerscarburettor.

Theory of Carburetion, Properties of Air-feed mixture, working of simple carburettor and its limitations **For S. I. Engine (PETROL INJECTION)**

Timed and continuous injection system. Port injection (MPFI) and throttle body injection. Advantages of port injection (MPFI) system. Electronic petrol injection system.Comparison between carburetion and Petrol injection. CNG, & LPG system, super charging. **(08)**

2 For C. I. Engine (COMPRESSION IGNITION ENGINE)

Components – Fuel tank, fuel lines, fuel filters, Priming Pump, fuel injection pump (inline and distributor type), fuel injection (single orifice, multiple orifice), types of nozzle.Governing and Governors (mechanical and hydraulic).Electronic controlled fuel pump.Unit injection system and common rail system**(8)**

3 Lubrication system – Purpose of lubrication. Properties of good lubricant, grading of lubricants.Different types of lubricants and their makes.Different methods of lubrication – Splash lubrication, Gravity lubrication, wet sump lubrication and dry sump lubrication. Components of wet sump lubrication system like strainer, fuel pump, filter, pressure gauge, Dipstick, relief valve, oil coolers.Causes of oil consumption and oil contamination, Crank case ventilation. Oil additives. **(6)**

4 COOLING SYSTEM (6)

Necessity of cooling. Types of cooling.Air-cooling system, Components of air-cooling system.Water-cooling system. Thermosyphon and pump assisted types. Liquid cooling system.Water cooling system layout, different components of water cooling system like cooling fan, water jackets, water pump, hoses, thermostats, radiator, PVRV cap etc. and their detail. Comparison between Air-cooling and water-cooling.

Overcooling and under cooling, Anti freeze solution, additives.

5 Ignition System – (6)

Introduction, requirement, function, types of ignition system, (Battery, magneto, electronic, DTS,) parts of ignition system. Ignition timing, advance mechanism

6. AIR POLLUTION AND EMISSION CONTROL

Pollutants from Petrol and Diesel Engines.Sources of pollutants from petrol and diesel engines Causes and effects of pollution from petrol and diesel engines on human health, vegetation and other materials. (like on paper, plastic, paint etc.)Comparison of Diesel and Gasoline emissions.Emission control system for S.I. engines and C.I. engines –

Catalytic Converter, positive crankcase ventilation, Evaporation loss control device (ELCD) by charcoal canister, Exhaust gas re-circulation (EGR). Diesel smoke, odour and control.Emission norms for petrol and diesel vehicles (Euro series and Bharat stage I & II).Introduction to Green House Effect. **(6)**

PAPER - XXVII
TRANSMISSION SYSTEM - II

1 Suspension System – (10)

Function, principle, necessity and requirements of good suspension

Types of Spring Construction and working of spring, types of spring such as Coil spring, Leaf spring, torsion bar etc.

Types of suspension system Rigid and independent system, independent front and rear system, combined coil and leaf spring suspension, stabilizer bar, swing arm, McPherson etc. lubrication of suspension, Rubber bushing, anti roll bar, design aspect of suspension system , air suspension system.

2 Shock absorber – (4)

Function, necessity construction of shock absorber types of shock absorber such as telescopic hydraulic, gas filled, column and struts,

3 Brake System – (13)

Introduction, Principle, necessity, construction, and types of brake system, disk and drum brake, mechanical, hydraulic, air, electric, vacuum and air assisted hydraulic brake. Parts of various brake system, parking brake, design aspect of brake system, factor affecting brake efficiency.

4 Steering System– (13)

Introduction, function, types of axle, live and dead axle, stub axle, types of steering system, different types of steering gear box, steering geometry, wheel alignment , Electronic power steering, Hydraulic Power steering, under steer and over steer, turning circle Radius, Ackerman principle.

PAPER XXVIII. Project Report should be submitted –
BASED ON PAPER-XXII.

PRACTICAL –BASED ON PAPER -XXIII

1) Study of various electrical measuring instruments.
2) Study of A.C. and D.C. Motors.
3) Study of Transformers.
4) Study of magnetism.

PRACTICAL –BASED ON PAPER -XXIV

One exercise sheet on each topic.

PRACTICAL –BASED ON PAPER -XXV

AUTOMOBILE TOOLS AND EQUIPMENTS.

1) Experiment on Engine analyzer
2) Experiment on timing lighter and dwell tech meter
3) Experiment on injector tester
4) Experiment on spark plug cleaning and testing machine
5) Experiment on coil and condenser tester and use of multimeter.
6) Experiment on wall refacing and valve seat cutting.
7) Use of hydrometer, Battery tester, Battery charger.
8) Experiment on hot patch clamp.
9) Study experiment on F.I. pump testing machine.
10) Fitting and removing of bearing on hydraulic press and arbore press.
11) Experiment on Gas welding, soldering, Brazing
12) Study experiment on wheel alignment and balancing
13) Study experiment on hydraulic hoist
14) Visit

PRACTICAL –BASED ON PAPER -XXVI.

ENGINE II

1 Study experiment of MPFI system.

2 Study experiment of CNG and LPG

3 Study experiment on CRDI

4 Study experiment on turbo charging and super charging

5 Servicing of feed pump and diesel filter.

6 Removing and refitting of F.I. Pump. Injector

7 Removing, servicing and refitting of oil pump, relief valve and pressure gauge.

8 Removing and refitting of water pump, thermostat valve and repairing of radiator

9 Servicing of ignition system

10 Visit.

PRACTICAL –BASED ON PAPER- XXVII.

TRANSMISSION SYSTEM - II

1) Overhauling of independent suspension system.

2) Overhauling of rigid suspension system

3) Overhauling of shock observer.

4) Overhauling of various types of steering gear boxes.

5) Experiment on wheel alignment

6) Study of power steering System

7) Study of various types of brake operating mechanism

8) Break bleeding

9) Study of air brake system

10) Visit.