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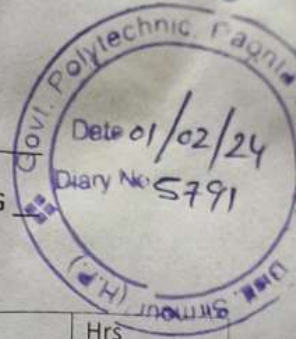
GOVT POLYTECHNIC PAONTA SAHIB, DISTRICT-SIRMAUR

PLANNED SYLLABUS COVERAGE

Faculty name and Designation: Vishal Singh Chauhan

Subject : AUTOMOTIVE REFRIGERATION AND AIR CONDITIONING

Syllabus Coverage: Total Periods Planned Theory 56



Sr. no	Topic/practical	Details of topic/practical	Hrs
1.	Principles of Refrigeration	<ul style="list-style-type: none"> -Meaning -Refrigeration Methods -Units of Refrigeration -Reversed Carnot Cycle -Heat Pump -Coefficient of Performance -Rating of Refrigeration Machines 	12hrs
2.	Refrigeration Systems	<ul style="list-style-type: none"> -Air Refrigeration cycle-applications and its limitations -Vapour Compression Cycle -Effect of sub cooling and super heating ---Departure of actual vapour compression cycle from theoretical cycle -Effect of varying condensing and suction temperature on coefficient of performance. -Simple mathematical calculation with pressure • enthalpy charts -Vapour absorption cycle -Actual vapour absorption cycle and application 	13hrs
3.	Refrigerants	<ul style="list-style-type: none"> -Important properties of a refrigerant -Properties and application of commonly used refrigerants such as R11, R12, R22, NH3 and Water -Newer refrigerants 	7hrs
4.	Refrigeration System, Components and Controls	<ul style="list-style-type: none"> -Function, types, specification and cons. details of components such as compressor, condenser, throttling device, evaporator, oil, separator, accumulator -Various controls : solenoid valve, thermostat, low/high pressure cut out, safety switch 	6hrs
5.	Psychrometry	<ul style="list-style-type: none"> -Various terms: Dry and wet bulb temperatures, saturation, dew point, adiabatic saturation, temperature, relative humidity, absolute humidity, humidity ratio -Psychrometric processes: sensible heating and sensible cooling, humidification and dehumidification, cooling and dehumidification, heating and humidification, and their representation of psychrometric chart (concept only) 	7hrs

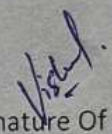
6.	Air Conditioning	<ul style="list-style-type: none"> -Introduction -Metabolism in human body -Human comfort -Applications of air-conditioning 	7hrs
7.	Air conditioning System	<ul style="list-style-type: none"> -Principles of automobile air conditioning: -Air distribution systems, concept of filter, damper, fan, blower, air register and diffuser, case/duct system, engine cooling and heater circuit. -Auto air conditioning systems : operating conditions, car air conditioning, bus air conditioning, truck air conditioning, performance, rating, typical installations. --Causes of failure of auto air conditioners. -Trouble shooting 	12hrs

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Signature Of Teacher



GOVT POLYTECHNIC PAONTA SAHIB, DISTRICT-SIRMAUR

PLANNED SYLLABUS COVERAGE

Faculty name and Designation: _____ Deepak Sandhu _____

Subject : _____ AUTOMOBILE RECONDITIONING _____

Syllabus Coverage: Total Periods Planned Theory/Practical 56

Sr. no	Topic/practical	Details of topic/practical	Hrs
1.	Servicing and Maintenance	<ul style="list-style-type: none"> - Servicing and its necessity. Types of servicing - Engine decarbonizing and its various methods, precautions to minimize carbon deposits in the combustion chamber - Road services, road test and test report - Exterior and interior inspection motor vehicle, inspecting the engine compartment inspecting the trunk bottom - Concept of maintenance, Preventive, Seasonal, Break down maintenance - Maintenance schedules - Maintenance chart 	10 hrs
2.	General Components	<ul style="list-style-type: none"> -Method of engine decarburizing and its need. -Method and necessity of engine sump flushing, cleaning of oil filter and air cleaner. - Necessity and method of adjustment of dynamo/alternator belt tension, valve clearance, -spark plug gap. Valve seat cutting and grinding, valve re-facing - Systematical approach to disconnect engine parts and accessories from chassis, removal of engine assembly, use of engine dismantling tools, cleaning of engine components - Storage of tyre and tubes - Factors determining retreading of tyre - Salient features of hot and cold retreading plants 	9hrs
3.	Overhauling	<ul style="list-style-type: none"> - Explanation of overhauling, necessity of overhauling, - period of overhauling, -Delaying of overhauling period, -Precautions taken during overhauling -Overhauling procedure (Dismantling and assembling) of engine -clutch, gear box, -differential, axles, -brake assemblies, -suspension system, steering system 	10hrs
4.	Reconditioning of Cylinders	<ul style="list-style-type: none"> - Necessity of cylinder head re-facing and operation of cylinder head re-facing machine - Cylinder wear, ovality and taper in cylinder and their measurement and permissible limit - Cylinder ridge removing, removing and fitting cylinder liners - Necessity of cylinder re-boring - Dimensions for re-boring and number of re-bores in light and heavy motor vehicle engines e.g. Maruti, Tata - Reconditioning of cylinder by boring, boring machines operation - Operation of cylinder honing machine and honing amount 	7hrs

5.	Piston and Piston Rings	<ul style="list-style-type: none"> - Measurement of piston ring side clearance and worn gudgeon pin holes - Procedure of replacement of pistons and piston Rings - Piston grooves cleaning. Over size of piston and rings of light and heavy engines 	5hrs
6.	Crank shaft, Cam shaft and Engine Bearing	<ul style="list-style-type: none"> - Necessity and method of crank shaft and cam shaft grinding, Effect on the performance of engine - Bearing clearance of camshaft, crankshaft and connecting rod - Operation of crank shaft and cam shaft grinding machine size of crank shaft and cam shaft grinding amount - Building up worn journals - Over sizes of crank and cam shaft bearings - Alignment of connecting rod - Changing of connecting rod bush - Replacement of small and big end bearing and its over sizes 	9hrs
7.	Welding	<ul style="list-style-type: none"> - Introduction to welding - Types of welding - Principles and uses of gas welding • high pressure and low pressure. - Description of gas welding equipment, different types of flames and their applications. - Fluxes and fillers - Welding techniques and safety precautions - Principles of arc welding - Description of AC and DC welding equipment and their applications. - Electrodes and their specifications - Principle of Resistance welding, spot and seam welding - Welding defects - Modern techniques of welding - Metal spraying 	9hrs
8.	Painting	<ul style="list-style-type: none"> - Preparation of surfaces for painting - Undercoating, its necessity - Detailed painting process of a vehicle - Spray and oven painting - Paint sprayers 	5hrs

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Deepak Sandhu
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GOVT POLYTECHNIC PAONTA SAHIB, DISTRICT-SIRMAUR

PLANNED SYLLABUS COVERAGE

Faculty name and Designation: _____ Anshul Sharma _____

Subject : _____ PRODUCTION PLANNING AND COSTING _____

Syllabus Coverage: Total Periods Planned Theory _____ 56 _____

Sr. no	Topic/practical	Details of topic/practical	Hrs
1.	Production Planning	Introduction - Necessity of Planning and control. - Functions of production, planning and control Department - Factors determining control procedure. - Advantages of PPC. - Types of production	6hrs
2.	Planning	-Material planning and allocation. - Allocation for optimum utilization. - Make or buy decision. - Break even analysis. - Process planning. - Procedure for process planning. - Process planning sheet. - Calculation of man and machine hours	8hrs
3.	Production Control	-Objectives - Routing - Loading and scheduling - Dispatching - Follow up.	4hrs
4.	Plant Layout & Material Handling	-Concept of plant layout - Method of Plant Layout - Work Station Design - Introduction and function of material handling - Material handling equipments. - Safety Precaution in their use.	6hrs
5.	Inspection and Quality Control	-Inspection Need and Planning for Inspection - Types of Inspection - Role of Operator and Inspector in Inspection - Quality Control and Quality Assurance Meaning and Need. Statistical Quality Control - Acceptance Sampling - Control Charts for variables and Attributes - Concept of TQM	7hrs
6.	Standards and Codes	- National and International Codes - ISO-9000 • Concept, its evaluation and implications	3hrs

7.	Inventory Control	<ul style="list-style-type: none"> - Importance - Store room operation - Inventory control techniques - Just in Time (JIT) Concept 	7hrs
8.	B. Costing	<p>Introduction Definition, and importance of estimating and costing. Difference between estimating and costing. Importance of preparing realistic estimates® Estimating procedures.</p>	5hrs
9.	Elements of Cost	<ul style="list-style-type: none"> - Direct materials : components. - Direct Labour - Indirect materials such as lubricants, Cotton waste - Indirect Labour - Other direct expenses such as of hired equipments. - Overhead expenses : rent of building, office expenses. - Depreciation and other costs like service charges. - Profits : concepts and requirements. - Terms used in costing. - Prime cost - Fabrication/service cost/factory cost - Production cost - Ultimate cost - Selling price - Fixed costs - Variable costs. - Estimation of costs. - Perception of job/work order. - Different units of work (Bifurcation as per type, Section etc.) - Analysis of time - Handling time - Preparation time - Work time - Inspection and dispatch time 	12hrs
10.	Sales and Purchase	<ul style="list-style-type: none"> - Market Trends and Survey - Advertising and sales techniques - After sales service - Warrantee and its claim procedures - Purchasing • various procedures 	6hrs

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GOVT POLYTECHNIC PAONTA SAHIB, DISTRICT-SIRMAUR

PLANNED SYLLABUS COVERAGE

Faculty name and Designation: Vishal Singh Chauhan

Subject : MOTOR VEHICLE ACT AND TRANSPORT MANAGEMENT

Syllabus Coverage: Total Periods Planned Theory 56

Sr. no	Topic/practical	Details of topic/practical	Hrs
1.	Motor Vehicle Act	Definition and provisions (Salient features of M.V. Act). -Requisites and formalities for following: - Different forms, application for various Uses - Registration of old and new vehicles - Private and commercial vehicle - Transfer of vehicle Local and State to State.	10hrs
2.	Inspection and Fitness of Vehicle	-Fitness of vehicle - Private and Commercial, - Permit consideration for transport and public service.	6hrs
3.	Insurance	-Different types of insurance and policies. - Procedure to get Accidental claim -and compensation - Surveyor duties, Relations between company and surveyor. -MACT (motor accident claims tribunal)	10hrs
4.	Driving	- Driving License - Different types of driving licenses - Procedure to get license. - Private, commercial, invalid, international license - Principle of Driving - Driving precautions - Driving in abnormal conditions: Like Hilly, night, fog, typhoon, -heavy traffic, rainy.	9hrs
5.	Road Safety	- Road Signs - Imposition of Penalties for violation - Act and Articles - Duties of Driver, Duties of conductor	8hrs
6.	Pollution Control	- Different contents of exhaust gas - Prescribed standards for vehicles: Bharat stage norms - Method of Control of pollution for SI and CI engines - Fuel efficiency	9hrs

Sr. no	Topic/practical	Details of topic/practical	Hrs
7.	Transport Management	<ul style="list-style-type: none"> - Structure of fleet organization - State transport, optimum utilization of fleet, source of traffic, survey of route, factors affecting frequency, preparation of vehicle schedule and duty roaster - Road worthiness requirement - Maintenance of log book - History sheet, causes and prevention of: Road Accident Analysis of Accident - Economy of replacement - Test Drive - Assessment of used vehicles for sale and purchase - Automotive Associations in India. 	12hrs

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GOVT POLYTECHNIC PAONTA SAHIB, DISTRICT-SIRMAUR

PLANNED SYLLABUS COVERAGE

Faculty name and Designation: Deepak Sandhu

Subject : TRACTOR AND FARM EQUIPMENT

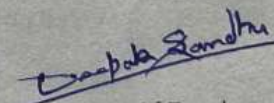
Syllabus Coverage: Total Periods Planned Theory 56

Sr. no	Topic/practical	Details of topic/practical	Hrs
1.	Tractor	-Classification Of Tractors, -Main Tractor Assemblies, -Functions On Farm Tractors, -Types Of Engine Used, horse Power Requirement, -Human Factor In Tractor Design. -Prominent Indian Makes Tractors, -Specifications, Selection, Maintenance -Operation Of Tractors.	9hrs
2.	Tractor Theory	-Basics Trends In Tractor Design, -Forces Acting On A Tractor On Move, - Parallel Pull And Rolling Resistance, -Tractor stability and weight distribution,	7hrs
3.	Hydraulic System	-Functions of hydraulic system, -hydraulic components -methods of attaching implements --classification of hydraulic controls for hitches, integral hitch -Three point hitches, -draft control system. -Salient Features Of Engine,	9hrs
4.	Tractor Chassis	-Clutch, -Power Transmission, -Final Drive, Brakes And -Steeping Of Indian Tractors.	7hrs

Sr. no	Topic/practical	Details of topic/practical	Hrs
5.	Supplementary System	-Power Take Off Shaft, -Draw Bar Working, Belt Pulley, -Tractor Control Unit.	7hrs
6.	Tractor Wheels and Tyres	-Salient Features Of Wheels And Tyres, -Specifications Of Wheels And Tyres, -Dual Versus Tandom Tyres, -Tread Design, -Effect Of Tyre Inflation.	7hrs
7.	Agricultural Equipment	-Types Of Agriculture Equipment, -Trailer And Mounted Types, -Description And Working Principles Of -Ploughs, Single Plough, -Disc Plough, Tiller, Cultivator, -Reaper, Winnowers. -Binder, Thrasher -pumps, sprayers and attachments.	13hrs
8.	Repair and Maintenance	-Faults and their rectification in tractor and farm equipment and their maintenance.	5hrs

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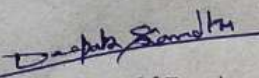
Faculty name and Designation: _____ Deepak Sandhu _____

Subject : _____ AUTO RECONDITIONING WORKSHOP _____

Syllabus Coverage: Total Periods Planned Practical _____ 56 _____

Sr. no	Topic/practical
1.	Decarbonising of Engines : removing carbon deposits from engine combustion chamber, piston crown, and valve parts manually and by using engine de-carbonizing machine.
2.	Overhauling of Diesel engine.
3.	Surfacing of cylinder heads, cylinder blocks and manifolds with cylinder head re- facing machine.
4.	Practice in cylinder boring machine, measuring ovality and taperness of cylinder bore, using cylinder dial gauge, inside micrometer, telescopic gauge, use of direct reading micrometer.
5.	Practice in honing cylinder blocks, keeping allowance of cylinder clearances.
6.	Inspection and practice of crankshaft, crankpin, journal grinding, main journal grinding on crankshaft grinding machine.
7.	Practice of cam shaft journals on line boring machine.
8.	Servicing of valve and valve mechanism, replacement of valves, valve seats, valve guide, checking and replacement of defective springs, facing of valve, tappet and rocker arm and seat reconditioning, lapping, adjusting of valve tappets.
9.	Testing of fuel injector in fuel injection tester.
10.	Calibrations of fuel injection pump on fuel calibration machine.
11.	Operation and use of engine analyzer, analysis of diesel engine performance.
12.	Practice on brake drum lathe, measuring ovality, skimming the brake drum.
13.	Practice in nozzle grinding and lapping, setting of injection pressure and nature of spray.
14.	Practice in bending and nipple forming of fuel pipes. 15. Alignment of connecting rod.

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