

# Trade - Mech. Diesel

## Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
1	1	Theory	Importance & scope of mechanic Diesel Trade Training. - General discipline in the Institute	Demonstration of Machinery used in the trade
	2		Elementary First Aid, Occupational Safety & Health - Knowledge of Personal Safety & Safety precautions in handling Diesel machine	Identify safety Gear/PPE (Personal Protective Equipments) and their uses
	3	W/Shop calculation	Classification of Unit System Fundamental and Derived Units F.P.S, C.G.S, M.K.S and SI Units ,Measurement Units and Conversion, Factors, HCF, LCM and Problems	Identify safety Gear/PPE (Personal Protective Equipments) and their uses
	4	Engg. Drawing	Engineering Drawing – Introduction Introduction to Engineering Drawing and Drawing Instruments – -> Conventions -> Viewing of engineering drawing sheets. -> Method of Folding of printed Drawing sheet as per BIS SP: 46-2003	Importance of maintenance and cleanliness of Workshop.
	5	ES	Behavioural Skill-Creating a focused and responsible learning environment-Chart paper Activity.	Extra Curricular Activity : 2 Hrs. Theory : 3 Hrs. Concept about House Keeping & 5S method. - Energy conservation process
	6	ES	Self-awareness and confidence building, display professionalism at the institute and work place	Demonstration on safe handling and Periodic testing of lifting equipment, and Safety disposal of used engine oil.

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

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## Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
2	1	Theory	Safety disposal of Used engine oil, - Electrical safety tips.	Demonstration on safe handling and Periodic testing of lifting equipment, and Safety disposal of used engine oil.
	2		Safe handling of Fuel Spillage, - Knowledge of Fire Safety & Fire extinguishers used for different types of fire.	Demonstration on health hazards, occupational safety & first Aid.
	3	W/Shop calculation	Fractions – Addition, Subtraction, Multiplication and Division -> Decimal Fractions - Addition, Subtraction, Multiplication and Division -> Solving Problems by using calculator	Demonstration fire service station to provide demo on Fire safety.
	4	Engg. Drawing	Drawing Instrument -> Drawing board, T-square, Drafter (Drafting M/c), Set squares, Protector, Drawing Instrument Box (Compass, Dividers, Scale, Diagonal Scales etc.), pencils of different grades, Drawing pins/ Clips.	Perform use of fire extinguishers.
	5	ES	Increased Social initiations relationships and networks . Acceptance of peers from different cultures and social groups and work with them . Collaboration with team to prioritise the common goal and compromise individual priorities.	Extra Curricular Activity : 2 Hrs. Theory : 3 Hrs. Safe disposal of toxic dust, - safe handling and Periodic testing of lifting equipment
	6	ES	Characteristic of a responsible citizen- Display the same by respecting self, others, environment, care for duty and value for time.	Energy saving Tips of ITI electricity Usage.

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Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
3	1	Theory	Marking scheme, marking material-chalk, Prussian blue. - Cleaning tools- Scraper, wire brush, Emery paper,	Perform marking using all marking aids, like steel rule with spring callipers, dividers, scribe, punches, chisel etc. on MS Flat/Sheet Metal.
	2		Description, care and use of Surface plates, steel rule, measuring tape, try square. Callipers-inside and outside. Dividers, surface gauges, scribe,	Perform marking using all marking aids, like steel rule with spring callipers, dividers, scribe, punches, chisel etc. on MS Flat/Sheet Metal.
	3	W/Shop calculation	Square and Square Root -> Simple problems using calculator -> Application of Pythagoras Theorem and related problems	Perform marking using all marking aids, like steel rule with spring callipers, dividers, scribe, punches, chisel etc. on MS Flat/Sheet Metal.
	4	Engg. Drawing	Free hand drawing of – -> Lines, polygons, ellipse etc.	Perform marking using all marking aids, like steel rule with spring callipers, dividers, scribe, punches, chisel etc. on MS Flat/Sheet Metal, Measure a wheel base of a vehicle with measuring tape.
	5	ES	Adopting best practices and aspire to follow success stories of individual for personal development.	Extra Curricular Activity : 2 Hrs. Theory : 3 Hrs. PUNCHES-prick punch, centre punch, pin punch, hollow punch, number and letter punch. Chisel-flat, cross-cut. Hammer- ball peen, lump, mallet. Screw drivers-blade
	6	ES	English literacy:-Importance of learning english	Measure a wheel base of a vehicle with measuring tape.

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## Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
4	1	Theory	Screwdriver, Phillips screw driver, Ratchet screwdriver. Allen key, bench vice & C-clamps,	Measure valve spring tension using spring tension tester
	2		Pliers - Combination pliers, multi grip, long nose, flat-nose, Nippers or pincer pliers, Side cutters, Tin snips, Circlip pliers, external circlips pliers. Air impact wrench	Measure valve spring tension using spring tension tester
	3	W/Shop calculation	Monthly Test WCS	Perform to remove wheel lug nuts with use of an air impact wrench
	4	Engg. Drawing	Monthly Test ED	Perform to remove wheel lug nuts with use of an air impact wrench Operate General workshop tools & power tools.
	5	ES	Monthly Test ES	Monthly Test theory
	6	ES	Different naming words, word used for replacing names, action words, describing people, place and their use.	Monthly Test Practical

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## Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
5	1	Theory	Description, Least Count calculation, care & use of - Micrometers- Outside	Perform measuring practice on Cam height, Camshaft Journal dia, crankshaft journal dia, Valve stem dia, piston diameter, and piston pin dia with outside Micrometres
	2		Description, Least Count calculation, care & use of - Micrometers- Outside, and depth micrometer, - Micrometer adjustments,	Perform measuring practice on the height of the rotor of an oil pump from the surface of the housing or any other auto component measurement with depth micrometer.
	3	W/Shop calculation	Ratio and Proportions -> Direct and Indirect proportion -> Percentage -> Changing percentage to decimal	Perform measuring practice on valve spring free length.
	4	Engg. Drawing	Geometrical figures and blocks with dimension	Perform measuring practice on cylinder bore, Connecting rod bore, inside diameter (ID) of a camshaft bearing with Telescope gauges. (
	5	ES	Introduction to punctuation-comma, full stop, question mark.	Extra Curricular Activity : 2 Hrs. Theory : 3 Hrs. Description, Least Count calculation, care & use of Vernier Calliper
	6	ES	Singular plural	Perform measuring practice on cylinder bore for taper and out-of-round with Dial bore gauges.

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## Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
6	1	Theory	telescope gauges Dial indicators, straightedge, feeler gauge, thread pitch gauge, vacuum gauge, tire pressure gauge.	Perform measuring practice to measure wear on crankshaft end play, crankshaft run out, and valve guide with dial indicator.
	2		telescope gauges Dial indicators, straightedge, feeler gauge, thread pitch gauge, vacuum gauge, tire pressure gauge.	Perform measuring practice to check the flatness of the cylinder head is warped or twisted with straightedge is used with a feeler gauge.
	3	W/Shop calculation	Types of metals -> Physical and Mechanical Properties of metals	Perform measuring practice to check the end gap of a piston ring, piston-to-cylinder wall clearance with feeler gauge.
	4	Engg. Drawing	Transferring measurement from the given object to the free hand sketches.	Perform practice to check engine manifold vacuum with vacuum gauge.
	5	ES	Change of tense-simple present, past; present, past progressive	Extra Curricular Activity : 2 Hrs. Theory : 3 Hrs. Telescope gauges, Dial bore gauges, Dial indicators, straightedge, feeler gauge, thread pitch gauge, vacuum gauge, tire pressure gauge.
	6	ES	Construction of simple sentences-kinds of sentences	Perform practice to check the air pressure inside the vehicle tyre is maintained at the recommended setting.

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Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
7	1	Theory	Different types of metal joint (Permanent, Temporary), methods of Bolting, Riveting, Soldering, Brazing, Seaming	Perform practice on general cleaning, checking and use of nut, bolts, & studs etc.
	2		Study of different types of screws, nuts, studs & bolts, locking devices, Such as lock nuts, cotter, split pins, keys,	Perform removal of stud/bolt from blind hole.
	3	W/Shop calculation	Types of ferrous and non-ferrous metals -> Introduction of iron and cast iron	Perform practice on cutting tools like Hacksaw, file, chisel, Sharpening of Chisels, center punch, safety precautions while grinding.
	4	Engg. Drawing	Solid objects – Cube, Cuboids, Cone, Prism, Pyramid, Frustum of Cone with dimensions.	Perform practice on cutting tools like Hacksaw, file, chisel, Sharpening of Chisels, center punch, safety precautions while grinding.
	5	ES	Usege of appropriate words to express themselves	Extra Curricular Activity : 2 Hrs. Theory : 3 Hrs. circlips, lock rings, lock washers and locating where they are used. Washers & chemical compounds can be used to help secure these fasteners.
	6	ES	Greetings & self indroduction	Perform practice on Hacksawing and filing to given dimensions.

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Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
8	1	Theory	Function of Gaskets, Selection of materials for gaskets and packing, oil seals. Types of Gaskets – paper, multilayered metallic, liquid, rubber, copper and printed. Thread Sealants- Various types like, locking, sealing, temperature resistance, antilocking, lubricating etc.	Perform practice on Hacksawing and filing to given dimensions.
	2		Study of different type of cutting tools like Hacksaw, File- Definition, parts of a file, specification, Grade, shape, different type of cut and uses., OFF-hand grinding with sander, bench and pedestal grinders, safety precautions while grinding. Definition of limits, fits & tolerances with examples used in auto components	Perform on Soldering & Brazing.
	3	W/Shop calculation	Monthly Test WCS	Perform on Soldering & Brazing.
	4	Engg. Drawing	Monthly Test ED	Perform practice on making various Gaskets like oil sump, intake manifold, water pump, tappet cover etc
	5	ES	Monthly Test ES	Monthly Test theory
	6	ES	Asking & self introduction	Monthly Test Practical



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Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
9	1	Theory	Drilling machine - Description and study of Bench type Drilling machine, Portable electrical Drilling machine, drill holding devices, Work Holding devices, Drill bits.	Perform practice on Marking and Drilling clear and Blind Holes, Sharpening of Twist Drills Safety precautions to be observed while using a drilling machine.
	2		Description and study of Bench type Drilling machine, Portable electrical Drilling machine, drill holding devices, Work holding devices, drill bits.	Perform practice on Marking and Drilling clear and Blind Holes, Sharpening of Twist Drills Safety precautions to be observed while using a drilling machine.
	3	W/Shop calculation	Difference between iron and steel, alloy steel and carbon steel -> Properties and uses of rubber, timber and insulating materials	Perform practice on Tapping a Clear and Blind Hole, Selection of tape drill Size, use of Lubrication, Use of stud extractor
	4	Engg. Drawing	Free hand drawing of hand tools and measuring tools, simple fasteners (nuts, bolts, rivets etc.) trade related sketches	Perform practice on Tapping a Clear and Blind Hole, Selection of tape drill Size, use of Lubrication, Use of stud extractor
	5	ES	Asking & responding to question	Extra Curricular Activity : 2 Hrs. Theory : 3 Hrs. Taps and Dies - Hand Taps and wrenches, Calculation of Tap drill sizes for metric and inch taps. Different type of Die and Die stock. Screw extractors.
	6	ES	Sharing information with others	Perform practice on Tapping a Clear and Blind Hole, Selection of tape drill Size, use of Lubrication, Use of stud extractor

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Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
10	1	Theory	Perform practice on Tapping a Clear and Blind Hole, Selection of tape drill Size, use of Lubrication, Use of stud extractor	Perform practice cutting Threads on a Bolt/ Stud. Adjustment of two piece Die, Reaming a hole/ Bush to suit the given pin/ shaft, scraping a given machined surface.
	2		Perform practice on Tapping a Clear and Blind Hole, Selection of tape drill Size, use of Lubrication, Use of stud extractor	Perform practice cutting Threads on a Bolt/ Stud. Adjustment of two piece Die, Reaming a hole/ Bush to suit the given pin/ shaft, scraping a given machined surface.
	3	W/Shop calculation	Mass, volume, density, weight & specific gravity	Perform practice cutting Threads on a Bolt/ Stud. Adjustment of two piece Die, Reaming a hole/ Bush to suit the given pin/ shaft, scraping a given machined surface.
	4	Engg. Drawing	Lines -> Definition, types and applications in drawing as per BIS: 46-2003 -> Classification of lines (Hidden, centre, construction, extension, Dimension, Section)	Perform practice cutting Threads on a Bolt/ Stud. Adjustment of two piece Die, Reaming a hole/ Bush to suit the given pin/ shaft, scraping a given machined surface.
	5	ES	Formal and informal communication	Extra Curricular Activity : 2 Hrs. Theory : 3 Hrs. Hand Reamers – Different Type of hand reamers, Drill size for reaming, Lapping, Lapping abrasives, type of Laps.
	6	ES	Speak and provide information about workplace	Perform practice cutting Threads on a Bolt/ Stud. Adjustment of two piece Die, Reaming a hole/ Bush to suit the given pin/ shaft, scraping a given machined surface.

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Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
11	1	Theory	State the various common metal Sheets used in Sheet Metal shop Sheet metal operations - Shearing, bending, Drawing, Squeezing - Sheet metal joints Hem & Seam Joints Fastening Methods - Riveting, soldering, Brazing. fluxes used on common joints. Sheet and wire-gauges.	Perform practice on making Rectangular Tray
	2		State the various common metal Sheets used in Sheet Metal shop Sheet metal operations - Shearing, bending, Drawing, Squeezing - Sheet metal joints Hem & Seam Joints Fastening Methods - Riveting, soldering, Brazing. fluxes used on common joints. Sheet and wire-gauges.	Perform practice on making Rectangular Tray Perform pipe bending, fitting nipples union in pipes
	3	W/Shop calculation	Related problems for mass, volume, density, weight & specific gravity	Perform pipe bending, fitting nipples union in pipes
	4	Engg. Drawing	Drawing lines of given length (Straight, curved) -> Drawing of parallel lines, perpendicular line -> Methods of Division of line segment	Perform Soldering and Brazing of Pipes
	5	ES	Discussions on current happenings. Self, Work, Environment	Extra Curricular Activity : 2 Hrs. Theory : 3 Hrs. The blow lamp its uses and pipe fittings.
	6	ES	Simple writing skills	Perform Soldering and Brazing of Pipes

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## Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
12	1	Theory	Electricity principles, - Ground connections, - Ohm's law,	Perform practice in joining wires using soldering Iron.
	2		Voltmeter, ammeter, Ohmmeter, Multimeter	Perform practice in joining wires using soldering Iron. Prepare simple electrical circuits, measuring of current, voltage and resistance using digital multimeter.
	3	W/Shop calculation	Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	Prepare simple electrical circuits, measuring of current, voltage and resistance using digital multimeter.
	4	Engg. Drawing	Drawing of Geometrical figures: Definition, nomenclature and practice of	Perform practice continuity test for fuses, jumper wires, fusible links and circuit breakers.
	5	ES	Communication Skills:-Interview Skill/Confidence Building	Extra Curricular Activity : 2 Hrs. Theory : 3 Hrs. Conductors & insulators, Wires, Shielding, Length vs. resistance, Resistor ratings
	6	ES	Professionalism and display of same at the institute and work place	Perform practice continuity test for fuses, jumper wires, fusible links and circuit breakers.

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## Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
13	1	Theory	Fuses & circuit breakers, - Ballast resistor, - Stripping wire insulation, - cable colour codes and sizes,	Perform diagnose series, parallel, series-parallel circuits using Ohm's law
	2		Resistors in Series circuits , - Parallel circuits and Series-parallel circuits, - Electrostatic effects, Capacitors and its applications, - Capacitors in series and parallel.	Check electrical circuit with a test lamp.
	3	W/Shop calculation	Quarterly Test WCS	Perform voltage drop test in circuits using multimeter, measure current flow using multimeter /ammeter
	4	Engg. Drawing	Quarterly Test ED	Perform voltage drop test in circuits using multimeter, measure current flow using multimeter /ammeter Check circuit using of service manual wiring diagram for troubleshooting
	5	ES	Quarterly Test ES	Quarterly Test theory
	6	ES	Understand the usage of appropriate words to express themselves communicate effectively on telephone.	Quarterly Test Practical

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## Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
14	1	Theory	Description of Chemical effects, Batteries & cells, Lead acid batteries & Stay Maintenance Free (SMF) batteries, - Magnetic effects, Heating effects, Thermo-electric energy, Thermistors, Thermo couples,	Execute cleaning and topping up of a lead acid battery
	2		Electrochemical energy, Photo-voltaic energy, Piezo-electric energy, Electromagnetic induction, - Relays, Solenoids, Primary & Secondary windings, Transformers, stator and rotor coils	Perform testing battery with hydrometer Perform connecting battery to a charger for battery charging and checking & testing a battery after charging
	3	W/Shop calculation	Related problems on speed and velocity	Perform connecting battery to a charger for battery charging and checking & testing a battery after charging
	4	Engg. Drawing	Triangle: different types	Measure and Diagnose the cause(s) of excessive Key-off battery drain (parasitic draw) and do corrective action
	5	ES	Manage personal hygiene and presentation positive body language:adopt and use it appropriately to build a positive impression	Theory : 3 hrs - . Revision <b>Parents instructor meeting: 2 hrs</b>
	6	ES	Different spatial zones: Understanding and need to maintain it, create safe zones for communication	Perform test of relay and solenoids and its circuit.

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Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
15	1	Theory	Description of Semiconductors, Solid state devices- Diodes,	Identify and test power and signal connectors for continuity
	2		Transistors, Thyristors, Uni Junction Transistors ( UJT),	Perform test and identify different type of Diodes, NPN & PNP Transistors for its functionality
	3	W/Shop calculation	Potential energy, Kinetic Energy and related problems with related problems	Perform test and identify different type of Diodes, NPN & PNP Transistors for its functionality
	4	Engg. Drawing	Rectangle, Square, Rhombus, Parallelogram	Construct and test simple logic circuits OR, AND & NOT and Logic gates using switches
	5	ES	Maintainig appropriate eye-contact in building trust and confidence	Extra Curricular Activity : 2 Hrs. Theory : 3 Hrs. Metal Oxide Field Effect Transistors ( MOSFETs), - Logic gates-OR, AND & NOT and Logic gates using switches.
	6	ES	Impact of touch in a formal environment. Acceptable and unacceptable touch.	Construct and test simple logic circuits OR, AND & NOT and Logic gates using switches

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Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
16	1	Theory	Introduction to welding and Heat Treatment Welding processes - Principles of Arc welding, brief description, classification and applications	Perform practice to make straight beads and Butt, Lap & T joints Manual Metal Arc Welding
	2		Introduction to welding and Heat Treatment Welding processes - Principles of Arc welding, brief description, classification and applications	Perform practice to make straight beads and Butt, Lap & T joints Manual Metal Arc Welding
	3	W/Shop calculation	Work, power, energy, HP, IHP, BHP and efficiency	Perform practice to make straight beads and Butt, Lap & T joints Manual Metal Arc Welding
	4	Engg. Drawing	Circle and its elements	Perform practice to make straight beads and Butt, Lap & T joints Manual Metal Arc Welding
	5	ES	Time management and planning skills interview skills its phases & ways to crack interview	Introduction to welding and Heat Treatment Welding processes - Principles of Arc welding, brief description, classification and applications Manual Metal Arc welding - principles, power sources, electrodes, welding parameters, edge preparation & fit up and welding techniques; - Oxy – Acetylene welding - principles, equipment, welding parameters, edge preparation & fit up and welding techniques; - Basic knowledge about advance welding process & equipments like MIG, TIG, Spot Welding, Plasma Cutter.
	6	ES	Handing setbacks/rejection and recover from it with an action plan.	Perform practice to make straight beads and Butt, Lap & T joints Manual Metal Arc Welding



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## Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
17	1	Theory	Introduction to welding and Heat Treatment Welding processes - Principles of Arc welding, brief description, classification and applications Manual Metal Arc welding -principles, power sources, electrodes, welding parameters, edge preparation & fit up and welding techniques; - Oxy – Acetylene welding - principles, equipment, welding parameters, edge preparation & fit up and welding techniques;.	Perform practice to make straight beads and Butt, Lap & T joints Manual Metal Arc Welding
	2			- Basic knowledge about advance welding process & equipments like MIG, TIG, Spot Welding, Plasma Cutter.
	3	W/Shop calculation	Monthly Test WCS	Perform practice to make straight beads and Butt, Lap & T joints Manual Metal Arc Welding
	4	Engg. Drawing	Monthly Test ED	Perform practice to make straight beads and Butt, Lap & T joints Manual Metal Arc Welding
	5	ES	Monthly test ES	Monthly Test theory
	6	ES	Developing strong professional contract/network to gain support in learning process and career as a whole	Monthly Test Practical

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## Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)	
18	1	Theory	Heat Treatment Process - Introduction, Definition of heat treatment, - - Definition of Annealing, Normalizing, Hardening and tempering. –	Set Gas welding flames and perform practice to make a straight beads and joints by Oxy – Acetylene welding	
	2		- Case hardening, Nitriding, Induction hardening - Flame Hardening process used in auto components with examples.		
	3	W/Shop calculation	Concept of heat and temperature, effects of heat, difference between heat and temperature -> Scales of temperature, Celsius, Farenhieght, Kelvin and Conversion between scales of temperature		
	4	Engg. Drawing	Different polygon and their values of included angles. Inscribed and circumscribed polygons		
	5	ES	Literacy:- Indtroduction to computers and its applications hardware and peripherals, srtating and shutting down of computer, basic ofn computer networks.		Extra Curricular Activity : 2 Hrs. Theory : 3 Hrs. Heat Treatment Process - Introduction, Definition of heat treatment, - - Definition of Annealing, Normalizing, Hardening and tempering. – - Case hardening, Nitriding, Induction hardening - Flame Hardening process used in auto components with examples.
	6	ES	Basics of Operating System, Types of operating systems, user interface of widows OS/ latest create, copy move and delete files and folders, use of external memory like pen drive, CD,DVD etc, introduction toinbuilt windows apps, tools and features.		Set Gas welding flames and perform practice to make a straight beads and joints by Oxy – Acetylene welding

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Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
19	1	Theory	Non-destructive Testing Methods - Importance of Non-Destructive Testing In Automotive Industry, Definition of NDT, - Liquid penetrant and Magnetic particle testing method – Portable Yoke method	Perform liquid penetrant testing method and Magnetic particle testing method.
	2		Non-destructive Testing Methods - Importance of Non-Destructive Testing In Automotive Industry, Definition of NDT, - Liquid penetrant and Magnetic particle testing method – Portable Yoke method	Perform liquid penetrant testing method and Magnetic particle testing method.
	3	W/Shop calculation	Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	Perform liquid penetrant testing method and Magnetic particle testing method.
	4	Engg. Drawing	Lettering & Numbering – -> Single Stroke	Identify of Hydraulic and pneumatic components used in vehicle. (
	5	ES	Basic operating of word processing, creating, opening and closing documents, use of shortcuts, creating and editing of text, formatting the text	Introduction to Hydraulics & Extra Curricular Activity : 2 Hrs. Theory : 3 Hrs. Pneumatics - Definition of Pascal law, pressure, Force, viscosity. Description, symbols and application in automobile of Gear pump-Internal & External,
	6	ES	Creating simple documents like resum, letter writing, job application etc., printing document	Identify of Hydraulic and pneumatic components used in vehicle.

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Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
20	1	Theory	Introduction to Hydraulics & Pneumatics - Definition of Pascal law, pressure, Force, viscosity. Description, symbols and application in automobile of Gear pump-Internal & External,	Tracing of hydraulic circuit on hydraulic jack, hydraulic power steering, and Brake circuit.
	2		Introduction to Hydraulics & Pneumatics - Definition of Pascal law, pressure, Force, viscosity. Description, symbols and application in automobile of Gear pump-Internal & External,	Tracing of hydraulic circuit on hydraulic jack, hydraulic power steering, and Brake circuit.
	3	W/Shop calculation	Co-efficient of linear expansion and related problems with assignments	Tracing of hydraulic circuit on hydraulic jack, hydraulic power steering, and Brake circuit.
	4	Engg. Drawing	Lettering & Numbering – Double Stroke	Identify components in Air brake systems
	5	ES	Basic of excel worksheet and its importance creating simple worksheets adding and average function, printing of simple excel sheet.	Extra Curricular Activity : 2 Hrs. Theory : 3 Hrs. single acting, double acting & Double ended cylinder; Directional control valves-2/2, 3/2, 4/2, 4/3 way valve, Pressure relief valve, Non return valve, Flow control valve used in automobile.
	6	ES	Introduction to world wide web. (www) usefull websides web browser-usege, search engine etc. Using popular sites like bharat skills, skill traing related govt. portals, nokari.com, and other job portals.	Identify components in Air brake systems

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21	1	Theory	Auto Industry - History, leading manufacturers,	Identify of different types of Vehicle.
	2		- Development in automobile industry, Classification of vehicles on the basis of load as per central motor vehicle rule, wheels, final drive, and fuel used, axles,	Demonstrate of vehicle specification data
	3	W/Shop calculation	Monthly Test WCS	Identify of vehicle information Number
	4	Engg. Drawing	Monthly Test ED	(VIN). Demonstrate of Garage, Service station equipments.- Vehicle hoists – Two post and four post hoist, Engine hoists, Jacks, Stands.
	5	ES	Monthly Test ES	Monthly Test theory
	6	ES	Cits Applications , apprenticeship portal (naps), resize images, singing up, online fund transfer, using UPI gateway	Monthly Test Practical

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22	1	Theory	Description of internal & external combustion engines, Classification of IC engines, Principle & working of 2&4-	Identify the different parts of IC Engine
	2		Principle of Spark Ignition Engine(SI), differentiate between 2-stroke and 4 stroke, C.I engine and S.I Engine Main Parts of IC Engine - Direct injection and indirect injection, Technical terms used in engine, Engine specification.	Identify the different parts of IC Engine
	3	W/Shop calculation	Problem of Heat loss and heat gain with assignments -> Thermal conductivity and insulators	Identify the different parts in a diesel engine of LMV/ HMV
	4	Engg. Drawing	Lettering & Numbering – Inclined.	Identify the different parts in a diesel engine of LMV/ HMV
	5	ES	Creating and using an email account like gmail, and any other, usages of cc and bcc, attaching documents checking email and composing email	Extra Curricular Activity : 2 Hrs. Theory : 3 Hrs. Direct injection and indirect injection, Technical terms used in engine, Engine specification.
	6	ES	Scanning QR/AR code, sharing best practices and downloading trade Related videos using Wi-Fi, fund Transfer through app like BHIM.	Perform practice on starting and stopping of diesel engines. Observe and report the reading of Tachometer, Odometer, temp and Fuel gauge under ideal and on load condition.

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Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
23	1	Theory	Study of various gauges/ instrument on a dash board of a vehicle- Speedometer, Tachometer, Odometer and Fuel gauge, and Indicators such as gearshift position, Seat belt warning light, Parking-brake-engagement warning light and an Engine-malfunction light.	Perform practice on starting and stopping of diesel engines. Observe and report the reading of Tachometer, Odometer, temp and Fuel gauge under ideal and on load condition.
	2		Different type of starting and stopping method of Diesel Engine	Practice on dismantling Diesel engine of LMV/HMV as per procedure.
	3	W/Shop calculation	Boiling point and melting point of different metals and Nonmetals -> Concept of pressure and its units in different system	Practice on dismantling Diesel engine of LMV/HMV as per procedure.
	4	Engg. Drawing	Dimensioning and its Practice -> Definition, types and methods of dimensioning (functional, non-functional and auxiliary) -> Position of dimensioning (Unidirectional, Aligned)	Practice on dismantling Diesel engine of LMV/HMV as per procedure.
	5	ES	Entrepreneur skills:- Need of becoming entrepreneur	Extra Curricular Activity : 2 Hrs. Theory : 3 Hrs. Procedure for dismantling of diesel engine from a vehicle
	6	ES	Ways to becoming a good entrepreneur	Practice on dismantling Diesel engine of LMV/HMV as per procedure

# Trade - Mech. Diesel

## Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
24	1	Theory	Description and Constructional feature of Cylinder head, Importance of Cylinder head design, - Type of Diesel combustion chambers, - Effect on size of Intake & exhaust passages, Head gaskets. - Importance of Turbulence	Perform Overhauling of cylinder head assembly, Use of service manual for clearance and other parameters,(
	2		Description and Constructional feature of Cylinder head, Importance of Cylinder head design, - Type of Diesel combustion chambers, - Effect on size of Intake & exhaust passages, Head gaskets. - Importance of Turbulence	Perform Overhauling of cylinder head assembly, Use of service manual for clearance and other parameters,(
	3	W/Shop calculation	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC, DC and their comparison, voltage , resistance and their units	Perform practice on removing rocker arm assembly manifolds
	4	Engg. Drawing	Types of arrowhead -> Leader line with text -> Symbols preceding the value of dimension and dimensional tolerance.	Perform practice on removing rocker arm assembly manifold Perform practice on removing the valves and its parts from the cylinder head, cleaning
	5	ES	Enabling environment available to vecome an entrepreneur	Extra Curricular Activity : 2 Hrs. Theory : 3 Hrs. Description and Function of Engine Valves, different types, materials, - Type of valve operating mechanism, Importance of Valve seats, Valve seats inserts in cylinder heads,
	6	ES	Different Govt. institutions/schemes promoting entreprenur viz., Gramin bank, PMMY-MUDRA loan, DIC, SIDA SISI, NSIC, SIDO.	Perform practice on removing the valves and its parts from the cylinder head, cleaning



# Trade - Mech. Diesel

## Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
25	1	Theory	valves & valve Actuating mechanism - - Description and Function of Engine Valves, different types, materials, - Type of valve operating mechanism, Importance of Valve seats, Valve seats inserts in cylinder heads,	Inspection of cylinder head and manifold surfaces for warping, cracks and flatness. Checking valve seats & valve guide – Replacing the valve if necessary Check leaks of valve seats for leakage – Dismantle rocker shaft assembly -clean & check rocker shaft- and levers, for wear and cracks and reassemble
	2		- importance of Valve rotation, Valve stem oil seals, size of Intake valves, Valve trains, Valve- timing diagram, concept of Variable valve timing.	
	3	W/Shop calculation	Conductor, Insulator, types of connections- Series and Parallel, -> Ohm's Law, relation between VIR & related problems	Check leaks of valve seats for leakage – Dismantle rocker shaft assembly -clean & check rocker shaft- and levers, for wear and cracks and reassemble
	4	Engg. Drawing	Sizes and layout of drawing sheets -> Selection of sizes -> Title Block, its position and content -> Item Reference on Drawing Sheet (Item list)	Check valve springs, tappets, push rods, tappet screws and valve stem cap. Reassembling valve parts in sequence, refit cylinder head and manifold & rocker arm assembly, adjustable valve clearances, starting engine after adjustments
	5	ES	Day to day monitoring mechanism for maintaing an enterprise.	Extra Curricular Activity : 2 Hrs. Theory : 3 Hrs. Description of Camshafts & drives , - Description of Overhead camshaft (SOHC and DOHC), importance of Cam lobes, Timing belts & chains, Timing belts & tensioners
	6	ES	Different Government shcems supporting entrepreneurship.	Check valve springs, tappets, push rods, tappet screws and valve stem cap. Reassembling valve parts in sequence, refit cylinder head and manifold & rocker arm assembly, adjustable valve clearances, starting engine after adjustments.

# Trade - Mech. Diesel

## Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
26	1	Theory	Description & functions of different types of pistons, piston rings and piston pins and materials. - Used recommended clearances for the rings and its necessity precautions while fitting rings, common troubles and remedy. - Compression ratio.	Perform Overhauling piston and connecting rod assembly. Use of service manual for clearance and other parameters
	2		materials used & composition of bearing materials- Shell bearing and their advantages- special bearings material for diesel engine#	Perform Practice on removing oil sump and oil pump – clean the sump Perform removing the big end bearing, connecting rod with the piston
	3	W/Shop calculation	Quarterly Test WCS	Perform removing the piston rings; Dismantle the piston and connecting rod. Check the side clearance of piston rings in the piston groove & lands for wear. Check piston skirt and crown for damage and scuffing, clean oil holes.
	4	Engg. Drawing	Quarterly Test ED	Measure -the piston ring close gap in the cylinder, clearance between the piston and the liner, clearance between crank pin and the connecting rod big end bearing.
	5	ES	Quarterly Test ES	Quarterly Test theory
	6	ES	Examples of successful and unsuccessful entrepreneurs.	Quarterly Test Practical

# Trade - Mech. Diesel

## Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
27	1	Theory	Description and function of Crank shaft, camshaft, - Engine bearings- classification and location materials used & composition of bearing materials- Shell bearing and their advantages- special bearings material for diesel engine#	Perform Overhauling of crankshaft, Use of service manual for clearance and other parameters
	2		Application bearing failure & its causes- care & maintenance. - Crank-shaft balancing, firing order of the engine.	Perform removing damper pulley, timing gear/timing chain, flywheel, main bearing caps, bearing shells and crankshaft from engine]
	3	W/Shop calculation	Electrical power, energy and their units, calculation with assignments	Inspect oil retainer and thrust surfaces for wear
	4	Engg. Drawing	Method of presentation of Engg. Drawing -> Pictorial View -> Orthographic View -> Isometric View	Measure crank shaft journal for wear, taper and ovality
	5	ES	Maintaining efficiency at workplace:- Factors affecting productivity	Theory : 3 hrs - . Revision <b>Parents instructor meeting: 2 hrs</b>
	6	ES	Improving productivity	Demonstrate crank shaft for fillet radii, bend & twist.

# Trade - Mech. Diesel

## Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
28	1	Theory	Description and function of the fly wheel and vibration damper.	Inspect flywheel and mounting flanges, spigot and bearing.(
	2		Crank case & oil pump, gears timing mark, Chain sprockets, chain tensioner	Check vibration damper for defect.Perform removing cam shaft from engine block, Check for bend & twist of camshaft. Inspection of cam lobe, camshaft journals and bearings and measure cam lobe lift.
	3	W/Shop calculation	Magnetic induction, self and mutual inductance and EMF generation -> Electrical Power, HP, Energy and units of electrical energy	Perform removing cam shaft from engine block, Check for bend & twist of camshaft. Inspection of cam lobe, camshaft journals and bearings and measure cam lobe lift.
	4	Engg. Drawing	Symbolic representation – different symbols used in the trades -> Fastener (Rivets, Bolts and Nuts)	Perform removing cam shaft from engine block, Check for bend & twist of camshaft. Inspection of cam lobe, camshaft journals and bearings and measure cam lobe lift.
	5	ES	Personal finance literacy planning, saving, tax govt. schemes for financial safety e.g. Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY) etc.	Function of clutch & coupling units attached to flywheel.
	6	ES	Occupational Safety, Health and environment Education:-Introduction to occupational safety & health at work place, occupational hygiene. Basic Hazards, chemical, physical (electrical. Temperature, illumination) ergonomic, biological, vibro acoustic, mechanical, psychosocial hazards, prevention of hazards	Extra Curricular Activity : 2 Hrs. Theory : 3 Hrs. Perform removing cam shaft from engine block, Check for bend & twist of camshaft. Inspection of cam lobe, camshaft journals and bearings and measure cam lobe lift.

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

# Trade - Mech. Diesel

## Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
29	1	Theory	Description of Cylinder block, -	Perform cleaning and checking of cylinder blocks
	2		Cylinder block Description	Surface for any crack, flatness measure cylinder bore for taper & ovality, clean oil gallery passage and oil pipe line.
	3	W/Shop calculation	Area and perimeter of square, rectangle and parallelogram -> Area and Perimeter of Triangle	Perform bore - descale water passages and examine
	4	Engg. Drawing	Bars and profile sections -> Weld, Brazed and soldered joints	Removing cylinder liners from scrap cylinder block. Perform practice in measuring and refitting new liners as per maker's recommendations precautions while fitting new liners.
	5	ES	Different types of personal protective equipment (PPE), Accident prevention techniques	Extra Curricular Activity : 2 Hrs. Theory : 3 Hrs. Function of clutch & coupling units attached to flywheel.
	6	ES	Care of injured & sick at the workplace first-aid & transportation of sick person Basic provisions of safety & health	Perform practice in measuring and refitting new liners as per maker's recommendations precautions while fitting new liners.

# Trade - Mech. Diesel

## Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
30	1	Theory	Engine assembly procedure with aid of special tools and gauges used for engine assembling	Perform reassembling all parts of engine in correct sequence and torque all bolts and nuts as per workshop
	2		Introduction to Gas Turbine, Comparison of single and two stage turbine engine, - Different between gas turbine and Diesel Engine.	Perform reassembling all parts of engine in correct sequence and torque all bolts and nuts as per workshop manual of the engine.
	3	W/Shop calculation	Monthly Test WCS	Perform testing cylinder compression, Check idle speed.
	4	Engg. Drawing	Monthly Test ED	Perform testing cylinder compression, Check idle speed. Perform removing & replacing a cam belt, and adjusting an engine drive belt, replacing an engine drive belt
	5	ES	Monthly Test ES	Monthly Test theory
	6	ES	Introduction to environment, ecosystem and factors causing imbalance, pollution and pollutant including liquid, gaseous, solid and hazardous waste, protecting the environment-energy, conservation, ground water, global warming, responsibility about the environment, segregation and disposal of waste	Monthly Test Practical

# Trade - Mech. Diesel

## Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
31	1	Theory	Need for Cooling systems - Heat transfer method, Boiling point & pressure, - Centrifugal force, - Vehicle coolant properties and recommended change of interval, - Different type of cooling	Perform practice on checking & top up coolant, draining & refilling coolant, checking / replacing a coolant hose. (
	2		Basic cooling system components - Radiator, Coolant hoses, - - Water pump, - Cooling system thermostat, Cooling fans, - Temperature indicators, - Radiator pressure cap, Recovery system, Thermo-switch.	Perform practice on checking & top up coolant, draining & refilling coolant, checking / replacing a coolant hose. (
	3	W/Shop calculation	Area and Perimeter of Circle, Semi-circle, circular ring, sector of circle, hexagon and ellipse	Perform test cooling system pressure.
	4	Engg. Drawing	Electrical and electronics element -> Piping joints and fitting	Execute on removing & replacing radiator/ thermostat check the radiator pressure cap
	5	ES	Different actions people that affect other and the environment.	Extra Curricular Activity : 2 Hrs. Theory : 3 Hrs. Basic cooling system components - Radiator, Coolant hoses, - - Water pump, - Cooling system thermostat, Cooling fans, - Temperature indicators
	6	ES	Types, causes & effects, areas in india that are prone to be affected, preparedness & mitigation, dos and don'ts-before, during and after any disaster, how to reduce man-made disasters.	Execute on removing & replacing radiator/ thermostat check the radiator pressure cap

# Trade - Mech. Diesel

## Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
32	1	Theory	Basic cooling system components - Radiator, Coolant hoses, - - Water pump, - Cooling system thermostat, Cooling fans, - Temperature indicators, - Radiator pressure cap, Recovery system, Thermo-switch..	Test of thermostat.
	2		Basic cooling system components - Radiator, Coolant hoses, - - Water pump, - Cooling system thermostat, Cooling fans, - Temperature indicators, - Radiator pressure cap, Recovery system, Thermo-switch..	Perform cleaning & reverse flushing.
	3	W/Shop calculation	Surface area and Volume of solids- cube, cuboids, cylinder, sphere and hollow cylinder	Perform cleaning & reverse flushing.
	4	Engg. Drawing	Projections -> Concept of axes plane and quadrant	Perform overhauling water pump and refitting.
	5	ES	-> Concept of axes plane and quadrant	Extra Curricular Activity : 2 Hrs. Theory : 3 Hrs. Basic cooling system components - Radiator, Coolant hoses, - - Water pump,
	6	ES	Self-Awareness, articulating personal values, value-based decision making, dilemma situations.	Perform overhauling water pump and refitting.



# Trade - Mech. Diesel

## Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
33	1	Theory	Need for lubrication system, - Functions of oil, Viscosity and its grade as per SAE , - Oil additives, Synthetic oils, The lubrication system, Splash system, - Pressure system - Corrosion/noise reduction in the lubrication system.	Perform checking engine oil, draining engine oil, replacing oil filter, & refilling engine oil
	2		Lubrication system components - Description and function of Sump, Oil collection pan, Oil tank, Pickup tube, - different type of Oil pump & Oil filters Oil pressure relief valve, Spurt holes & galleries, Oil indicators, Oil cooler.	Perform checking engine oil, draining engine oil, replacing oil filter, & refilling engine oil
	3	W/Shop calculation	Finding lateral surface area , total surface area and capacity in liters of hexagonal, conical and cylindrical shaped vessels	Execute overhauling of oil pump, oil coolers, air cleaners and air filters and adjust oil pressure relief valves, repairs to oil flow pipe lines and unions if necessary.
	4	Engg. Drawing	Projections -> Concept of axes plane and quadrant	Execute overhauling of oil pump, oil coolers, air cleaners and air filters and adjust oil pressure relief valves, repairs to oil flow pipe lines and unions if necessary.
	5	ES	Identify sources and types of stress (positive/negative stress)	Extra Curricular Activity : 2 Hrs. Theory : 3 Hrs. Lubrication system components - Description and function of Sump, Oil collection pan, Oil tank, Pickup tube, - different type of Oil pump & Oil filters Oil pressure relief valve, Spurt holes & galleries, Oil indicators, Oil cooler.
	6	ES	Managing stress (long term/ short-term)	Execute overhauling of oil pump, oil coolers, air cleaners and air filters and adjust oil pressure relief valves, repairs to oil flow pipe lines and unions if necessary.

# Trade - Mech. Diesel

## Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
34	1	Theory	Intake & exhaust systems – - Description of Diesel induction & Exhaust systems. Description & function of air compressor, exhauster, Super	Execute dismantling air compressor and exhauster and cleaning all parts - measuring wear in the cylinder, reassembling all parts and fitting them
	2		Exhaust system components- - Description and function of Exhaust manifold, Exhaust pipe, Extractors, Mufflers- Reactive, absorptive, Combination of Catalytic converters, Flexible connections, Ceramic coatings, Back-pressure, - Electronic mufflers.	Execute dismantling & assembling of turbocharger, check for axial clearance as per service manual.
	3	W/Shop calculation	Monthly Test WCS	Examine exhaust system for rubber mounting for damage, deterioration and out of position; for leakage, loose connection, dent and damage;
	4	Engg. Drawing	Monthly Test ED	Perform practice on exhaust manifold removal and installation, practice on Catalytic converter removal and installation. Check Exhaust system for rubber mounting for damage, deterioration and out of position; for leakage, loose connection, dent and damage.
	5	ES	Monthly Test ES	Monthly Test theory
	6	ES	Handling rejection and building resilience, identify day wasters.	Monthly Test Practical

# Trade - Mech. Diesel

## Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
35	1	Theory	Fuel Feed System in IC Engine(Petrol & Diesel) - Gravity feed system, Forced feed system, main parts, Fuel Pumps-	Perform work on removing & cleaning fuel tanks, checking leaks in the fuel lines.
	2		Diesel Fuel Systems - Description and function of Diesel fuel injection, fuel characteristics, concept of Quiet diesel technology & Clean diesel technology.	Perform work on removing & cleaning fuel tanks, checking leaks in the fuel lines.
	3	W/Shop calculation	Simple machines, Effort and load, mechanical advantage, velocity ratio, efficiency of machine	Perform soldering & repairing pipe lines and Unions, brazing nipples to high pressure line studying the fuel feed system in diesel engines, draining of water separators.
	4	Engg. Drawing	Orthographic projections	Perform soldering & repairing pipe lines and Unions, brazing nipples to high pressure line studying the fuel feed system in diesel engines, draining of water separators.
	5	ES	Labour Welfare legislation:-Benefits guaranteed under various acts- Factories act, apprenticeship act, employees state insurance act(ESI), payment wages act.	Extra Curricular Activity : 2 Hrs. Theory : 3 Hrs. Diesel fuel system components - Description and function of Diesel tanks & lines, Diesel fuel filters, water separator, Lift pump, Plunger pump, Priming pump, - Inline injection pump, Distributor-type injection pump, Diesel injectors, Glow plugs, Cummins & Detroit Diesel injection.
	6	ES	Employees provident fund act, the workmen's compensation act, POSH. Interpret applicable labour and industrial laws.	Execute overhauling of Feed Pumps (Mechanical & Electrical).

# Trade - Mech. Diesel

## Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
36	1	Theory	Diesel fuel system components - Description and function of Diesel tanks & lines, Diesel fuel filters, water separator, Lift pump, Plunger pump, Priming pump, - Inline injection pump, Distributor-type injection pump, Diesel injectors, Glow plugs, Cummins & Detroit Diesel injection.	Execute overhauling of Feed Pumps (Mechanical & Electrical).
	2			Perform bleeding of air from the fuel lines, servicing primary & secondary filters
	3	W/Shop calculation	relation between efficiency	Perform bleeding of air from the fuel lines, servicing primary & secondary filters
	4	Engg. Drawing	Orthographic projections	Execute removing a fuel injection pump from an engine-refit the pump to the engine re- set timing - fill lubricating-oil start and adjust slow speed of the engine.
	5	ES	Quality management:-Create awareness on introduction of quality concepts.	Extra Curricular Activity : 2 Hrs. Theory : 3 Hrs. Diesel fuel system components - Description and function of Diesel tanks & lines, Diesel fuel filters, water separator, Lift pump, Plunger pump, Priming pump, - Inline injection pump, Distributor-type injection pump, Diesel injectors, Glow plugs, Cummins & Detroit Diesel injection.
	6	ES	Concept of Quality Management(QMS), PDCA, Fishbone, 5s, 5d, kaizen.	Execute removing a fuel injection pump from an engine-refit the pump to the engine re- set timing - fill lubricating-oil start and adjust slow speed of the engine..

# Trade - Mech. Diesel

## Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
37	1	Theory	Electronic Diesel control- - Electronic Diesel control systems, Common Rail Diesel Injection (CRDI) system, hydraulically actuated electronically controlled unit injector (HEUI) diesel injection system. Sensors, actuators and ECU (Electronic Control Unit) used in Diesel Engines.	Execute removing a fuel injection pump from an engine-refit the pump to the engine re- set timing - fill lubricating-oil start and adjust slow speed of the engine.
	2		Electronic Diesel control- - Electronic Diesel control systems, Common Rail Diesel Injection (CRDI) system, hydraulically actuated electronically controlled unit injector (HEUI) diesel injection system. Sensors, actuators and ECU (Electronic Control Unit) used in Diesel Engines.	Execute overhauling of injectors and testing of injector.
	3	W/Shop calculation	- Functions of oil, Viscosity and its grade as per SAE ,	Execute overhauling of injectors and testing of injector. (
	4	Engg. Drawing	- Oil additives, Synthetic oils, The lubrication system,	General maintenance of Fuel Injection Pumps (FIP).
	5	ES	Splash system, - Pressure system	Extra Curricular Activity : 2 Hrs. Theory : 3 Hrs. Electronic Diesel control- - Electronic Diesel control systems, Common Rail Diesel Injection (CRDI) system, hydraulically actuated electronically controlled unit injector (HEUI) diesel injection system. Sensors, actuators and ECU (Electronic Control Unit) used in Diesel Engines.
	6	ES	Preparation to the world of work:-Identify the difference between job and career	General maintenance of Fuel Injection Pumps (FIP)

# Trade - Mech. Diesel

## Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
38	1	Theory	Marine & Stationary Engine:- Types, - double acting engines, opposed piston engines, starting systems, cooling systems, lubricating systems, supplying fuel oil, hydraulic coupling,	Execute Start engine adjust idling speed and damping device in pneumatic governor and venture control unit checking.I
	2		Reduction gear drive, electromagnetic coupling	Verify performance of engine with off load adjusting timings. Start engine-adjusting idle speed of the engine fitted with mechanical governor
	3	W/Shop calculation	Lever and its types	Check performance for missing cylinder by isolatingdefective injectors and test-dismantle and replace defective parts and reassemble and refit back to the engine.
	4	Engg. Drawing	Method of first angle and third angle projections (definition and difference)	Check performance for missing cylinder by isolatingdefective injectors and test-dismantle and replace defective parts
	5	ES	Job roles available in respective traes	Extra Curricular Activity : 2 Hrs. Theory : 3 Hrs. Electrical drive, generators and motors, supercharging.
	6	ES	Awareness of industries, and the respective professional pathways.	Check performance for missing cylinder by isolatingdefective injectors and test-dismantle and replace defective parts and reassemble and refit back to the engine.

# Trade - Mech. Diesel

## Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
39	1	Theory	Emission Control:- Vehicle emissions - Standards- Euro and Bharat II, III, IV, V Sources of emission, Combustion, Combustion chamber design. Types of emissions	Monitor emissions procedures by use of Engine gas analyser or Diesel smoke meter.
	2		Characteristics and Effect of Hydrocarbons, Hydrocarbons in exhaust gases, Oxides of nitrogen, Particulates,	Monitor emissions procedures by use of Engine gas analyser or Diesel smoke meter.
	3	W/Shop calculation	Quarterly Test WCS	Checking & cleaning a Positive crank case ventilation (PCV) valve. Obtaining & interpreting scan tool data. Inspection of EVAP canister purges system by use of scan Tool.
	4	Engg. Drawing	Quarterly Test ED	Checking & cleaning a Positive crank case ventilation (PCV) valve. Obtaining & interpreting scan tool data. Inspection of EVAP canister purges system by use of scan Tool.EGR /SCR Valve Remove and installation for
	5	ES	Quarterly Test ES	Quarterly Test theory
	6	ES	Awareness of higher education/education/up skilling (short- term) options Steps involved in online application for instructor course,	Quarterly Test Practical

# Trade - Mech. Diesel

## Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
40	1	Theory	Basic Knowledge about DC Generator & AC Generator. - Constructional details of Alternator	Perform removing alternator from vehicle dismantling, cleaning checking for defects, assembling and testing for motoring action of alternator & fitting to vehicles. (
	2		Description of charging circuit operation of alternators, regulator unit, ignition warning lamp- troubles and remedy in charging system. Description of starter motor circuit, - Constructional details of starter motor solenoid switches, common troubles and remedy in starter	Perform removing alternator from vehicle dismantling, cleaning checking for defects, assembling and testing for motoring action of alternator & fitting to vehicles. (
	3	W/Shop calculation	Measurement of Angle, Trigonometrical Ratios	Perform removing alternator from vehicle dismantling, cleaning checking for defects, assembling and testing for motoring action of alternator & fitting to vehicles. (
	4	Engg. Drawing	Symbol of 1st angle and 3rd angle projection in 3rd angle.	Practice on removing starter motor Vehicle and overhauling the starter motor, testing of starter motor
	5	ES	apprenticeship and different jobs in popular site like the indiagobs.com, naukari.com, monsterindian.com, GOVT.website.	Theory : 3 hrs - . Revision <b>Parents instructor meeting: 2 hrs</b>
	6	ES	forms of greeting	Practice on removing starter motor Vehicle and overhauling the starter motor, testing of starter motor



# Trade - Mech. Diesel

## Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
41	1	Theory	Diesel fuel system components - Description and function of Diesel tanks & lines, Diesel fuel filters, water separator, Lift pump, Plunger pump, Priming pump, - Inline injection pump, Distributor-type injection pump, Diesel injectors, Glow plugs, Cummins & Detroit Diesel injection.	Execute troubleshooting in LMV/HMV for Engine Not starting – Mechanical & Electrical causes, High fuel consumption, Engine overheating, Low Power Generation, Excessive oil consumption, Low/High Engine Oil Pressure, Engine Noise.
	2			
	3	W/Shop calculation	- Description and function of Diesel tanks & lines, Diesel fuel filters, water separator, Lift pump, Plunger pump, Priming pump,	Execute troubleshooting in LMV/HMV for Engine Not starting – Mechanical & Electrical causes, High fuel consumption, Engine overheating, Low Power Generation, Excessive oil consumption, Low/High Engine Oil Pressure, Engine Noise.
	4	Engg. Drawing	Symbol of 1st angle and 3rd angle projection in 3rd angle.	
	5	ES	Use of positive body language	Extra Curricular Activity : 2 Hrs. Theory : 3 Hrs. Diesel injectors, Glow plugs, Cummins & Detroit Diesel injection.
	6	ES	Handling grievances (Use of ask-listen-repeat technique)	Execute troubleshooting in LMV/HMV for Engine Not starting – Mechanical & Electrical causes, High fuel consumption, Engine overheating, Low Power Generation, Excessive oil consumption, Low/High Engine Oil Pressure, Engine Noise.

# Trade - Mech. Diesel

## Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
42	1	Theory	Troubleshooting : Causes and remedy for - Engine Not starting Mechanical & Electrical causes, - High fuel consumption, Engine overheating, - Low Power Generation, - Excessive oil consumption, - Low/High Engine Oil Pressure, Engine Noise.	Execute troubleshooting in LMV/HMV for Engine Not starting – Mechanical & Electrical causes, High fuel consumption, Engine overheating, Low Power Generation, Excessive oil consumption, Low/High Engine Oil Pressure, Engine Noise.
	2		Troubleshooting : Causes and remedy for - Engine Not starting Mechanical & Electrical causes, - High fuel consumption, Engine overheating.	Execute troubleshooting in LMV/HMV for Engine Not starting – Mechanical & Electrical causes, High fuel consumption, Engine overheating, Low Power Generation, Excessive oil consumption.
	3	W/Shop calculation	Trigonometry-Application in calculating height and distance	Execute troubleshooting in LMV/HMV for Engine Not starting – Mechanical & Electrical causes, High fuel consumption, Engine overheating, Low Power Generation, Excessive oil consumption.
	4	Engg. Drawing	Orthographic projection from isometric projection	Execute troubleshooting in LMV/HMV for Engine Not starting – Mechanical & Electrical causes, High fuel consumption, Engine overheating, Low Power Generation, Excessive oil consumption.
	5	ES	Relationship building with customers, importance of probing.	Troubleshooting : Causes and remedy for - Engine Not starting Mechanical & Electrical causes
	6	ES	Use of open-ended/close-ended questions to gauge requirement.	Execute troubleshooting in LMV/HMV for Engine Not starting – Mechanical & Electrical causes, High fuel consumption, Engine overheating, Low Power Generation, Excessive oil consumption.

# Trade - Mech. Diesel

## Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
43	1	Theory	Troubleshooting : Causes and remedy for - Engine Not starting Mechanical & Electrical causes, - High fuel consumption, Engine overheating	Execute troubleshooting in LMV/HMV for Engine Not starting – Mechanical & Electrical causes, High fuel consumption, Engine overheating, Low Power Generation, Excessive oil
	2		Troubleshooting : Causes and remedy for - Engine Not starting Mechanical & Electrical causes, - High fuel consumption, Engine overheating	Execute troubleshooting in LMV/HMV for Engine Not starting – Mechanical & Electrical causes, High fuel consumption, Engine overheating, Low Power Generation, Excessive oil
	3	W/Shop calculation	Quarterly Test WCS	Execute troubleshooting in LMV/HMV for Engine Not starting – Mechanical & Electrical causes, High fuel consumption, Engine overheating, Low
	4	Engg. Drawing	Quarterly Test ED	Execute troubleshooting in LMV/HMV for Engine Not starting – Mechanical & Electrical causes, High fuel consumption, Engine overheating, Low Power Generation, Excessive oil consumption, Low/High Engine Oil Pressure, Engine Noise.
	5	ES	Quarterly Test ES	Troubleshooting : Causes and remedy for - Engine Not starting Mechanical & Electrical causes, - High fuel consumption, Engine overheating, - Low Power Generation, - Excessive oil consumption, - Low/High Engine Oil Pressure, Engine Noise.
	6	ES	Revision	Quarterly Test Practical

# Trade - Mech. Diesel

## Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
44	1	Theory	Revision	Revision
	2		Revision	Revision
	3	W/Shop calculation	Trigonometry-(Simple Applications)	Revision
	4	Engg. Drawing	Reading of fabrication drawing	Revision
	5	ES	Revision	Theory : 3 hrs - . Revision <b>Parents instructor meeting: 2 hrs</b>
	6	ES	Revision	Revision