TRADE: MECHANIC (DIESEL)

PERIOD OF TRAINING: ONE YEAR OR 52 WEEKS

The syllabus for the one year of training is as follows:-

1.	Induction and safety training	2 weeks
2.	Allied Trade works – Fitting	4 weeks
3.	Allied Trade work – Sheet Metal	2 weeks
4.	Engine Repair work	23 weeks
5.	Engine Erection work	1 week
6.	Fuel Injection system work	12 weeks
7.	Repair of shop floor equipment	2 weeks
8.	Electrical Repair work	4 weeks
9.	Industrial Visit	1 week
10.	Revision & Test	1 week
	Total	52 weeks

Week No.	Practical	Theory	Engineering Drawing.	Workshop Science And Calculation.
1.	ORIENTATION TO THE COURSE Familiarization with the Institute. Importance of the Trade, machinery used in the Trade-types of Work done by the Students in the Institute-Shop floor of the Institute.	General Introduction to The Course-Duration of the Course and Course Content. Study of the Syllabus-general Rules pertaining to the Institute-Facilities Available Hostel, Recreation and Medical Facilities - Library-working Hours, Time Table.		
2.	Description of Safety Equipment Their use Safety Rules to be observed in an Automobile Repair shop. Accidents & their causes up keep of fire Extinguishers Familiarization of the Tools & Machinery Available in the shop their uses and up keep Importance of maintenance and cleanliness of Workshop, Tools, jacks Trays and Houses.	Importance of Safety and general Precautions to be observed in the shop fire Extinguishers used for different types of fire – Storing and Handling of Inflammable Materials Elementary first aid.	----------	----------
3.	ALLIED TRADE: FITTING Demonstration of the use of Fitter's hand tools Marking off with steel Rule, Calipers, scriber, dividers, dot and Centre punch Chipping in marked lines in a given piece sharpening of chisels, Centre punch & Dot punch to correct Angles.	Systems of measurement conversion of English in to metric measurements and vice versa Marking Media chalk Mechanic's Blue Red Lead and Tools used for Marking Steel rule, Try Square, calipers and Dividers, Scriber Prick and Centre Punch Hammer and Chisel-uses. And Maintenance-Safety Precautions in Handling Grinding Machines.	Introduction to Engineering Drawing and Blue Print Reading. Free Hand Sketching of Straight Lines, Rectangles Squares and circles.	Simple Workshop Problems involving addition, subtraction Multiplication and division of Whole numbers.

4.	Hacksawing and Filing to given Dimensions filling True and Square practice different Types of filing operations Marking and Drilling clear and Blind Hotels, Sharpening of Twist Drills Safety precautions to be observed while using a drilling machine.	Types of Hacksaw Frames and Blades Their selection and uses Types of Files and their uses. Care and Maintenance of Files Types & Sizes of Drills Cutting Angles and Speeds of Drills Calculation of Tap Drill Sizes.	Free Hand Sketching with Dimensions & Proportionate Sketching of circles Rectangles Squares Parellograms, Rhombus, Polygons.	Common Fractions addition, subtraction Multiplication and Division of Common Fractions Vulgar Fractions Simple Shop problems involving Fractions.
5.	Tapping a clear and Blind Hole selection of Tap Drill Size use of Lubricant cutting Threads on a Bolt/Stud- Adjustment of two piece Die-Reaming a Hole/Bush To suit the given pin/shift- scraping a given machined surface.	Taps & Dies-Description use of different types Taps & Dies- Use of "V" threads Precautions while using Taps & Dies Description and use of different types of scrapers, Reamers and Emery papers.	Reading of simple Blue Prints sketching of simple solids such as cubes, Rectangular Bio-cks, Cylinders.	Applied workshop Problems involving Fractions & vulgar Fractions.
6.	Measuring Diameter of pistons, Main journals, Crankpins, Kingpins big end and main nearing, cylinder Bores, with Micrometers & Vernier Calipers Measuring width and Thickness of machined flat and round Bars Measuring of valve Angles with Protractor head Locating centre of Round bar with centre Head.	Construction & Method of Reading Micrometers (internal and External) and Vernier Calipers Correct handling of Micrometers and Vernier calipers. Reading pf Vernier Scale Description and use of combination set Care and maintenance of Micrometers, Dernier calipers, combination set.	---------Do-------	Properties of Ferrous Metal Their uses Cast iron, Wrought iron plain and High Carbon Steel High speed Steel & Alloy Steel.
7.	ALLIED TRADE SHEET METAL WORK Joining OF Metal parts by Soft Soldering Simple Marking out on Sheet Metal and cutting Bending and Folding.	Sheet Metal Worker's Hand Tools- Their Description and uses – Description of simple Soldering and Brazing. Fluxes used for common Joints Types of sheet metal Joints – Their uses.	Freehand Sketching of Nuts- Bolts- Studs- with dimensions from samples.	Same as in Week NO.6.

8.	Practice in Silver Soldering; pipe Bending, Annealing of pipes Fitting Nipples and Unions Soldering and Brazing of pipes.	Sheet and wire Gauges the blowlamp and its uses pipe fitting explanation of various common metal Sheets used in Sheet Metal shop.	Sketching of views of solid bodies such as square and Rectangular Blocks Hollow cylinders Rings-Cones.	Properties of Non-Ferrous Metals & Their uses Copper, Zine, Lead, Tin, Brass, Aluminum, Bronze, Solder, Bearing Metals.
9.	Exercises involving use of wrenches pliers, screwdrivers and pullers cleaning and lubrication & identification of engine components.	General description & construction of diesel engine diesel engine characteristics & classification working principles of 4 stroke cycle diesel engine comparison between petrol and diesel engine.	Freehand sketching of rivets washers with dimensions from samples.	Brief description of manufacturing process of non-ferrous metals i.e. copper, aluminum zine and tin.
10.	Practice on unserviceable diesels engine, removing jammed nuts and broken studs reconditioning a damaged stud hole fitting oversized studs.	Two stroke cycle diesel engine types of scavenging uniflow and loop flow scavenger opposed piston engine differences between two stroke and 4 stroke cycle diesel engines.	Freehand sketching of Bolts & Nuts with dimensions from samples.	----do----
11.	Selection of materials for gaskets and pakings use of locking devices Lick nuts, cotters, split pins and circlips, lock rings Location where they are used inspection and checking leakage of air, fuel oil & exhaust in the engine.	Engine details –cylinder materials cylinder arrangements cylinder liners and their advantages cylinder heads, description, function, care and maintenance – Location combustion chamber in cylinder heads and also heater plugs and post & valve arrangements.	Explanation of simple orthographic projection hand sketching of 4 stroke-two stroke cycles.	F.P.S. & C.G.S. system, metric weights and measurements, conversion factors.

12.	Practice on starting and stopping of diesel engines use of speed center in determining the engine speed running of engine on load checking temperature fuel and oil compression testing of cylinders.	Combustion chambers pumps open and closed types, advantages and disadvantages, compression ration & compression pressures compression testing of cylinders and analysis of results & its importance.	Explanation of simple orthographic projection in 3rd angle.	Shop problems on metric system of weights and measurements.
13.	Maintenance checks-daily weekly, monthly for deferent types of engines writing up of inspection schedules Maintenance of log sheets-details of maintenance.	Need for maintenance check up in diesel engine – Preparation of maintenance schedule from charts of popular makes of engines.	Views of simple hollow & solid bodies with dimensions.	Meaning of tenacity elasticity, malleability , brittleness hardness compressibility and ductility with example
14.	Remove,rockers,arm,assembly manifolds-and cylinder head – removing valves and its parts, cleaning & decarburizing, checking valve seats and valve guide, reconditioning valves seats and prefacing valves – lapping valves on its seats – testing leaks of valve seats for leakage – inspection of cylinder head and manifold surfaces for warping and cracks.	Valves, valve operations-Mechanism-parts, and function of each valve timing diagram-camshaft and timing gears-types of drives used in engines chain tension and its importance cylinder head and manifold construction and function-water jackets passages.	Freehand sketching of Valve, valve springs, valve assembly with dimension.	Effect of alloying elements on properties of cast iron and steel.
15.	Dismantle rocker arm assembly clean & check shaft-bushes, posts and rocker arm for wear and Cracks and reassemble. Check valve springs, tappets, pushrods, tappet screws and valve stem cap. Reassembling valve parts in sequence refit cylinder head and manifold and rock arm assembly, adjustable valve clearances, starting engine after decarburizing.	Description and function of valve parts-maintenance materials used-Necessity of valve clearance prescribed by makers of engine-effect of incorrect clearances-common troubles and remedy-reason for warping of cylinder head.	Simple isometric view of objects such as square, rectangles and cubes.	Square root of perfect square and whole number square root of decimals.

16.	Removing piston and connecting rod from engine – examine –piston ring lands for wear examine piston skirt for cracks & distortions, clear oil holes –check connecting rod for bend and twist and parent bore for taper, ovality, and gudgeon pin bushes for wear check elongation of cap fixing bolts.	Piston and piston rings function types and materials. Used recommended clearances for the rings and its necessity precautions while fitting rings connecting rods types function and material used methods of fixing gudgeon pin on small end method bearing failure & its causes care & maintenance.	Freehand sketching of piston gudgeon pins rings and connecting rod with dimensions from samples.	Shop problems involving square roots.
17.	Removing crankshaft and camshaft from engine-checking oil retainer and trust surface for wear-measure crank shaft journal for wear-checking flywheel and mounting flanges, spigot, bearing-check vibration damper for defects – check cam shaft for bend & crank.	Crankshaft - construction & factions –materials used – arrangement of crank pins and Main journals – balancing methods-Flywheel-construction & its functions and material used Rim marks and balancing. Elementary of clutch & coupling units attached to flywheel.	Freehand sketching of crankshaft and flywheel with dimension from samples.	Ratio and proportion shop problem.
18.	Checking cylinder blocks surface – measure cylinder bore for taper & ovality-check main bearing parent bore for taper & ovality clean oil pipe line- check main bearing cap bolt holes check cam shaft, bearing and tappet bore – rescale water passages and examine welsch plugs check cylinder head for warping.	Description & function of cylinder block-material used-cylinder liners- & details-crank case and oil pan and their construction water jacket passages & wail thickness-bolt hole dimension got cylinder fixing provision for mounting accessories like oil pump, water pump filters-oil flow passages and cleaning plugs.	Freehand sketching of cylinder block and cylinder head.	Mass, unit of mass, force-absolute unit of force-weight of a body, shop problems.
19.	Fixing bearing inserts in cylinder block & cap check nip and spread clearance & oil	Engine bearings-classification and location – materials used &	Freehand sketching of bearings with	Mass, unit of mass, force-absolute unit of

	holes & locating lungs fix crankshaft on block-torque bolts-check seating – check-seating repeat similarly for connecting rod and Check seating and refit.	composition of bearing materials-Shell bearing and their advantages-special bearings material for diesel engine application bearing failure & its causes-care & maintenance.	dimensions from sample.	force weight of a body, shop problem.
20.	Overhauling oil pump, oil filters oil coolers air cleaners and air filters, check and adjust oil pressure relief values – changing oil in the sump, repairs to oil flow pipelines and unions.	Friction-its meaning and importance, methods to reduce friction in engines use of lubricants-oil for diesel engine lubrication – properties of lubricants.	Freehand sketching of oil filters oil pumps oil coolers with dimensions from samples.	Example of useful and waste friction in engine, applied problems.
21.	Reassemble al parts of engine in correct sequence and torque al bolts and nuts as per maker's recommendation for engines.	Need for lubrication system for diesel engines-types used and layout of the system by pass & full flow arrangement-types of oil pumps oil filters, oil coolers, common troubles – care and maintenance.	Freehand sketching of oil filters oil pumps oil coolers with dimensions from samples.	Examples of useful and waste friction in engine, applied problems.
22.	Reassemble all parts of engine in correct sequence, torque all bolts & nuts as per markers, recommendations for the engine-Fit accessories & start, and run the engine on stands.	Engine assembly procedure need for cleanliness and special tools and gauges used for engine assembling, practice-periods of decarburizing and overhauling engine-interms of hours of run or mileage – running in procedure of overhauled engines.	Freehand sketching of bolt and nuts with dimensions form samples, Freehand sketching of torque wrenches.	Work, unit of work Energy power, unit of power.
23.	Removing cylinder liners from scarp cylinder block, practice in measuring and refitting new liners as per maker's recommendations precautions while fitting new liners.	Cylinder liners-construction & purpose – material used and finish provided – types of liners in use-method used to fir the same in cylinder bore, advantages of wet and dry liners wear	Freehand sketching of cylinder liners with dimensions from sample.	Work, unit of work-energy power – units of power-shop problems.

		pattern & allowable wear cylinder wear and its causes.		
24.	Removing radiator and water [ump from engine, cleaning & reverse flushing radiator, testing thermostat and refitting on engine-overhauling-water pump-refitting-adjusting cooling system of the engine.	Need for cooling as engine general description & type of air and liquids – cooling used in engine0layout of cooling system and parts in the layout-function of parts like radiator-thermostat & water pump – purpose of thermostat & need to maintain engine working temperature.	Freehand sketching of water pumps thermostatic valve & water jackets in the cylinder block.	Ratio & proportion.
25	Removing radiator and water pump from engines, cleaning & reverse flushing radiator, testing thermostat and refitting on engine- overhauling – water pump-refitting-adjusting fan belt tension and connecting water pump with radiator with hoses & flushing cooling system of the engine.	Need for cooling an engine general description & types of air and liquids-cooling uses in engine-layout of cooling system and parts in the layout – function of parts like radiator – thermostat & water pump-purpose of thermostat & need to maintain engine-working temperature.	Freehand sketching of water pump thermostatic valve & water jackets in the cylinder block.	Ratio & proportion.
25	Dismantling air compressor and exhauster – cleaning all parts- measuring wear in the cylinder and blades- reassembling all parts and fitting them in the engine.	Description & operation of air compressor and exhauster attached to transport vehicle engines- common troubles & maintenance of both their specific application for the brakes of the vehicle.	-do-	Ratio and proportion problems.
26	Dismantling a petrol engine in a systematic procedure – clean & inspect all part for wear & restage-check oil clearance reset main and connecting rod bearings-check	Description of internal & external engines different types of IC Engines parts of all IC Engine 4stroke OTTO cycle engine- 2 stroke petrol engine-	Freehand sketching of 4-stroke cycle 2-stroke cycle valve timing diagram.	Different forms of heat energy – mechanical amp electrical.

	cylinder wear & examine piston and rings connecting rods- and crank shaft reconditioning if necessary reassemble all parts in sequence as per makers, recommendation adjusting valve tappets-start & adjust slow speed of the engine.	differences between of valve timing and parts of valve operation system description and operation.		
27	Practice on engine tune up operations involving testing vacuum and compression of engine, adjusting valve clearance, setting and adjusting ignition timing adjusting carburetor for slow speeds overhauling AC pump & Testing for its working cleaning spark plugs & testing for its working cleaning spark plugs & testing for its working cleaning spark plugs & testing and setting as per maker's recommendation starting engine. Adjusting slow speed.	Brief Description of engine components-their location and function – cooling and lubrication system-parts and layout of the system-fuel supply system-layout of parts in system & function of each part ignition system in a petrol engine system layout & parts of ignition system and functions of each part working of the system importance of firing order and Adv. retard mechanism.	Freehand sketching of parts of an engine. Freehand sketching of layout of fuel supply system Ignition system lubrication and cooling system.	Different forms of heat energy mechanical and electrical their conversion from one to anther with examples.
28	Visit to local industrial plants and factories.			
29	Trouble shooting in cooling and lubrication system/engine checking up and connecting oil and water leaks – changing defective packing and gaskets testing radiator leaks and testing functioning of thermostat.	Systematically method of diagnosis of troubles in the lubrication and cooling system reasons for engine overheating & remedies for the same. Crank case dilatation and crankcase ventilation flow test rate recommended for radiator.	Views of solid & hollow bodies cut sections plane.	Measuring of Horsepower IHP, FHP and applied shop problem.
30	Diagnosis of engine faults like main bearing noises piston pin noise flywheel knock & valve noise and crank noises and	Reasons for development of noises in the engine components rectification, methods of assembling practice to be	Views of hollow & solid bodies cut section plane.	Meaning of horsepower IHP BHP, FHP applied

	diesel knock.	followed during engine overhauling as per makers shop manual.		shop problems.
31	Diagnosis of engine faults like smoky, exhaust, overheating, heavy vibration-missing cylinders, exhaust noise, hunting characteristics of engine and erratic or irregular idling.	Reasons for excessive exhaust smoke overheating vibration, missing & hunting noises in an engine methods of elimination these noises for smooth working of the engine.	Practice on blue print reading.	Effects of force on materials like bending twisting and shearing problems.
32	Diagnosis of reasons for starting difficulty in a diesel engine and rectifying the faults.	Starting methods used for starting diesel engines used for transport, agricultural marine, industrial purposes brief description. Of each method to eliminate starting difficulty in a diesel engine.	Further practice in blue print reading.	Torque-definition example torque wrenches application – problems involving torque values of engine.
33	Practice in erecting overhauled engines on stands & foundations preparation of templates of foundation holes of the engine bade preparation of hold down bolt down, bolt and Nuts and boxes for foundation pits starting engine on foundation and observing vibrations.	Necessity of strong foundations for diesel engine details of foundation bolts & nuts-composition of a good mix for grouting foundation bolts dimensions of pits & Boxes to suit engine base purpose of template-need for aligning the engine on HD Bolts.	Freehand sketching of engines mountings, templates & fixing brackets & weight of simple bodies.	Shop problems on determination of volume & weight of simple bodies.
34& 35	Cleaning fuel tanks checking leaks in the fuel lines soldering & repairing pipe line and unions brazing nipples to high pressure line studying the fuel feed system in diesel engines draining of water separators.	Fuel feed system in diesels Air injection and airless injection. System their general description and lay out importance of water separators constructional details of water separators.	Freehand sketching of engine mountings, templates & fixing brackets & stands.	Shop problem on determination of volume & weight of simple bodies.
36& 37	Bleeding of air from the fuel lines servicing	Fuel filters types & constructional	Freehand sketching of	Center of gravity of

	primary & secondary filters removing filters elements in pressure filters.	details reasons for using no. of filters sequence of replacement of filter elements importance of Diesel fuel cleanliness types of diesel fuel HUS & LSD Description of O.F> valves & their functions.	fuel feed system and of filters.	bodies stable & unstable Neutrals & equilibrium Examples & Problems on centered of gravity
38 & 39	Dismantling an unserviceable fuel injection pump and governor studying the parts and reassemble general maintenance of F.I. Pumps.	Constructional details of fuel injection pumps, feed pumps and governors explanation of function and operation.	Freehand sketching of fuel injection pump with dimension from samples.	Simple levers with examples i.e. bell crank lever & other used in engine Advantages: in using them problems on lever.
40 & 41	Removing a fuel injection pump from an engine refit the pump to the engine set timing fill lubricating oil start of the engine.	Importance of timing the pumps with engine closed slot cross coupling marks vernier scale on coupling advancing and retarding methods effect of over advancing timing device and its details critical adjustment of jerk pump phasing and calibration adjustment for maximum speed idle speed & smoke limits.	Lettering number & alphabets and freehand sketching of feed pump.	Heat and temperature scales of temperature FH and Centigrade their conversions temperature measuring devices used in engine shops.
42	Start engine adjust idling speed and damping device in pneumatic governor and venture control unit checking performance of engine with off load adjusting timings.	Governors – pneumatic type-construction & operation-venture unit and its purpose and action-precautions to be observed in attending to the governor-definition of rated speed - maximum speed-over run of governors-purpose of auxiliary venture	Freehand sketching of a pneumatic governor with dimensions from samples.	Definition of stress, strain and modulus of clasticity – ultimate strength types of stresses-factor of safety examples & problems.

		in the Governor-principle of idling damper.		
43	Start engine-adjusting idle speed of the engine fitted with mechanical governor checking-high speed operation of the engine.	Mechanical governors Their construction, function and operation under different load & speed & maintenance-common troubles and remedies.	Freehand sketching of mechanical governor with dimensions from sample.	Definition of stress strain and modulus of elasticity ultimate strength types of factors of safety stress-examples & problems.
44 45	Checking performance for missing cylinder by isolating defective injectors & test-dismantle and replace defective parts & reassemble and refit back to the engine importance of correct torturing – while assembling the unit and fitting on to the engine.	Fuel injection Nozzles description & operation-of each type spray angles & orifices and their characteristics-injector tester-construction & function types of tests & their purpose-Effects of incorrect setting of nozzles on engine performance.	Freehand sketching of different types of nozzles (cut section) lettering practice.	Mechanical advantage velocity ratio & efficiency example & problems.
46	Repairing of grease guns oil cans-oil spray guns & other shop floor equipment Maintenance of drill press pedestal grinder, valve reface and air compressor.	Importance of periodical maintenance and upkeep of shop equipments preventive maintenance to avoid sudden & major failure-preparing maintenance charts for machineries & follow up.	Freehand sketching of grease gun horses-oil gun & service accessories.	Determination of mechanical advantage-velocity ratio-efficiency in simple machine i.e. screw jack/winch – pulley block wheel & axle & inclined plane.
47	Repairing of injector tester, horses, jacks and stands vacuum & compression gauges maintenance of washing pumps and	-Do-	Practice on blue print reading	Principle and working of simple machines.

	hydraulic presses phasing and calibrating machine.			
48	BASIC ELECTRICAL WORK Practice in joining wires & soldering – firming simple electrical circuits – measuring of current, voltage and resistance – cleaning and topping up of a lead acid battery - Testing battery with hydrometer-cell tester connecting battery to charger.	Simple electrical circuit series & parallel circuits identification of alternating –current and direct current meters-insulators and conductors-types of resistance – ohm's law and its application- common electrical terms and symbols – primary and secondary cells-lead acid battery description-construction – common troubles and remedy.	Freehand sketching of electrical symbols and drawing of simple electrical circuits.	Electricity and its effects static and dynamic electricity, AC and DC differences.
49	Studying electrical circuits in the engine assembly checking loose, open and short circuit in ignition circuits – cleaning and testing of distributor's assembly checking and setting ignition timings.	Description of electrical circuits – ignition system and the components – purpose of induction coil, condenser, spark plugs – common troubles in ignition circuit and remedy.	Freehand sketching of ignition circuit of a vehicle-sketching the circuit-line diagram of magneto ignition.	Magnets- natural and artificial types-poles of magnets-magnetic fields.
50	Removing dynamo from vehicle dismantling, cleaning checking for defects, assembling and testing for motoring action of dynamo & fitting to vehicles.	Description of charging circuit – operation of dynamo and regulator Unit-Ignition warning lamp- troubles & remedy in charging system.	Freehand sketching of charging system.	Definition of ampere, volt & ohm-Units of ampere, volt, ohm ohm's law.
51	Removing starter Motor vehicle and overhauling the starter motor- testing of starter motor.	Description of starter motor circuits-constructional details of starter motor-solenoid switches –common troubles and remedy in starter circuits.	Sketching starter motor circuits and solenoid switch circuits.	Calculation based on ohm's law.
52	Revision and Test.			

Sr. No.	Name of the tools & equipment as per the syllabus	No. of required for Instructor & Trainees for one Unit as per DGET Norms.
1	HAMMER BALL PEIN 0.75 KG	17
2	CHIESEL COLD FLAT 19 MM	17
3	CENTRE PUNCH 10 CM	17
4	STEEL RULE 15 CM ENGLISH & METRIC	17
5	SCREW DRIVER 30 CM X 9 MM BLADE	17
6	SCREW DRIVER 20 CM X 9 MM BLADE	17
7	SPANNER D.E SET OF 12 METRIC BLADE 8-32 MM	17
8	PLIERS COMBINATION 15 MM	17
9	HAND FILE 20 CM SECOND CUT	17
10	FEELER GUAGE 20 BLADE	17
11	RING SPANNER SET OF 12 METRIC 8 - 32 MM	17
12	STEEL TOOL BOX WITH LOCKS AND KEYS	17
	SHOP OUTFIT	
1	RULE STEEL 30 CM	1
2	DIVIDERS SPRING 15 CM	1
3	PRICK PUNCH 15 CM	1
4	CHISEL CROSS CUT 9X3 MM	1
5	HAMMER BALL PEIN 0. 5 KG	1
6	HAMMER COPPER 1 KG WITH HANDLE	1
7	ENGINEERS SQUARE 15 CM BLADE	1

8	SCRIBER 15 CM	2
9	SCRIBER BLOCK UNIVERSAL	1
10	MARKING OUT TABLES 90CM X 60 CM X 90 CM (HIGH)	1
11	SURFACE PLATE 60 X 60 CM BLADES	1
12	HACKSAW FRAME ADJUSTABLE FOR 20 - 30 CM BLADES	2
13	V BLOCK 75 X 38 MM PAIR WITH CLAMPS	2
14	PUNCH, HOLLOW, 6,7,8,9,10.5 & 12 MM SET	2
15	PUNCH FIGURE SET 3MM	1
16	PUNCH LETTER SET 3 MM	1
17	HAND VICE 3 - 7 MM	2
18	SCREW DRIVER, ELECTRICIAN TYPE 15 CM SIZE	2
19	FILE, FLAT 35 CM BASTARD	1
20	FILE FLAT 25 CM SECOND CUT	1
21	FILE FLAT 20CM SMOOTH	1
22	FILE FLAT SAFE EDGE 25 CM SMOOTH	1
23	FILE TRIANGULAR 15 CM SECOND CUT	1
24	FILE HALF ROUND 14 CM SECOND CUT	1
25	FILE ROUND 30 CM SECOND CUT	1
26	FILE SQUARE 20 CM SECOND CUT	1
27	DRILL, TWIST, METRIC 3 MM X 12 MM X 1 MM	1
28	TAPS AND DIES COMPLETE SET IN BOX B.A.B.S.W.B.S.F AMERICAN & METRIC	1
29	H.S.S. HAND REAMER, ADJUSTABLE 10.5MM TO 11.25MM 11.25 MM TO 12.75 MM 12.78 MM TO 14.25 MM & 14.25 MM TO 15.75MM	1
30	SCRAPER, FLAT 25 CM HANDLED	1

31	SCRAPER HALF ROUND 25 CM	1
32	SCRAPER TRIANGULAR 25 CM	1
33	SCRAPER BEARING	1
34	SETS OF MORSE SOCKET 0-1 1-2 & 2-3	1
35	MICROMETER, OUTSIDE 0 TO 25 MM	1
36	MICROMETER, OUTSIDE 50 MM TO 75 MM, 75 MM TO 100 MM	1
37	MICROMETER WITH EXTENSION ROD (INSIDE) 50 MM TO 150 MM	1
38	VERNIER CALIPERS SET 25 OR 20 CM INSIDE, OUTSIDE DEPTH TO READ BOTH INCHES AND IN MMS	1
39	SAFETY GOGGLES (CLEAR GLASS)	2
40	HAMMER, PLANISHING	1
41	SETTING HAMMER	1
42	MALLET (WOODEN)	1
43	TRAMMEL 30 CM	1
44	BLOW LAMP 0.5 LITRE	1
45	SOLDERING IRON 120 WATTS	1
46	SOLDERING IRON COPPER 225 GMS (FIRE HEATED)	1
47	PLIERS NOSE (ROUND AND STRAIGHT)	1
48	SHIP STRAIGHT	1
49	POT, MELTING	2
50	POKER	2
51	SPANNERS, DOUBLE ENDED SET OF 12 METRIC SIZE 8 TO 32 MM	1
52	SPANNERS, DOUBLE OFF-SET DOUBLE ENDED SET OF 7 W/W FROM 3 MM TO 13.5 MM	1
53	DOUBLE OPEN ENDED IGNITION SPANNER OF B.A OX1 TO 8X9 SET OF 5	1

54	SPANNERS, CLYBURN 15 CM	1
55	SPANNERS ADJUSTABLE 20 CM	1
56	SPANNER, RING OF SET OF 6 S.A.E.	1
57	SPANNER FOR SPARKING PLUG 14 MM	1
58	MAGNETO SPANNER SET WITH 8 SPANNERS	1
59	DOUBLE OPEN ENDED SPANNER AMERICAN A/F SIZE FROM 7.5MM*99MM*20.5MM SET OF6	1
60	SPANNER SOCKET SET OF 8 HANDLED T.BAR RATCHET	2
61	SPANNER, T.FLEX FOR SCREWING UP AND UNSCREWING IN INACCESSIBLE POSITION	1
62	DOUBLE OPEN ENDED TAPPET SPANNER FROM 10.5MN*12MMTO 16.5MM*18MM SET OF FOUR	1
63	DRIFT, COPPER 10MM*150MM	2
64	GUN, PARAFIN PRESSURE	1
65	GUN GREASE PRESSURE	1
66	CHAIN AND BLOCK 1016 KG CAPACITY	1
67	TRAY CLEANING 45*30 CM	16
68	DRILLING MACHINE BENCH TO DRILL UP TO 12 MM DIA.	1
69	OIL CAN 0.5 LITRE	1
70	LIFTER, VALVE SPRING	1
71	TOOL VALVE GRINDING, SUCTION TYPE (CONSUMABLE TOOL)	6
72	VALVE SEAT CUTTING TOOLS COMPLETE WITH GUIDES &PILOT BAR (ALL ANGLES) IN A BOX	1
73	EXTRACTOR, STUD "EZY OUT" TYPE	1
74	COMPRESSION GAUGE TO READ 120 KG/SQ.CM AND VACUUM GAUGE 0 TO 75 CM	1
75	STONE, CARBORANDUM 15*5*3.75 CM ROUGH AND SMOOTH (CONSUMABLE)	2
76	CYLINDER GUAGE, CAPACITY 6.25 CM X 15 CM	1
77	FORGE WITH CHIMNEY AND TROUGH FITTED WITH BLOWER	1

78	RING EXPANDER AND REMOVER.	1
79	TORQUE WRENCH (0 TO 75 KG METER)	1
80	WORK BENCH 250*120*75CM WITH 4 VICES OF 12.5 CM JAW	4
81	LOCKERS WITH 8 DRAWERS (STANDARD SIZE)	2
82	METAL RACK 180*150*45 CM	2
83	FUEL FEED PUMP	2
84	FUEL INJECTION PUMP	2
85	CARBURETTOR (TWO DIFFERENT TYPES)	2
86	WATER PUMP AND OIL PUMP	1
87	FILLING JIG FOR ADJUSTING THE PISTON RING GAP	1
88	STEEL ALMIRAH	1
89	BLACK BOARD WITH EASEL	1
90	DESK OR TABLE	1
91	FIRE EXTINGUISHER	2
92	FIRE BUCKETS WITH STAND	4
93	TACHOMETOR (COUNTING TYPE)	1
94	COMPRESSOR AIR PISTON TYPE (VEHICULAR) AND EXHAUSTER UNIT	1
95	CLUTCHES, DIFFERENT TYPES SUCH AS CONE TYPE, DISC TYPE	1
96	DYNAMO AND VOLTAGE REGULATOR	1
97	STARTER MOTOR	1
98	INJECTORS	2
99	BATTERY-12 VOLT	2
100	CHAIR	1
101	DISTRIBUTOR ASSEMBLY	2

102	PULLER SET UNIVERSAL FOR BEARINGS AND BUSHES	1
103	LIFTING JACK, SCREW TYPE 3048 KG.	2
104	FEELER GAUGE.	2
105	PISTON RING COMPRESSOR	2
106	VALVE KEY INSERTER	1
107	CONNECTING ROD ALIGNMENT FIXTURE	1
108	VALVE REFACER	1
109	HIGH RATE DISCHARGE TESTER	1
110	A.V.O METER	1
111	INJECTOR TESTING SET (HAND OPERATED)	1
112	INJECTOR CLEANING KIT	2
	GENERAL MACHINEARY	
1	GRINDER WITH TWO 18 CM WHEELS WITH TWIST DRILL GRINDING ATTACHMENT	1
2	ARBOR PRESS HAND OPERATED 2 TON CAPACITY	1
3	MOTOR LORRY IN RUNNING CONDITION (DIESEL) INDIAN MAKE)	1
4	DIESEL ENGINE CUT AWAY MODEL TO SHOW WORKING PARTS FOR DEMONSTRATION (1,2 STROKE & 4 STROKE)	2
5	DIESEL ENGINE 4 STROKE MULTICYLINDER 4/6 VEHICULAR TYPE INDIAN MAKE CONTEMPORARY-MODEL	4
6	PETROL ENGINE (RUNNING CONDITION, CAR TYPE) INDIAN MAKE	2
7	DIESEL ENGINE (RUNNING CONDITION) STATIONARY TYPE	4
8	PETROL ENGINE VERTICAL (2STROKE) MOTOR CYCLE/SCOOTER TYPE 1.5 HP INDIAN MAKE CONTEMPORARY MODEL	1
9	GROWLER	1
10	BATTERY CHARGER	1

11	TIMING LIGHTER	1
12	HYDEROMETER (CONSUMABLE TOOL)	6
13	WASHING PUMP-RECIPROCATING TYPE ELECTRICALLY OPERATED WITH 3 HP MOTOR-272 LITRE TANK	1
14	PORTABLE LIFTING CRANE ONE TON CAPACITY WITH CHAIN BLOCK & TACKLE ARRANGEMENT	1
15	TROLLEY TYPE PORTABLE AIR COMPRESSOR 1 SINGLE CYLINDER WITH 45 LITRES CAPACITY	1
	AIR TANK ALL ACCESSORIES & WITH WORKING PRESSURE 6.5 KG/SQ CM	2