

COURSE DETAILS

Name of Trade	: MOTOR VEHICLE MECHANISM AND MAINTENANCE
Qualification	: 10TH PASS / FAIL
Age	: 14-40 Years
Duration	: 2 Year
Number of Trainees	: 20
Number of Practical hours	: 32 hrs. per week
Number of Theory Hours	: 8 hrs. per week
Number of Workshop Calculation hours	: 2 hrs. per week.
Number of Engineering Drawing hours	: 2 hrs. per week
Space Required	
Workshop	: 500sq. feet
ClassRoom	: 200 sq. feet
Power Required in KW	: 2 k.w.

TRADE : MOTOR VEHICLE MECHANISM AND MAINTENANCE

LIST OF COMMITTEE MEMBERS

1. R.NAGARAJAN
Vice Principal
Govt.I.T.I
Ambattur
Chennai -600098

2. N.DURAI MURUGAN
Assistant Training Officer
Govt.I.T.I
Ambattur
Chennai -600098

3. S.SIVAKUMAR
Assistant Training Officer
Govt.I.T.I
Ambattur,
Chennai -600098

TRADE: MECHANIC MOTOR VEHICLE SERVICE AND MAINTENANCE

WEEK NO	PRACTICAL	THEORY	E/D	W/CAL/SCIENC
1	<p>FAMILIARISATION with institute Importance of the trade-machinery Used in trade. Types of work done By the students in the institute shop floor of the institute.</p>	<p>General introduction to the Course duration of the course and course content. Study of the syllabus.</p>		
2	<p>Description of safety equipment their use-safety rules to be observed in an Automobile repair shop. Accident and their causes-up keep of fire extinguishers familiarization of the tools and machinery available in the shop- their use and up-keep importance of maintenance and cleanliness of workshop tools, jacks, Trays and horses.</p>	<p>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.</p>		

WEEK NO	PRACTICAL	THEORY	E/D	W/CAL/SCIENCE
3&4	<p>Inspection of under carriage of vehicle, Tightening all loose bolts and nuts-use of hydraulic jacks hoist and horses-used in the shop selections of materials for packing</p> <p>Cutting packing and gaskets practice in the use of locking devices such as lock nuts, colter and split pinskeys, circlips, lock Ring, lock Washers-wire locking-locations where they are used.</p>	<p>Various locking devices used in an automobile selection of packing materials, gaskets etc.</p>		
5	<p>Removing wheels from vehicle dismantling tyres and tubes checking puncture in a tube and repairing puncture-assembling inflating to correct pressure.</p>	<p>Description of wheels and tyres-types-selection of tyres,ply rating-inflation pressure and carrying capacity --storage of tyres.</p>	<p>Introduction to the subject of engineering drawing.</p>	<p>Introduction to the subject of workshop calculation & calculation.</p>
6	<p>Inspecting the frame --checking alignment of frame.</p>	<p>Classification chassis frame and defects.</p>	<p>Sketching the lines and rectangles</p>	<p>Addition and subtraction.</p>
7	<p>Servicing of leaf spring-replacing new bushes for shackle pins.</p>	<p>Description and function common troubles conventional suspension system. types of leaf springs used.</p>	<p>Sketching the lines and rectangles</p>	<p>Addition and subtraction.</p>
8	<p>Changing bushes in shock absorbers-clearing and lubrication wheel bearings.</p>	<p>Types of shock absorbers their description operation and maintenance.</p>	<p>Sketching of and squares circles.</p>	<p>Multiplication and division of whole numbers</p>

WEEK NO	PRACTICAL	THEORY	E/D	W/CAL/SCIENCE
9	Removing king pins and bushes replacing new bushes and pins after reming bushes and lubrication of king pin bushes- changing rubber bushes in the front independent suspension system.	Description of different types of independent suspension system-special Features in each system-maintenance and lubrication of front suspension system	Simple solids such as cubes, prisms.	Common fraction, addition and subtraction.
10&11	Inspect and overhauling front and rear suspension rear springs coil springs-torsion bars, check -up axle for alignment.	Front axle- description and functions - types of steering knuckle-general layout of steering linkages.	Cylinder and lines etc., Free hand sketching of nuts and studs.	Multiplication and division - simple shop problems Multiplication and division - simple shop problems
12	Inspect and adjust steering linkages, after replacing of worn parts-alignment of steering wheels with respect to front wheel check and correct Toe-in.	Description of different types of steering boxes special feature off each adjustments repair and maintenance of steering and boxes.	Free hand sketching of nuts and studs.	Multiplication and division - simple shop problems
13	Inspect and overhauling steering steering gear box.	Power steering description and its advantages.	Free hand sketching of propeller shaft.	Decimal fractions conversion addition subtraction
14	Checking and adjusting Toe-in, Camber, caster, kinpin angle with special gange.	Description of Ackerman's Angle, caster, camber Toe-in and Toe-out an turns purpose and effects of these angles.	Free hand sketching of universal joint.	Multiplication division - simple shop problems
15	Adjusting brake pedal play dismantling wheel brake assembly clearing and inspecting- Adjusting brake shoes for proper clearances. Bleeding hydraulic brake.	Arrangement of brakes in cars & Tracks description of hand brakes its purpose-layout of mechanical and hydraulic brake system.	Use of drawing instruments -T- squares and drawing board.	Multiplication division - simple shop problems

WEEK NO	PRACTICAL	THEORY	E/D	W/CAL/SCIENCE
16	Removing master cylinder dismantling clearing and inspection of parts Assembling And testing.	Master cylinders-types -special features of each functions - common troubles And remedy.	Construction of simple figures cubes and prisms	Multiplication division - simple shop problems
17	Dismantling wheel brake assembly. Removing old lining And fitting new lining on the brake shee-removing clearing Of brake drums. removing wheel cylinder dismantling cleaning and inspect of parts Assembling.	Brake linings-types-user-Relining the brake shoes-pre caution to be observed - Wheel cylinder-description- Function.	Construction of simple figures with dimensions.	Unit - fundamental units - desired units.
18	Bleeding of vacuum Assisted Hydraulic brakes-Removing And re-fitting of vacuum booster- repairs to pipe linens- Adjusting the brakes.	Description and advantages of vaccum assisted hydraulic brakes special feature common troubles in vaccum assisted hydraulic Brakes.	Titles uses of different types of scales.	Measurements - british system. Metric system.
19	Adjusting air brakes repairs to tank unit air compressor wheel brake adjusters- locating air leaks in the brake lines and rectifying general maintenance and care.	Description of air brake system major components In air brake system. Their care and maintenance troubles in air brake assembly an their remedy	Drawing of 3 views stepped and taper blocks in 3 rd angle projection.	Plain and high carbon steel and their uses.
20	Trouble tracing in braking system of a vehicle.	Brake testing- efficiency of brakes. Common troubles in brake and their remedy.	Drawing of 3 views stepped and taper blocks in 3 rd angle projection.	Plain and high carbon steel and their uses.

WEEK NO	PRACTICAL	THEORY	E/D	W/CAL/SCIENCE
21	Adjusting clutch pedal play-Removing gear box and clutch assembly from vehicle, Dismantling clutch assembly cleaning Inspecting the parts.	Layout of transmission system, Description of single plate clutch and multiple clutches - functions- different types of clutches used in vehicles -their description, special features & Advantages.	Free hand sketching of shock absorbers.	Properties of non-ferrous metals.
22	Removing & fitting & new pilot bearing, removing & fitting of ring Gear in fly wheel-relining a clutch Plate-checking of fly wheel and pressure plate surface for reconditioning.	Clutch lining-types-materials used-bonded & riveted lining clutch plate-precautions while relining a clutch plate.	Free hand sketching of shock absorbers.	Lead tin brass aluminium bronze and their uses.
23	Assembling of pressure plate-adjusting tingers-aligning clutch assembly with fly wheel.	Clutch common troubles and remedy.	Drawing of plan elevation and side	Lead tin brass aluminium bronze and their uses.
24	Dismantling a sliding mesh gear box clearing inspection of parts - assembling the gear box and fitting in oil.	The purpose of gear box in a vehicle-description and functions of sliding mesh gear box-common troubles in gear box and their remedy.	View of tapered hollow objects	Lead tin brass aluminium bronze and their uses.
25 & 26	Dismantling clearing constant mesh gear box, synchro mesh gear box and assembly of gear shift mechanism - changing oil in gear box studying gear ratios in the gear box.	Lubrication of gear box- constant mesh gear box and synchro mesh gear box- description and advantages.	Drawing the 3 views 3 rd angle. Projection of curved objects.	Square root of whole numbers. Square root and decimals

WEEK NO	PRACTICAL	THEORY	E/D	W/CAL/SCIENCE
27	Removing open type propeller shaft from vehicle-removing universal joints-clearing, inspecting- replacing worn-out parts re-assembly and refitting to vehicle - special precaution while removing Farque tube drive shaft.	Propeller shaft- open and closed type - types of universal joints care and maintenance.	Isometric drawing of simple objects	Percentage - convey
28	Removing rear brake drums and adjusting the wheel bearings in full floating rear axles & semi floating Axles - replacing oil seals in rear axles.	Description and purpose of different types of rear axles - special features & advantages in each type - lubrication of rear axles - reasons for oil in brake drums.	Such as square and rectangular blocks	Simple shop problem
29	Removing rear axle assembly from vehicle dismantling, clearing, inspecting parts for wear and damage - removing tail pinion and bearing - clearing and inspection of oil seals and bearings.	Description & function of final drive assembly - crown wheel and tail pinion - hypoid gear and its lubrication - description of differential and its principle of operation.	Free hand sketching of master cylinder	Heat treatment purp
30 & 31	Checking tooth contact in crown and pinion & adjusting back ash - assembly the rear axle & fitting rear assembly on vehicles and testing.	Description and function of differential gears - types - tooth contact and backlash, pre loading adjustment - common troubles & their remedy in rear axle assembly.	Free hand sketching of master cylinder Explain of simple orthographic projection.	Different methods of treatment Ratio sim shop problems

WEEK NO	PRACTICAL	THEORY	E/D	W/CAL/SCIENCE
32	Trouble shooting in the transmission system of vehicle - detecting noises from clutch gear box, universal joints and rear axle assembly - dismantling transfers case from vehicle, clearing, impacting replacing worn parts re-assembly and fitting to vehicle.	Description & purpose of optional fittings such as transfer case - common troubles and remedy care and maintenance.	3 rd angle	Ratio simple shop problems
33	Dismantling of unserviceable engine - clearing, studying the parts in the endpin and assembly the engine - practice in the use of correct tools right procedure.	Description of internal and external combustion engines different types of I.C, engine - important working parts in the engine the 4 stroke cycle of operation.	Exercise in simple orthographic projection 3 rd angle	Proportion direct inver
34	Dismantling an unserviceable engine, clearing of parts in the engine measuring of cylinder bore - crack pins, main journals pistons studying valve operating mechanism.	Two stroke cycle operation difference between four stroke & two stroke cycle engines, description of valve operating mechanism and valve timing - description and function of valve spring, guide, tappets valve seats and locks	Exercise in simple orthographic projection 3 rd angle	Simple shop problems
35	Checking compression pressure in a running engine - dismantling the cylinder head - decarbonising the cylinder head, valves and pistons-assembling.	description and function of cylinder block - cylinder head - liners.	Exercise in simple orthographic projection 3 rd angle	Heat and temperature

WEEK NO	PRACTICAL	THEORY	E/D	W/CAL/SCIENCE
36	Removing piston and connecting rod assembly from engine dismantling, clearing, inspecting checking clearances inspecting rings and piston pins.	Description & function of different types of pistons, piston rings and piston pins - common troubles and remedy.	Exercise in simple orthographic projection 3 rd angle	Centigrade and Fahrenheit scale their conversion use of temperature measuring instruments.
37	Assembling crank shaft, piston and piston rings, connecting rod assembly in the engine, fitting cylinder head on the engine block.	Firing order of the engine description and function fly wheel.	Drawing of 3 view stepped.	Centigrade and Fahrenheit scale their conversion use of temperature measuring instruments.
38	Removing valve timing cover - checking and correct setting of valve timing replacing timing chains.	Adjusting and correct valve timing marks of timing gears.	Taper block in 3re angle projection	Centigrade and Fahrenheit scale their conversion use of temperature measuring instruments.
39	Assembling cylinder head - checking and adjusting tappet clearance.	Precaution to be observed while assembling engine components.	Free hand sketching of 4 stroke cycles	Geometry properties of angles
40	Removing inlet and exhaust manifold silencers and tail pipe - cleaning and refitting importance of back pressure.	Inlet and exhaust manifold description and purpose, description of silencers and tail pipe, catalytic converter its function.	Free hand sketching of 2 stroke cycles.	Triangle and circles.
41	Cleaning radiators, dismantling, clearing, assembly and testing water pump. Checking cooling system for over heating adjusting fan belt tension.	Engine cooling types air & water cooling-radiators, pump, thermostat and fan their description, function, care and maintenance, reasons for over heating in engine.	Free hand sketching of piston	Triangle and circles.

WEEK NO	PRACTICAL	THEORY	E/D	W/CAL/SCIENCE
42	Oil flow system in engine over hauling oil filters, oil pump & setting the pressure release valve for correct oil pressure	Need for lubrication of engine parts - lubrication system types - oil pump, oil filters - their special features and uses.	Free hand sketching of connecting rod	Triangle and circles
43	Over hauling of petrol pump, fuel fitters and air cleaners.	Fuel feed system in motor vehicles - layout of the system. Description, operation of petrol pump, fuel fitters.	Free hand sketching of crank shaft	Force, work done energy and power
44	Over hauling float level and slow speed adjustment - studying the fuel flow circuit in carburetors.	Types of carburetors - special features - different adjustments & their purposes.	Free hand sketching of crank shaft	Simple shop problems
45	Practice in engine tune-up in a vehicle.	Explanation of engine tune-up.	Drawing of plan elevation and side views of tapered hollow objects	Force, work done energy and power simple shop problems
46	Clearing and topping up of a lead acid battery. Testing the battery with hydrometer cell tester connecting battery to charger.	Simple electrical circuits identification of A.C and D.C - lead acid battery - description - construction - common troubles and remedies.	Drawing of plan elevation and side views of tapered hollow objects	Force, work done energy and power simple shop problems
47	Checking loose, open and short circuit ignition circuit. Clearing and testing spark plugs, over handing of distributor checking and setting ignition firing.	Description of electrical circuits- ignition system and the components purpose of ignition coil, condenser, spark play, common trouble in ignition circuit and remedies.	Drawing of plan elevation and side views of tapered hollow objects	Calculation of areas of square rectangles.
48	Removing alternator/dynamo in a vehicle - over handing and testing.	Description of charging circuit operation of dynamo/alternator - Regulators.	Drawing of plan elevation and side views of tapered hollow objects	Triangles, circles and regular polygons

WEEK NO	PRACTICAL	THEORY	E/D	W/CAL/SCIENCE
49	Removing starter motor from vehicle. Over hauling and testing of starter motor.	Description of starter motor circuit – operation of starter motor and solenoid switch.	Free hand sketching valve operating mechanism	Triangles, circles and regular polygons
50&51&52	Revision.		Free hand sketching valve operating mechanism Revision Text	Triangles circles and regular polygons Revision Text
53	Removing a petrol engine dismantling cylinder head – decarbonising checking valves – cutting valves seats – assembling valves and cylinder head & adjusting tappet clearance.		Free hand sketching of sectional	Simple levers problem related to levers as applied to motor vehicles screw jack.
54	Checking cylinder bore wear for ovality and taper – measuring piston – checking wear – refitting new bushes and pins.	Reasons for cylinder wear methods of reconditioning worn out cylinders.	Exhaust pipes and tail pipe	Simple levers problem related to levers as applied to motor vehicles screw jack.
55	Overhand ling and testing oil pumps – clearing oil fitters.	Lubricating pumps – types and their special features – By pass and full flow oil filters.	Drawing the 3 views 3 rd angle projection of curved objects.	Meaning of friction examples of useful and wasteful friction in vehicles.
56	Clearing fuel tank – checking for leaks in tank – overhauling petrol pumps testing for correct pressure.	Ac mechanical petrol pumps & S. U electrical pump – description and operation and maintenance.	Drawing the 3 views 3 rd angle projection of curved objects.	Efficient of friction simple problem of friction
57	Solex carburetor – Removing – dismantling clearing. Inspecting – replacing worn out parts and assembling – adjusting slow speed	Special feature of solex carburetors – petrol flow circuits in these carburetors – common troubles and remedies – introduction to multi point fuel injection system (MPFI)	Free hand sketching of fuel pumps	Meaning of friction examples of useful and wasteful friction in vehicles.

WEEK NO	PRACTICAL	THEORY	E/D	W/CAL/SCIENCE
58	Correct setting of valve timing - checking camshaft end play and correct it.	Valve timing gears timing marks - checking backlash in timing gears.	Free hand sketching of fuel pumps	Efficient of friction simple problem on friction.
59	Assembling piston & connecting rod assembly, cranked shaft, cam shaft and timing gears, fitting cylinder head - checking tappet clearance - starting and adjusting engine speed.	Engine assembling procedure checking and adjusting engine idle speed.	Free hand sketching of simple carburetors.	Problems on various trigonometric ratios
60	Removing inlet & exhaust manifold - clearing carbon - replacing new manifold gaskets - clearing silencers and tail pipe and refitting.	Inlet and exhaust manifold description and purpose of silencer exhaust pipes.	Free hand sketching of simple carburetors.	Reading of trigonometric tables problems on height and distance
61	Trouble shooting in cooling and lubrication system.	Step by step method of locating troubles in the lubrication and cooling system - reasons for engine overheating - crank case dilution.	Free hand sketching of combustion chambers of different types	Reading of trigonometric tables problems on height and distance
62	Trouble shooting in fuel feed and ignition system.	Procedure of trouble tracing in fuel feed and ignition system - reasons for excessive fuel and oil consumption.	Free hand sketching of combustion chambers of different types	Calculations of volume of square rectangular and conical blocks.

WEEK NO	PRACTICAL	THEORY	E/D	W/CAL/SCIENCE
63	Practice on unserviceable diesel engine - removing cylinder head, connecting rod and pistons, cleaning, inspecting and re fitting.	History and development of C.I engines - classification of C.I engines advantages over petrol engines.	Free hand sketching of compustion chambers of different types	Volume of cylinders solid and hollow
64	Practice in starting and stopping of diesel engine - checking oil, fuel, water levels.	Four stroke and two stroke diesel engine - uniflow and loop scavenging.	Free hand sketching of fuel feed system in diesel engines.	Reading of trigonometric tables problems on height and distance
65&66	Removing cylinder head, pistons, connecting rods - decarbonising the cylinder head - checking piston clearance - assembling - adjusting tappet clearance - adjust slow speed.	Specification of diesel engines - materials used for engine parts - valve - timing - heater plugs - types user.	Free hand sketching of fuel feed system in diesel engines. Free hand sketching of fuel feed system in diesel engines.	Density and specific gravity shop problems. Density and specific gravity shop problems.
67	Bleeding fuel lines for air locks	General layout of the fuel feed system.	Free hand sketching of fuel feed pump.	Explanation of horse power brake horse power and Indicated horse power.
68	Clearing of fuel fitters - removing feed pump - dismantling, cleaning, reassembling, testing and re fitting.	Types of fuel injection system - fuel feed pumps - description and operation common troubles and reminder	Free hand sketching of FI pump	Applied problems in horse power.

WEEK NO	PRACTICAL	THEORY	E/D	W/CAL/SCIENCE
69	Dismantling an unserviceable fuel injection pump - cleaning, inspecting and studying parts and re-assembling testing the for governor and setting injection timing.	The pumps - phasing and calibration of pumps - injection timing types of governors their description and operation starting and adjusting slow speed.	Free hand sketching of fuel	Algebra simple equations problems
70	Removing the injector dismantling, cleaning, inspecting - replacing defective parts - re-assembling - testing injection	Types of injector nozzles - description, operation - testing of injectors.	Injector nozzles types	Algebra simple equations problems
71	Trouble shooting in the fuel feed systems.	Maintenance of governors, reasons for black, white and blue smoke in exhaust.	Free hand sketching of rivets, screws washers.	Algebra addition subtraction
72	Visit to local garage and industries.		Sketching of riveted joints.	Multiplication division use brackets problems
73	Tracing the light circuit - test bulbs - align head lamps - replacing fuses - testing brake light and tail light.	Description of light circuits - fuses and their importance.	Free hand sketching of rivets screws washers	Algebraic formulae use for simple problems
74	Overhauling electrical horn - adjusting the horn of correct sound.	Electric horn circuit - operation of relay and horn common troubles and their remedies.	Sample sketching of riveted joints	Simultaneous equations - shop problems

WEEK NO	PRACTICAL	THEORY	E/D	W/CAL/SCIENCE
75	Overhauling wiper motor - setting blades for correct functioning.	Description and operation of an electric horn - common troubles and remedies.	Free hand sketching of electrical symbols	Simultaneous equations - shop problems
76	Tracing defects in the flasher circuits - replacing fuse bulb.	Plusher circuit, description and operation, common troubles and remedies.	Drawing of simple electrical circuits	Simultaneous equations - shop problems
77	Removing dismantling cleaning and assembling magnetos - testing magnetos.	Magneto ignition system - description and operation.	Drawing of simple electrical circuits.	Electricity and its effects of state dynamic electricity
78	Removing alternator (or) dynamo dismantling, cleaning, assembling and testing - general maintenance, adjusting fan belt play / tension.	Description and operation of alternators (or) dynamo common troubles and remedies.	Drawing of simple electrical circuits.	Electricity and its effects of state dynamic electricity
79	Removing starter motor - dismantling - cleaning - testing and re-assembling.	Positive and negative earthing of battery.	Free hand sketching of ignition circuit of a vehicle	AC & DC differences definition of ampere.
80	Trouble tracing in electrical system - checking solenoid switch	Color code for wiring in motor vehicle.	Free hand sketching of ignition circuit of a vehicle	Volt and ohms units of current.
81	Checking and replacing ignition coil overhauling distributor assembling cleaning and checking spark plug.	Function of ignition coil - distributor spark plug.	Free hand sketching of magneto ignition system	Ohm's law calculation base on ohm's law.

WEEK NO	PRACTICAL	THEORY	E/D	W/CAL/SCIENCE
82 to 88	Practice in straight driving on wide roads. Driving through lanes and curves. Practice in reversing, practice in wet surface. Practice in parking vehicle- practice in driving over narrow bridges.	Motor vehicle Act-Driving road rules-Road traffic signals-hand signals precautions to be taken while over-taking, reversing driving through narrow lines, curves and slopes.	Free hand sketching of charging circuit Free hand sketch of start or motor Free hand sketch of gauges and their circuit	Applied problems on resistance the series and parallel circuits. Calculation of volumes and weight of cubes. Hexagonal prisms shop problems
89	Removing transfer case from the vehicle - dismantling, cleaning inspecting parts - re-assembling, testing fitting.	Description and operation of four wheel drive - The purpose of transfer case and the arrangement of shifting mechanism.	Free hand sketching of light circuit of vehicle	Hexagonal prisms shop problems
90,91,92	Trouble shooting in the transmission system identifying the noises from clutch assembly, gearbox, universal joints - rear angle drive and the differential unit.	Systematic procedure of locating noises from the transmission units - common troubles in the system and remedies.	Free hand sketching of light circuit of vehicle Free hand sketching of flasher light Circuit with symbols	Hexagonal prisms shop problems Meaning of stress strain Modulus of elasticity ultimate strength examples.
93,94	Diagnosing noises and faults in engine and rectifying them	Different types of noises from engine - bearing knock, gudgeon pin knock, tappet noise		

WEEK NO	PRACTICAL	THEORY	E/D	W/CAL/SCIENCE
95,96	Engine tune up.	Engine tune up - fuel consumption.	Free hand sketching of layout cooling system Free hand sketching of layout of cooling system	Problems involving stress strain. Problems involving stress strain.
97,98	Repairs jacks, grease guns, oil spray guns and other shop floor equipments.	Garage equipments construction and operation of air compressor, spark plug tester, valve reface injector tester care and maintenance.	Free hand sketching of layout of lubrication system Free hand sketching of layout of lubrication system	Calculating of area volume and weight of hollow and solid bodies. Calculating of area volume and weight of hollow and solid bodies
99,100,101	Wheel balancing and use of equipment.	Importance of wheel balancing.	Conditioner in vehicle Conditioner in vehicle	Calculating of area volume and weight of hollow and solid bodies Calculating of area volume and weight of hollow and solid bodies
102&104	Revision trade test.			

List of Tools & Equipments
For The Trade of ■MV MECH: & MAINT
 (For a batch of unit of 20 trainees)

<u>SL.NO.</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>
1	Hammer ball pein 0.75 kg	5
2	Chisel cold flat 19 mm	10
3	Center punch 10mm dia x 100mm	10
4	Steel rule 15 cm English and Metric	10
5	Screw driver 30 cm x 9mm blade	10
6	Screw driver 20 cm x 9mm blade	10
7	Spanner D.E set of pieces (10mm to 32mm)	10
8	Plier combination 15 cm	10
9	Hand file 20cm second cut	10
10	Feeler gauge 20 blades (metric)	10
11	Ring spanner set of 1 pieces (10mm to 32mm)	10
12	Steel tool box with lock and key (folding type) Size : 400 x 200 x 150 mm	10
13	Allen key set 12 pieces (2mm to 4mm)	2 sets
14	Circlip plier (external & internal) 150mm and 200mm	2 each

Tools, Measuring Instruments and General Shop Outfit

<u>SL.NO.</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>
1.	Rule steel 300mm	2
2.	Chisel cross cut 200mmx6mm	2
3.	Hacksaw frame for 30cm blade	4
4.	Hand vice 37mm	2
5.	Screw driver, electrician type 15cm size	2
6.	Mallet (wooden)	1
7.	Blow lamp 0.5 liter	1
8.	Pilers Nose (round and straight) 150mm and 200mm	2 each
9.	Spanners adjustable 20cm	1
10.	Spanners for sparking plug 14mm	1 set
11.	Spray gun-kerosene	1
12.	Pressure Grease Gun	1
13.	Chain pulley block -3 ton capacity	1
14.	Tray cleaning 45x30cm	5
15.	Oil can 0.5 liter	1
16.	Lifter, valve spring	1
17.	Tools, valve grinding, suction type (consumable tool)	2
18.	Valve set cutting tools complete with guides and pilot bar (all cutting) in a box	1 set
19.	Cylinder Dial Gauge	1 set
20.	Torque wrench (0 to 67.5 kg-meter) set of 3	1
21.	Work bench 240x120x75cm with 4 vices 12.5cm jaw	2
22.	Lockers with 8 drawers (Standard size)	1
23.	Metal reek 180x150x45cm	1
24.	Fuel pump, distributors-old for practice	2
25.	Carburetor (two different types)	2
26.	Water pump and oil pump	2each

27.	Steel almirsn 180x90x50cm	1
28.	Black board 180x90cm	1
29.	Desk or table 90x60cm (for instructor)	1
30.	Fire extinguisher	1
31.	Fire buckets with stand	2
32.	Tachometer	1
33.	Brake assembly, Master cylinder, wheel cylinder and servo old	1
34.	Air brake assembly	1
35.	Clutches-different types such as cone type disk type diaphragm type etc., sample old clutches only	1
36.	Steering assembly-Rack and pinion type	1
37.	Valve spring compressor	1
38.	Carburetor repair tool kit	1 set
39.	Puller set steering wheel universal	1 set
40.	Lifting jack, screw type	2
41.	Piston ring compressor	1
42.	Valve key inserter	1
43.	Piston ring expander	1
44.	Stud extractor	1 set
45.	Torque wrench (set of three Nos.) already	1
46.	Battery charger	1
47.	Soldering iron 120 watts	1
48.	Tyre changer two levers	1
49.	Fuel injection pump (Diesel) inline	1
50.	Multi-point fuel injection pump	1
51.	Petrol nozzle	2 set

GENERAL MACHINERY

43

<u>SL.NO</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>
1.	Motor car in running condition (petrol)	1
2.	Petrol engine running condition (vehicle type)	1
3.	Petrol engine running condition carburetor type	1
4.	Diesel engine running condition (vehicle type)	1
5.	Petrol engine (2-stroke) motor cycle/scooter	1
6.	Air compressor -2 stage - 500 liter with 1Hp motor Single phase old air compressor	1

ACHIEVEMENTS

- 1. Familiarization of trade, tools & machinery.**
- 2. Overhauling the transmission system parts .**
- 3. Inspecting and servicing front axle, suspension and steering systems.**
- 4. Inspecting and Overhauling brake assembly.**
- 5. Studying Air brake system.**
- 6. Dismantling and assembling of different components of the engine.**
- 7. Servicing the manifold, silencer and tail pipe.**
- 8. Studying fuel feed system .**
- 9. Overhauling feed pump & Injection pump.**
- 10. Bleeding fuel lines for Air lock , Testing injectors.**
- 11. Practice in engine tune up a vehicle.**
- 12. Checking multi point fuel injection pump and petrol nozzle.**
- 13. Servicing and testing electrical and electronic system and accessories.**
- 14. Checking and correcting cooling and lubrication system.**
- 15. Studying air conditioning unit in motor vehicle.**