

MAHARASHTRA STATE BOARD OF VOCATIONAL EDUCATION EXAMINATION, MUMBAI -51

1	Name of Syllabus	C.C. IN THREE WHEELER MECHANIC (306103)																																								
2	Max. Nos of Student	25 students.																																								
3	Duration	6 Month																																								
4	Type	Part Time																																								
5	Nos Of Days / Week	6 Days																																								
6	Nos Of Hours /Days	4 Hrs																																								
7	Space Required	Workshop = 800 Sq feet Class Room = 200 Sq feet TOTAL = 1000 Sq feet																																								
8	Entry Qualification	7 th standard passed																																								
9	Objective Of Syllabus/ introduction	1) Trainee should be well conversant with the tool generally used for repair and maintenance of three wheeler engines & Trainee should know the working of engine. 2) Trainee should be able to detect the faults. 3) He should be able to rectify the fault by way of repairing defective part of carry out minor repair and put the engine in working condition. 4) He should know the maintenance of the engine.																																								
10	Employment Opportunity	1. Shock absorber repairing 2. 3 wheelers washing and greasing (service station) 3. Spare parts selling and distribution. 4. Petrol and Diesel 3 wheelers repairing workshop. 5. Tyres puncture, retarding and vulcanizing. WAGE EMPLOYMENT:- Will is able to work in three wheeler vehicle related establishment.																																								
11	Teacher's Qualification	D.M.E.(MECHANICAL) OR D.A.E.(AUTO)																																								
12	Training System	Module wise Training System Per Week <table><tr><td>Theory</td><td>Practical</td><td>Total</td></tr><tr><td>6 Hours</td><td>18 Hours</td><td>24 Hours</td></tr></table>						Theory	Practical	Total	6 Hours	18 Hours	24 Hours																													
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13	Exam. System	<table><tr><td>Sr. No.</td><td>Paper Code</td><td>Name of Subject</td><td>TH/PR</td><td>Hours</td><td>Max. Marks</td><td>Mini. Marks</td></tr><tr><td>1</td><td>30610311</td><td>ENGINE & DIFFERENT TYPES OF SYSTEM</td><td>TH-I</td><td>3 HRS</td><td>100</td><td>35</td></tr><tr><td>2</td><td>30610321</td><td>PETROL/DIESEL AUTO</td><td>PR-I</td><td>3 HRS</td><td>100</td><td>50</td></tr><tr><td>3</td><td>30610322</td><td>MAINTENANCE OF COMMON SYSTEM (PETROL AND DIESEL)</td><td>PR-II</td><td>6 HRS</td><td>200</td><td>100</td></tr><tr><td colspan="5">TOTAL</td><td>400</td><td>185</td></tr></table>						Sr. No.	Paper Code	Name of Subject	TH/PR	Hours	Max. Marks	Mini. Marks	1	30610311	ENGINE & DIFFERENT TYPES OF SYSTEM	TH-I	3 HRS	100	35	2	30610321	PETROL/DIESEL AUTO	PR-I	3 HRS	100	50	3	30610322	MAINTENANCE OF COMMON SYSTEM (PETROL AND DIESEL)	PR-II	6 HRS	200	100	TOTAL					400	185
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THEORY PAPER – I, ENGINE & DIFFERENT TYPES OF SYSTEM

1. Introduction about three wheeler Mech. Course safety precaution. First-aid skilled worker, Hand Tools and Equipments, Definition of Welding (Arc & Gas) used in Automobile.
2. Introduction about all 3 wheeler & Technical specification like Bajaj (Commercial & Rear Engine) Mini door (Bajaj Tempo) Greaves Garuda Vikram 750 D
3. Working Method of 2 stroke and 4 stroke Petrol & Diesel engine with neat sketch, cycle of 2 stroke and 4 stroke engine.
4. To study of entire Petrol Engine, Material of their Parts like cylinder Head Block piston, Crank shaft Flywheel, pulley etc.
5. To study of entire diesel engine like piston cylinder liner, types of piston Rings, Oil Gallery Valve Mechanism.
6. Cooling system- Air cooling & Water cooling
7. Lubrication system-oil pump, filter gallery & Pressure gauge
8. Fuel system – types of carburetor, pump, filter, FI-pump Injectors, Oil pump.
9. Ignition system (Magneto/Battery) Starter & Dynamo.
10. Filters and cleaners
11. Transmission system (working & Methods) Principle of clutch box. (dry-wet)
12. Types of clutch
13. Gear Box-Constant Mesh, Synchromesh, Sliding Mesh
14. Chain and Axle-Definition of work, power, energy Mechanical efficiency.
15. Differential Unit-Sun/Star Gear, Crown cage Crown wheel, bevels Pinion.
16. Rear Axle and their components like hub, cone, and shaft Bearing and Oil Seal.
17. Wheels- Tyres sizes, study of tyres, ply rating inflation retarding-cold and hot, tube and disc.
18. Suspension system-Internal construction of shock Absorber-Leaf spring, shackle, steering shaft-Rubber Cush.
19. Steering system-Internal. Caster angle, camber angle, Ackerman's Principle-, K. P. I. relating & bearing.
20. Brake system Mechanical and Hydraulic, wheel cylinder, Brake shoe, Brake liners & Hand Brake.
21. Electrical system wiring colour codes, coils, wiring horns.
22. Types of chassis & frames, welding, painting & Denting methods. (Outside work) information.
23. Road signs, signals & RTO rules, RTO passing, driving license and permit etc.
24. Fare-Meter Regular and Electronics Digital

Entrepreneurship:-

- 1) Talking to the clients so as to get the history of the vehicle.
- 2) Preparation of preliminary estimates, final costs, billing, and maintenance of accounts registers etc.
- 3) Information on banking procedure and services.
- 4) Information on Government laws – with reference to registration, sales income, tax, excise duty
- 5) Maintaining inventory books for spare parts and vehicle under repairs etc.
- 6) Information of various financing institution –

M.S.F.C.M.S.S.I.D.C. , N.S.I.D.C., R.D.C. S.I.S.I. etc.

- 7) Sources of information for spare parts and methods of keeping track of prices, rates and commercial practices.
- 8) Budgeting financial planning and saving.
- 9) Systems of wage payment

PRACTICAL – I, PETROL / DIESEL AUTO

A. PETROL AUTO

1. To Demonstration of hand tools & equipment Study of 2 stroke & four stroke Petrol Engine,
2. Dismantle of Bajaj Petrol Engine & study of all components of petrol Engine like Piston, connecting rod Crank shaft, Bearing etc.
3. Fuel system, carburetor over hall,
4. Inlet Manifold, Air filter,
5. Exhaust system, silencer decarburizing, types of silencers.
6. Ignition system to replacement of CB Point, condenser,
7. to study of Electronics Ignition system.
8. To study of starting system and Dismantle Assemble of starter.
9. Dynamo o/H. Cut-out setting,
10. Battery checking lime cell testing, gravity tests.
11. Multiplate, single plate clutch over hall.
12. Gear Box O/H- Auto rickshaw.
13. Gear Box-study and O/H
14. Drive lines-Propeller shaft, chain guide, Sprocket, Universal Joint, Slip Joint O/H
15. Differential unit O/H-crown pinion sun/Demonstration of all star gear, back lash adjustment of parts. Bevel Pinion.

B. DIESEL AUTO

1. To Demonstration of hand tools & equipment Study of 4 strokes Diesel Engine
2. Dismantle of VICKARM diesel Engine & study of all components of diesel Engine like Piston, connecting rod Crank shaft, Bearing etc.
3. Fuel system, Inlet Manifold,
4. Air filter, Exhaust system, silencer decarburizing, types of silencers.
5. To dismantle of diesel engine construction & study of working methods in detail & reassemble

6. Fuel Injection Pump (Over Hall)
7. Governor-valve grinding-Head over Hall
8. Injector O/H. Fuel Filter O/H Repair & Replacement of H. p. Line (High Pressure Line) and Breezing.
9. To study of starting system and Dismantle Assemble of starter of diesel auto.
10. Dynamo o/H. Cut-out setting,
11. Battery checking lime cell testing, gravity tests.
12. Multiplate, single plate clutch over hall of diesel auto.
13. Gear Box O/H- Auto rickshaw. Vikram 750D
14. Gear Box-study and O/H of diesel auto.
15. Drive lines-Propeller shaft, chain guide, Sprocket, Universal Joint, Slip Joint O/H of diesel auto.
16. Differential unit O/H-crown pinion sun/Demonstration of all star gear, back lash adjustment of parts. Bevel Pinion of diesel auto..

PRACTICAL – II, MAINTAINANCE OF COMMON SYSTEM PETROL & DIESEL ENGINE

1. Dismantle & assemble of Control cables.
2. Real Axel O/H – Hub Shaft, Bearing oil Seal of diesel auto.
3. Hub O/H information about retarding
4. Tube Vulcanizing Puncture of diesel auto.
5. Shock absorber and leaf spring O/H of diesel auto.
6. Steering Colum-Fork O/h of Bajaj Steering box O/H-Vick ram & Mini door.
7. Bleeding-master and wheel cylinder O/H change liners & Brake pipe lines of diesel auto.
8. Wiper headlight, circuits, reverse light circuits parking light circuit, Inductor circuit of diesel auto.
9. Brake light circuits, revere light circuits accessories like reveres horn, audio tape. Radio LED. Lights, Halogen lamps of diesel auto.
10. Dismantle of frames & chassis,
11. Painting Denting and reassemble of diesel auto.
12. Replacement of wind shield (Front Glass) Hood fitting.
13. Seat fitting. Accessories fitting. All glasses. Miscellaneous repairs.

ADDITIONAL REMARKS FOR PRACTICALS

1. Minimum 4 Industrial Visits.
2. Minimum 4 service Station Visits.
3. Candidate should know about Wheel Changing. Tyres Replacement, Cable Replacement.
4. All types of Lubricants should be known to candidate like SAE Oil No., Tyres of Grease etc.

LIST OF TOOLS AND EQUIPMENTS :-

Sr. No.	Name of Tools	Quantity
1.	Tools Box with lock and key	2 Nos.
2.	Ball pain hammer ½ kg	2 Nos.
3.	Cross pain hammer ½ kg	2 Nos.
4.	Mallet	1
5.	Chisel Cold Flat	1
6.	Centre Punch	1
7.	Screw Driver set	1
8.	Philips screw driver set	1
9.	D. E. Spanner set	1
10.	Ring Spanner Set	1
11.	Box Spanner set	1
12.	Combination Pliers	1
13.	Cutter Pliers	1
14.	Nose pliers	1
15.	Internal and External Circlip Pliers	1
16.	Adjustable spanner 12"	1
17.	Pipe range 12"	1
18.	Tubular Spanner set	1
19.	Nylon Brush (1/2" & 1")	1
20.	Adjustable Pliers	1
21.	File Flat Triangular half rough	1
22.	Square, smooth and rough	1 Set
23.	Hack saw frame	2 Nos
24.	Steel tray	2
25.	Oil can	1

26.	Pressure grease gun	1
27.	Liquid measure 1 Ltr	1
28.	Magnet puller	1
29.	Clutch puller	1
30.	Jack and stand	1
31.	Air compressor	1
32.	Arbor press	1
33.	Drill Machine (portable)	1
34.	Hydro meter	1
35.	Tap set	1

OUTSIDE WORK:-

1. Crank through (Bush fitting)
2. Connecting rod repair
3. Block Boring.
4. Fork, Chassis true (Out-bend-etc)
5. Welding
6. Oven Painting
7. Change of valve guide and re facing.

REFERENCE BOOK:-

1. Three Wheeler Mechanics.
2. Auto Rickshaw Servicing & Repairing (Gangadhar Mahambare).
3. Service Manual :- Bajaj Auto Ltd. Akurdi. Pune-35.
Greaves garuda Minidor (Bajaj Tampo) Akurdi, Pune-35.
APE PIAGGO Baramati pune
4. Wall Charts :- spaco carburetor.
Electrical & Wiring Diagram.
Lubrication Charts.
Exploded view of engine for further charts. Please contact .
to company service Manager.
5. Tyre Servicing, repairing and retarding. Matathe/ Vaze.
