

MAHARASHTRA STATE BOARD OF VOCATIONAL EDUCATION EXAMINATION, MUMBAI -51

1	Name of Syllabus	C.C. IN Automobile Mechanic Technician (306203)																																										
2	Max.Nos of Student	25 Students																																										
3	Duration	1 year																																										
4	Type	Part Time																																										
5	Nos Of Days / Week	6 Days																																										
6	Nos Of Hours /Days	4 hrs																																										
7	Space Required	1) Workshop = 300 sqfeet 2) Class Room = 200 sqfeet TOTAL= 500 sqfeet																																										
8	Entry Qualification	SSC Appeared																																										
9	Objective Of Syllabus/ introduction	1. To get knowledge and skills of an Automobile. [2 wheeler] 2. Know the faults and causes and able to rectify.																																										
10	Employment Opportunity	1. Able to seek employment as a Technician in any Automobile concern / Garage . 2. Able to start a Automobile repair shop / Garage .																																										
11	Teacher's Qualification	1) MCVC (Auto Engg Technician) OR 2) ITI / NCVT in Motor Mech. Vehical Trade OR 3). Diploma Automobile Engineering OR 4) Diploma in mechanical Engineering with 1year experience in Automobile																																										
12	Training System	Training System Per Week <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th align="center">Theory</th> <th align="center">Practical</th> <th align="center">Total</th> </tr> </thead> <tbody> <tr> <td align="center">6 hrs</td> <td align="center">18 hrs</td> <td align="center">24 hrs</td> </tr> </tbody> </table>	Theory	Practical	Total	6 hrs	18 hrs	24 hrs																																				
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Automobile Engineering Technician—

Introduction

The objectives of Vocational Education in the context of fulfillment of national goal are to train the students for self-employment. Automobile Engineering Technician can have ample opportunities if skills are learned with commitment.

Skill to be Provided

1. Use proper tools for repair work.
2. Able to assemble and disassemble the parts of the 2 wheelers.
3. Able to identify the various faults and to rectify

C.C. IN Automobile Mechanic Technician

PAPER - I, TWO AND THREE WHEELER MECHANISM

• TWO WHEELER MECHANISM

Week No	Theory - I	Practical - I
1	Construction and working of spark ignition, 2-stroke and 4-stroke engine. Comparison of two and four stroke spark ignition engine.	Study the working of two and four stroke spark ignition engine with the help of a sectional model. Dismantling the two and four stroke engine, cleaning and inspecting the parts and also reassembling the (working model) engine.
2	Construction and working of two and four stroke spark ignition engine parts i.e. Cylinders head, Cylinder, Piston, Connecting rod, Crank Shaft, Dry sump, Wet sump, Spark Plug, Carburetor.	Cleaning the spark plug, setting the spark plug gap or replacing the spark plug with new one. Dismantling the carburetor cleaning and inspecting the parts and also reassembling the parts. Fixing the carburetor on engine.
3	Construction and working of Air cleaners, Silencers, Mufflers (two Wheelers only). Necessity of cooling system, Study air cooling system, advantages and disadvantages of air cooling system.	Dismantling the air cleaner, cleaning, inspecting, setting and refitting to the vehicle. Dismantling the manifolds and muffler. Cleaning, inspecting, setting and refitting to the vehicle.
4	Necessity of lubricating system, Study the splash type and pressure lubrication system. Types of oils, which are, used in two-wheeler engines.	Faultfinding and rectification in lubrication system. Inspecting the lubricating system, changing of oil filters.
5	Necessity of Ignition system, construction and working of magneto ignition system. Detailed study of two-wheeler automobile wiring circuits. Starting motor- motor working	Cleaning and testing of ignition system. Removing the contact breaker points, setting the ignition timing and C. B. point gap or replacing with new contact breaker points.

	principle construction and function of the battery.	Removing the battery, Checking the electrolyte, Specific gravity and reconnecting. Faultfinding and rectification of magneto ignition system. Fault finding and rectification of ignition and Lighting circuit. Faultfinding and rectification in starting motor
6	Function of clutch, principle of operation, centrifugal, semi centrifugal, and multiple clutches construction, working, servicing and maintenance	Explaining where it is used and finding faults in its operation. Dismantling the clutch, checking for wear and tear, cleaning injecting and reassembling with new clutches.
7	Gear box, types of gears, types of gear boxes i.e., sliding mesh gear box and constant mesh gear box. Necessity of gear box and lubrication of gear box	To study about gearbox. Dismantling the gearbox. Cleaning, inspecting and reassembling
8	Functions of shock absorbers and telescope shock absorbers. Transmission of power-chain drive, belt drive and their functions.	Fault finding and rectifying suspension springs. Dismantling of shock absorber, inspecting replacing with new springs, oil seals and oils.
9	Braking principles, Mechanical brakes and disc brakes. Requirements of good braking system and maintenance of brakes.	Dismantling of both front and rear brakes, Cleaning, inspecting and refitting.
10	Two wheeler service station lay out, factors effecting service station. Two wheeler maintenance - servicing and maintenance of two stroke and four stroke engines.	To study about the service station setup. To study about 2 wheeler maintenance.
11	Tool kit of mechanics, service station tools and special tools.	What are the tools used where they are used are studied in detail.
12	Raw materials, consumables, kerosene, Cotton waste, grease, engine oil.	To study about raw materials.
13	Revision and Tests	Revision through OJT

• **THREE WHEELER MECHANISM**

Week No	Theory	Practical
1	Construction and working of spark ignition, and C.I., 2-stroke and 4-stroke engine. Comparison of two and four stroke spark ignition engine and C.I. engine.	Study the working of two and four stroke spark ignition and C.I. engine with the help of a sectional model. Dismantling the two and four stroke engine, cleaning and inspecting the parts and also reassembling the (working model) engine.

2	Construction and working of two and four stroke spark ignition and C.I. engine parts i.e., Cylinders head, Cylinder, Piston, Connecting rod, Crank Shaft, Dry sump, Wet sump, Spark Plug, Carburetor.	Cleaning the spark plug, setting the spark plug gap or replacing the spark plug with new one. Dismantling the carburetor cleaning and inspecting the parts and also reassembling the parts. Fixing the carburetor on engine.
3	Construction and working of Air cleaners, Silencers, Mufflers (three Wheelers only). Necessity of cooling system, Study air cooling system, advantages and disadvantages of air cooling system.	Dismantling the air cleaner, cleaning, inspecting, setting and refitting to the vehicle.
4	Necessity of lubricating system, Study the splash type and pressure lubrication system. types of oils which are used in two wheeler engines.	Fault finding and rectification in lubrication system. Inspecting the lubricating system, changing of oil filters.
5	Necessity of Ignition system, construction and working of magneto and battery ignition system. Detailed study of three wheeler automobile wiring circuits. Starting motor- motor working principle construction and function of the battery.	Cleaning and testing of ignition system. Removing the contact breaker points, setting the ignition timing and C.B point gap or replacing with new contact breaker points. Removing the battery, Checking the electrolyte, Specific gravity and reconnecting. Fault finding and rectification of magneto ignition system. Fault finding and rectification of ignition and Lighting circuit. Fault finding and rectification in starting motor.
6	Function of clutch, principle of operation, multiple clutch construction, working, servicing and maintenance.	Explaining where it is used and finding faults in its operation. Dismantling the clutch, checking for wear and tear, cleaning injecting and reassembling with new clutches
7	Gear box, types of gears, types of gear boxes i.e., sliding mesh gear box and constant mesh gear box. Necessity of gear box and lubrication of gear box.	To study about gear box. Dismantling the gear box. cleaning, inspecting and reassembling
8	Functions of shock absorbers and telescope shock absorbers. Transmission of power-chain drive, belt drive and their functions.	Fault finding and rectifying suspension springs. Dismantling of shock absorber, inspecting replacing with new springs, oil seals and oils.
9	Braking principles, Mechanical and hydraulic brakes and brakes.	Dismantling of both front and rear brakes,

	Requirements of good braking system and maintenance of brakes.	Cleaning ,inspecting and refitting.
10	Three wheeler service station layouts, factors effecting service station. Three wheeler maintenance – servicing and maintenance of two stroke and four stroke engines.	To study about the service station setup. To study about 3 wheeler maintenance.
11	Tool kit of mechanics, service station tools and special tools.	What are the tools used where they are used are studied in detail.
12	Raw materials, consumables kerosene, Cotton waste, grease,engine oil.	To study about raw materials.
13	Revision and Tests	Revise Practical.

PAPER – II, FOUR WHEELER MECHANISM

Week No	Theory - II	Practical - II
1	Construction and working of spark ignition, and C.I., 4-stroke engine. Comparison of four stroke spark ignition engine and C.I.engine.	Study the working of two & four stroke spark ignition and C.I.engine with the help of a sectional model. Dismantling the four stroke engine, cleaning and inspecting the parts and also reassembling the (working model) engine.
2	Construction and working of four stroke spark ignition and C.I. engine parts i.e., Cylinders head, Cylinder, Piston, Connecting rod, Crank Shaft, Dry sump, Wet sump, Spark Plug, Carburetor.	Cleaning the spark plug, injector and injection pump, setting the spark plug gap or replacing the spark plug with new one. Dismantling the carburetor cleaning and inspecting the parts and also reassembling the parts. Fixing the carburetor on engine
3	Construction and working of Air cleaners, Silencers, Mufflers (four Wheelers only). Necessity of cooling system, Study air cooling system, advantages and disadvantages of air cooling system.	Dismantling the air cleaner, cleaning, inspecting, setting and refitting to the vehicle. Dismantling the manifolds and muffler. Cleaning, inspecting, setting and refitting to the vehicle.
4	Necessity of lubricating system, Study the splash type and pressure lubrication system. Types of oils which are used in two wheeler engines.	Fault finding and rectification in lubrication system. Inspecting the lubricating system, changing of oil filters. Cleaning and testing of ignition system.
5	Necessity of Ignition system, construction and working of battery	Removing the contact breaker points, setting the ignition timing and C.B.

	<p>ignition system. Detailed study of four wheeler automobile wiring circuits. Starting motor- motor working principle construction and function of the battery.</p>	<p>point gap or replacing with new contact breaker points. Removing the battery, Checking the electrolyte, Specific gravity and reconnecting. Fault finding and rectification of magneto ignition system. Fault finding and rectification of ignition and Lighting circuit. Fault finding and rectification in starting motor.</p>
6	<p>Function of clutch, principle of operation, single plate clutches construction, working, servicing and maintenance.</p>	<p>Explaining where it is used and finding faults in its operation. Dismantling the clutch, cheking for wear and tear, cleaning injecting and reassembling with new clutches.</p>
7	<p>Gear box, types of gears, types of gear boxes i.e., sliding mesh gear box and constant mesh gear box and synchromesh gear box. Necessity of gear box and lubrication of gear box.</p>	<p>To study about gear box. Dismantling the gear box. Cleaning , inspecting and reassembling .</p>
8	<p>Functions of shock absorbers and telescope shock absorbers and leaf springs. Transmission of power and their functions.</p>	<p>Fault finding and rectifying suspension springs. Dismantling of shock absorber, inspecting replacing with new springs, oil seals and oils.</p>
9	<p>Braking principles, Mechanical and hydraulic brakes and brakes. Requirements of good braking system and maintenance of brakes.</p>	<p>Dismantling of both front and rear brakes, Cleaning, inspecting and refitting.</p>
10	<p>Four wheeler service station layouts, factors effecting service station. Four wheeler maintenance – servicing and maintenance of four stroke engines.</p>	<p>To study about the service station setup. To study about wheeler maintenance.</p>
12	<p>Tool kit of mechanics, service station tools and special tools.</p>	<p>What are the tools used where they are used are studied in detail.</p>
13	<p>Raw materials, consumables, kerosene, Cotton waste, grease, engine oil.</p>	<p>To study about raw materials.</p>
14	<p>Revision and Tests</p>	<p>Revise Practical.</p>

Project Report –

The Project Report for starting his own enterprises/ Venture / Buisness should be prepared by each candidates

3 . LIST OF TOOLS & EQUIPMENT

1. Air Compressor
2. Tyre Inflator
3. Work Bench
4. Oil Spray Gun
5. Hydro Meter
6. Battery Charger
7. Tool kit
- 8 Vehicals as per Requirements (2 Wheeler , 3 Wheeler , 4 Wheeler)

4 Raw materials, (consumables),

kerosene, Cotton waste, grease, engine oil. etc.

9. REFERENCE BOOKS

1. The Automobile by Harbans Singh Reyat
2. Automobile Engineering by R.B.Gupta.
3. Automotive mechanics by S.Srinivas
4. Automotive Mechanics Trade manual by K.C.Kohad
