

# CERTIFICATE IN TWO WHEELER TECHNICIAN

Skill Based Curriculum – NSQF Level 3 & 4

Duration: 1 Year



**AUTOMOBILE SECTOR**



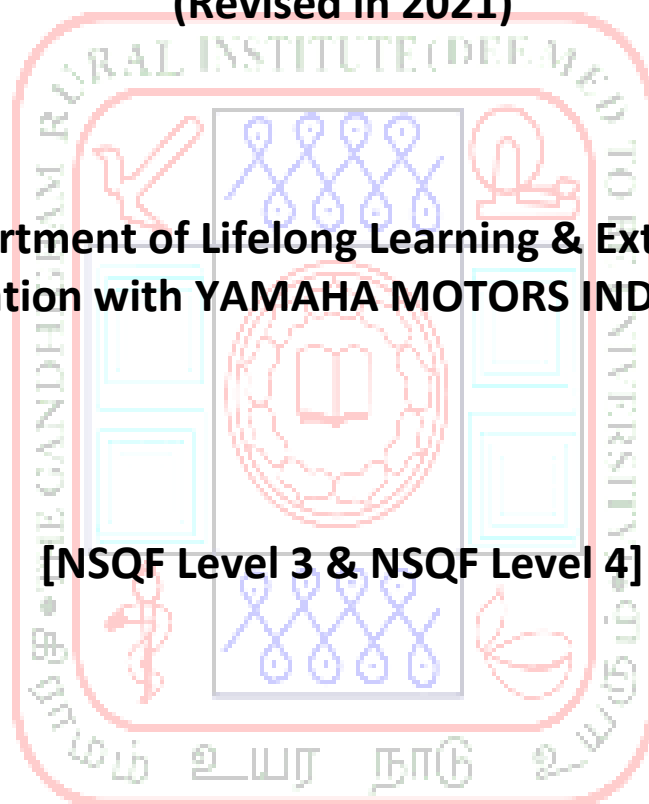
**THE GANDHIGRAM RURAL INSTITUTE – DEEMED TO BE UNIVERSITY**  
**GOVERNMENT OF INDIA**  
**MINISTRY OF EDUCATION (SHIKSHA MANTRALAYA)**  
Accredited by NAAC with “A” Grade (3<sup>rd</sup> Cycle)

# CERTIFICATE IN TWO WHEELER TECHNICIAN

(Revised in 2021)

Department of Lifelong Learning & Extension  
(Collaboration with YAMAHA MOTORS INDIA Pvt Ltd.,)

[NSQF Level 3 & NSQF Level 4]



Developed by

**The Gandhigram Rural Institute – Deemed to be University**

MINISTRY OF EDUCATION (SHIKSHA MANTRALAYA), Government of India

Accredited by NAAC with “A” Grade (3<sup>rd</sup> Cycle)

Gandhigram – 624302






## ACKNOWLEDGEMENT

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Special acknowledgement is extended by GRI to the following expert members who had contributed immensely in this curriculum framework.

| Experts within the Institute  |             | Experts from the Industry and Service Providers   |        |
|---|-------------|---|--------|
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| <b>Director</b><br>DDU-KK<br>Gandhigram Rural Institute<br>Gandhigram                                   | Member      | <b>Mr.Anna Durai</b><br>President<br>Dindigul District Micro and Small<br>Entrepreneurs Association<br>11/1, SIDCO Industrial Estate<br>Dindigul<br>9944944916<br>dindigulmasea@gmail.com     | Member |
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## FACULTY DETAILS

| S.NO | STAFF NAME  | DESIGNATION   | PHOTO   |
|------|---|---------------|---|
| 1.   | Dr.L.Raja<br><b>Specialization</b> <ul style="list-style-type: none"> <li>• Peace Making,</li> <li>• Gandhian Thought,</li> <li>• MicroPlanning</li> </ul>                                    | Principal     |    |
| 2.   | Dr.R.Venkatravi<br><b>Specialization</b> <ul style="list-style-type: none"> <li>• Rural Development,</li> <li>• Extension</li> </ul>  | Coordinator   |    |
| 3.   | Er. M.Praveen kumar<br><b>Specialization</b> <ul style="list-style-type: none"> <li>• Automobile Engineering</li> <li>• Thermal Engineering</li> <li>• Yamaha Bronze certification</li> </ul> | Guest Faculty |   |
| 4.   | Er. J.Muthukumar<br><b>Specialization</b> <ul style="list-style-type: none"> <li>• Automobile Engineering</li> <li>• Thermal Engineering</li> <li>• Yamaha Bronze certification</li> </ul>    | Guest Faculty |  |
| 5.   | Mr. T. Saravanakumar<br><b>Specialization</b> <ul style="list-style-type: none"> <li>• Mechanical Lab Operations</li> <li>• QC analyst</li> <li>• Yamaha Beginner certification</li> </ul>    | Lab Attendant |  |

## CONTENTS

| S.No | Topics                                      | Page No |
|------|---|---------|
| 1.   | Introduction                                | 6       |
| 2.   | Training Methodology                        | 7 – 9   |
| 3.   | NSQF Level Compliance                       | 10 – 11 |
| 4.   | Job Role                                    | 12      |
| 5.   | Objectives and Learning Outcomes            | 13 – 14 |
| 6.   | Assessment Outcome with Assessment Criteria | 15 – 23 |
| 7.   | Structure of the Programme                  | 24      |
| 8.   | Syllabus – First Semester                   | 25 – 29 |
| 9.   | Syllabus – Second Semester                  | 30– 32  |
| 10.  | List of Assets                              | 33 – 34 |
| 11.  | Workshop Equipments & General Tools         | 35 – 40 |
| 12.  | Format for Internal Assessment              | 41      |
| 13.  | Certificate Details                         | 42      |

## 1. INTRODUCTION

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The Gandhigram Rural Institute (GRI) - Deemed University, Gandhigram is one of the pioneering institutions working for rural development and preparing human resources for managing rural development during last four decades. The GRI has a separate Department of Lifelong Learning and Extension which is mainly working for the vocational training for skill development. In this context, focus is on the “skills and knowledge” needed to work with people in various employment settings, in the rural and semi-urban areas, particularly in the unorganized sector and also in the Non-governmental organizations. In this background, Institute has established a Community College (CC) with the support of the UGC, New Delhi.

The Community College is to increase accessibility of a large number of individuals in the rural community, while offering vocational skills development as well as traditional coursework, to locally providing opportunities to the learners to move directly to the employment sector. Currently, the Community College (CC) is offering a Diploma in Two Wheeler Mechanism and Maintenance.

The GRI has signed an MoU with Yamaha Motors to establish a Yamaha Training School [YTS] to train rural youth to provide basic skills training relating to the servicing of Two Wheelers. The training school has been established in the GRI campus and is ready. The training will lead to a Certificate in Two Wheeler Technician. This will be a joint certification programme of GRI and Yamaha Motors.

## 2. TRAINING METHODOLOGY

The Certificate programme is of two semester duration and follows the credit system. In the first semester the students are introduced to the essential elements of two wheelers and appropriate practices in the form of practical training and on-job training is provided during the first semester. There are four courses in the first semester and three courses in second semester. Each of these courses have both Theory and Practical components. The evaluation and Grading will be done as per GRI pattern. Each course will be evaluated for a maximum of 100 marks – Combining both Theory and Practical components. Being a skill development programme, the passing minimum will be 40%. At the end of the first semester candidates of the Certificate in Two wheeler Technician broadly need to demonstrate that they are able to:

- Read and understand technical parameters / documents, plan and organize work processes, identify necessary materials and tools;
- Perform task with due consideration to safety rules, accident prevention regulations and environmental protection stipulations;
- Apply professional skill, knowledge, core skills & employability skills while performing jobs and solve problem during execution.
- Able to fill the job card in the dealerships to repair the faulty two wheeler and to perform the service.
- Document the technical parameters related to the task undertaken

The trainee will be tested for his skill, knowledge and attitude during the period of course. The evaluation and Grading will be done as per Gandhigram Rural Institute pattern and Yamaha Technical Academy. Each course will be evaluated for a maximum of 100 marks – Combining both Theory and Practical components as suggested by UGC for vocational courses in Community Colleges. Being a skill based programme, the passing minimum will be 40%. Teaching and Training process includes the following:

- Classroom sessions
- Demonstration
- Hands-on-Training with the help of industrial partner
- ICT enabled interactive sessions

- Industrial Placement
- Exposure Visit to Industry
- Study Material in English and Tamil (bilingual)

**INDUSTRY COLLABORATION:**

- Yamaha Motors through its Yamaha Training Academy (YTA) is providing all kind of support for the programme as Industry Partner
- Yamaha Training Academy (YTA) providing professional training to the Faculty and Students
- Networking with identified Two-Wheeler Dealers, Workshops and Technical Institutions in and around Dindigul to provide Practical Training and opportunities for hands-on experience.
- Experts available in these industrial units / Technical Institutions will be invited as Guest Faculty
- Signing of Memorandum of Understanding [MOU] by the Community College with identified Two Wheeler Dealers and Workshops.
- During the first semester students are placed in the industrial units / workshops for one month Internship.
- Yamaha Motors is Industry Partner for the Programme
- During the second semester for practical training, students will be placed in the Industry under Industry Placement Programme [IPP].

**METHOD OF ASSESSMENT:**

- The Controller of Examination, GRI shall conduct the End Semester Examination [ESE] as is being practiced in the case of other Certificate / Diploma Programmes.
- The course teacher will be the examiner.
- The Industry Experts, if required, can be invited for conducting the practical Examinations.
- Certificates are issued to the successful students by the Certificate from GRI. They will also get Certificate from Yamaha Training Academy (YTA) and Automotive Skill Development Council (ASDC).



- For theory papers assessment is based End Semester Examination only.
- A student will be declared to have passed in a course when she / he have scored 40% in Theory and 60% in Practical. Over all 40% to get pass in course.
- In the Case of student absent / failed in a subject in a semester examination, she / he have to write both Theory and Practical examination for that subject during the subsequent semesters.
- A student has to pass in course with maximum attempts of 5 times [1+4Times]
- The second semester practical examination includes - 40% for Internship Report and 60% for practical examination.

**TIMELINE OF ASSESSMENT:**

| Months        |         | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---------------|---------|---|---|---|---|---|---|---|---|---|----|
| Semester - I  | Regular | █ |   |   |   | █ |   |   |   |   |    |
|               | OJT     |   |   |   | █ |   |   |   |   |   |    |
| Semester - II | Regular |   |   |   |   |   | █ |   |   |   |    |
|               | OJT     |   |   |   |   |   |   |   |   |   | █  |

### 3. NSQF LEVEL COMPLIANCE

The learning outcomes of the Certificate in Two wheeler Technician matches with the level descriptor at LEVEL 3 and Level 4. Each level of the NSQF is described by a statement of learning outcomes in five domains, known as level descriptors. These five domains are:

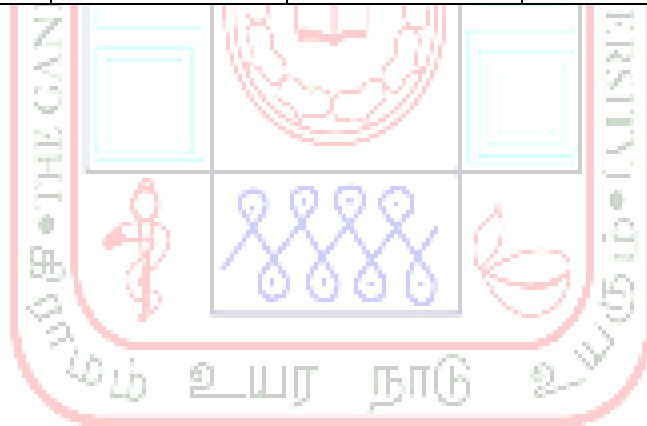
- a. Process
- b. professional knowledge,
- c. professional skill,
- d. core skill and
- e. Responsibility.

The NSQF LEVEL 3 descriptor is given below:

| Level     | Process required  | Professional knowledge  | Professional Skill  | Core skill   | Responsibility  |
|-----------|---|---|---|--|---|
| Level - 3 | Person may carry out a job which may require limited range of activities routine and predictable. | Basic facts process and principle applied in trade of employment. | Recall and demonstrate practical skill routine and repetitive in narrow range of application. | Communication written and oral with minimum required clarity skill of basic arithmetic and algebraic principles, Personal banking, basic understanding of social and natural environment | Under close supervision. Some responsibility for own work within defined limit. |

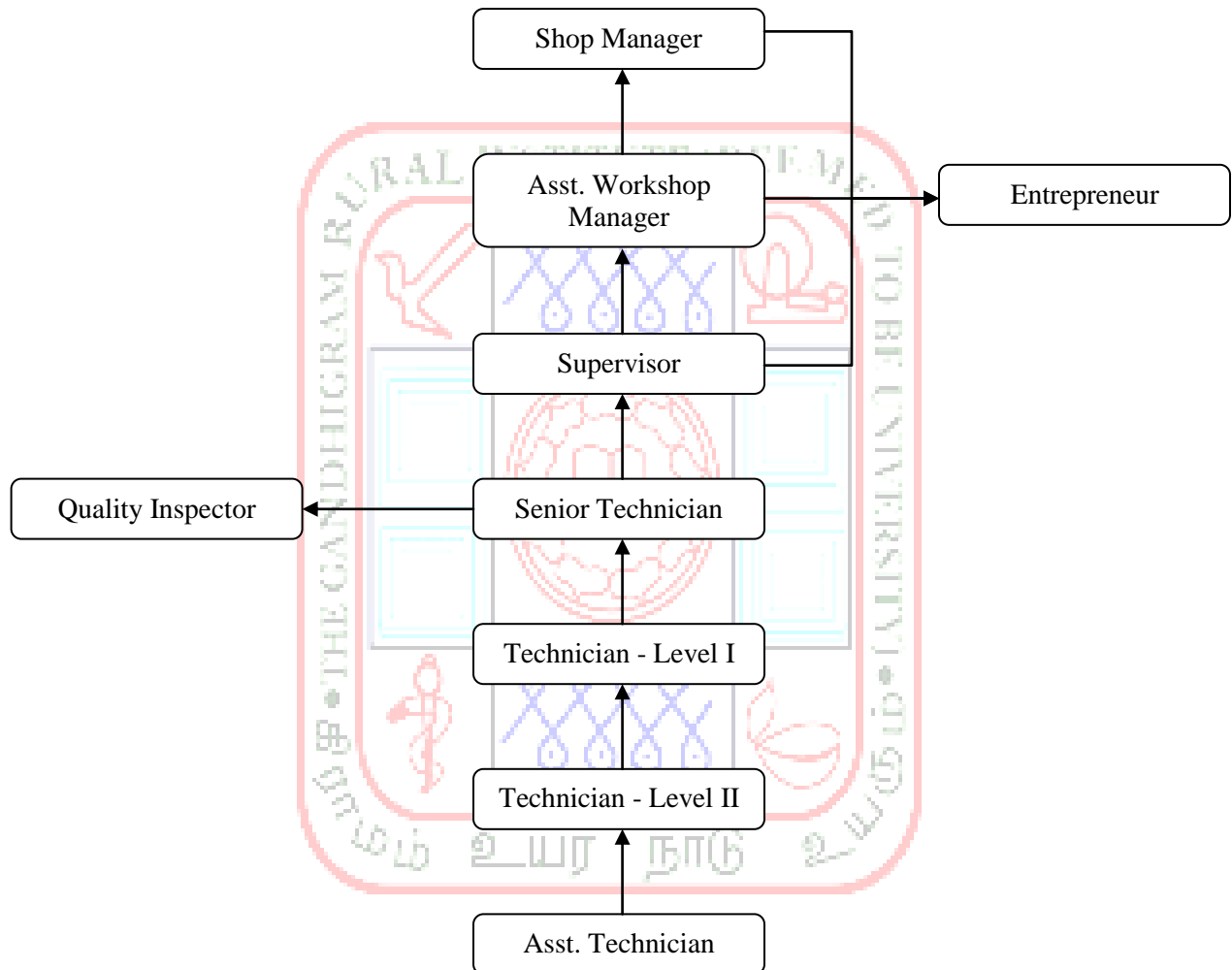
The NSQF LEVEL 4 descriptor is given below:

| Level     | Process required  | Professional knowledge                            | Professional Skill  | Core skill   | Responsibility                           |
|-----------|---|---|---|--|--|
| Level - 4 | Work in familiar predictable, routine, situation of clear choice. | Factual knowledge of field of knowledge or study. | Recall and demonstrate practical skill, routine and repetitive in narrow range of application, using appropriate rule and tool, using quality concepts. | Language to communicate written or oral, with required clarity, skill to basic arithmetic and algebraic principles, basic understanding of social political and natural environment. | Responsibility for own work and learning |



## 4. JOB ROLE

Those who had completed one year Certificate in Two wheeler Technician have the entry eligibility of the following job roles especially in the Technicians and supervisor category.



Apart from the above jobs, there is an opportunity to enter in to the YAMAHA Manufacturing plants in the category of trainee grades.

## 5. OBJECTIVES & LEARNING OUTCOMES

The main objective of the Certificate programme is

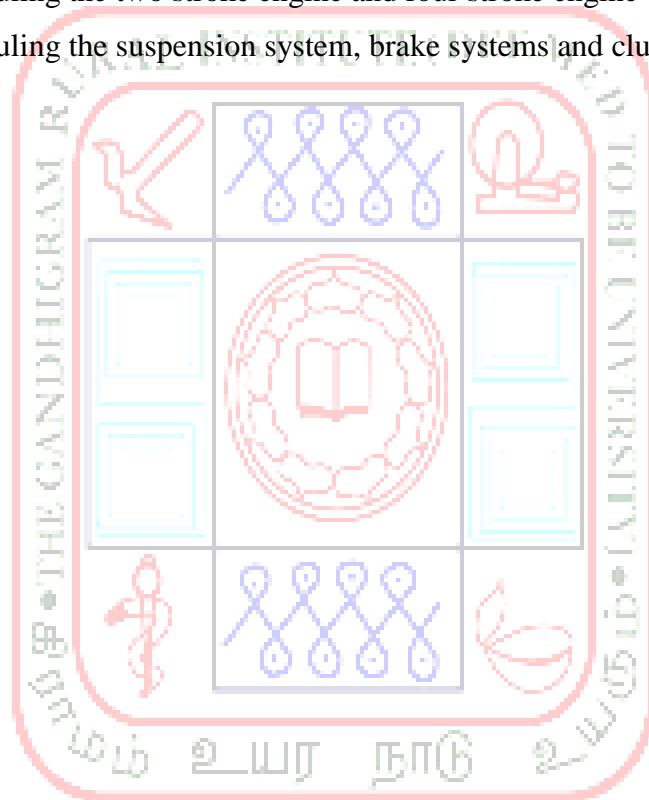
1. To convert interested rural student into professional technician.
2. Make the rural students as qualified and skilled man power for the two wheeler service sector in the rural and urban areas.
3. To create an opportunity for the rural students to become an entrepreneur and increase the employability.

### Learning Outcomes

After completion of one year Certificate in Two wheeler Technician, our trainee is

- able to understand the history of Automobile Industry and major two wheeler manufactures in India
- provided knowledge on various types of two wheelers
- able to know the principles, general concepts, material used, type of Two Wheeler chassis
- able understand the function and classification of two / four stroke engine and their components
- enabled to explain the function of clutch and gear box
- able to explain the need for suspension, brakes and their types
- able understand the function and classification of wheels and tires
- enabled to Identify the parts of Fuel Injection System and check the trouble shooting in FI
- enabled to trouble shoot the sensors by using FI Diagnostic Tool
- capable of working of ECU
- enabled lighting system like the Head Light, Tail light, Parking light as per norms
- able to understand basics of general servicing and various types of servicing of the two wheelers
- able to do the service and maintenance of the electrical circuit and lighting system
- enabled to explain the function of fuel tank, carburetor and fuel injection system
- able to explain the need for tuning the engine and its adjustment

- enabled handle and dismantling engine / assemble the engine after servicing
- capable of adjusting the clutch system, servicing and fitting
- enabled to identify the electrical parts & examine their goodness with suitable devices
- able understand the basics of electrical systems and Safety Precautions
- capable of dismantling the battery and charge; and re-fit battery in series connection and parallel connection
- able to dismantle the sparkplug and clean it. Assess its capability
- enabled to dismantle assemble Ignition coil, distributor and CDI
- able to overhauling the two stroke engine and four stroke engine
- able to overhauling the suspension system, brake systems and clutch system.



## 6. ASSESSMENT OUTCOME WITH ASSESSMENT CRITERIA

| WEEK | WORK   | OUTCOME   | Asset & Tools Usage             | Study Material  |
|------|--|---|---------------------------------|---|
| 1    | Identify the General tools and Special Tools | Trainee is able to identify the available general tools and special tools in the workshop   | General tools and Special Tools | <ul style="list-style-type: none"> <li>• Service Manual</li> <li>• Tools catalogue</li> </ul>   |
| 2    | Water washing, Greasing and Lubricating      | <p>Trainee is able to identify the proper position of the two wheeler</p> <p>Water washing, cleaning and drying</p> <p>Lubricating and applying grease</p> <p>Checking function and performance after servicing</p>   | Water wash Machine              | <ul style="list-style-type: none"> <li>• Service Manual</li> <li>• NSQF Level 3 book</li> </ul> |
| 3    | Dismantling the battery                      | <p>Removing the side covers of the two wheeler with suitable tool</p> <p>Trainee is able to identify the battery terminals</p> <p>Following the standard procedure of removing battery</p> <p>Select the suitable electrical kit to examine the battery goodness</p> <p>Consult the authorities on if any replacement</p> | General tools                   | <ul style="list-style-type: none"> <li>• Service Manual</li> <li>• NSQF Level 3 book</li> </ul> |
| 4    | Dismantle the sparkplug and clean            | <p>Trainee is able to identify the sparkplug in a given vehicle</p> <p>Removing the sparkplug with suitable special tool</p> <p>Clean the sparkplug with suitable method and standard procedure</p> <p>Consult the authorities on if any replacement</p>  | General tools                   | <ul style="list-style-type: none"> <li>• Service Manual</li> <li>• NSQF Level 3 book</li> </ul> |

|        |   |   |                               |  |
|--------|---|---|-------------------------------|--|
| 5      | Dismantling and cleaning of the air filter, and assembling and refitting the air filter | Follow safety precautions<br>Cleaning air filter<br>Consult the authorities on if any replacement   | General tools                 | <ul style="list-style-type: none"> <li>• Service Manual</li> <li>• NSQF Level 3 book</li> </ul>                              |
| 6 to 7 | Dismantling and assembling the components to be mounted on a chassis                    | <ul style="list-style-type: none"> <li>• Select, care and use of Personal Protective Equipments [PPE] while carrying out dismantling / assembling</li> <li>• Select the tools / equipments required for dismantling / assembling</li> <li>• Ensure availability and use the tools in the timely manner</li> <li>• Carry out their dismantling and assembling of components               <ul style="list-style-type: none"> <li>• By reviewing</li> <li>• Technical data</li> <li>• Removal and Replacement procedures</li> <li>• Legal Requirement</li> </ul> </li> <li>• Check for proper functionality / adjustment</li> </ul> | General tools & Special tools | <ul style="list-style-type: none"> <li>• Service Manual</li> <li>• NSQF Level 3 book</li> </ul>                              |
| 8      | Replacing the Drum Brake  | <ul style="list-style-type: none"> <li>• Ensure availability and use the tools in the timely manner</li> <li>• Carry out their dismantling and assembling of Drum Brake               <ul style="list-style-type: none"> <li>• By reviewing</li> <li>• Technical data</li> <li>• Removal and Replacement procedures</li> </ul> </li> </ul>  | General tools                 | <ul style="list-style-type: none"> <li>• Service Manual</li> <li>• NSQF Level 3 book</li> <li>• NSQF Level 4 book</li> </ul> |



|    |  |   |                               |  |
|----|--|---|-------------------------------|--|
|    |  | <ul style="list-style-type: none"> <li>• Legal Requirement</li> <li>• Check for proper functionality / adjustment</li> </ul>  |                               |  |
| 9  | Overhauling of Front fork                    | <ul style="list-style-type: none"> <li>• Ensure availability and use the tools in the timely manner</li> <li>• Carry out their dismantling and assembling of Front fork <ul style="list-style-type: none"> <li>• By reviewing</li> <li>• Technical data</li> </ul> </li> <li>• Removal and Replacement procedures</li> <li>• Legal Requirement</li> <li>• Discuss within the Team and higher authority on need for replacement and its cost implication</li> <li>• Check for proper functionality / adjustment</li> </ul> | General tools & Special tools | <ul style="list-style-type: none"> <li>• Service Manual</li> <li>• NSQF Level 3 book</li> <li>• NSQF Level 4 book</li> </ul> |
| 10 | Dismantling and assembling Suspension System | <ul style="list-style-type: none"> <li>• Ensure availability and use the tools in the timely manner</li> <li>• Carry out their dismantling and assembling of Suspension System</li> <li>• Check for proper functionality / adjustment</li> </ul>  | General tools                 | <ul style="list-style-type: none"> <li>• Service Manual</li> <li>• NSQF Level 3 book</li> <li>• NSQF Level 4 book</li> </ul> |
| 11 | Dismantling and servicing of carburetor      | <ul style="list-style-type: none"> <li>• Follow safety precautions</li> <li>• Dismantling of carburetor</li> <li>• Follow the technical standard Servicing</li> <li>• Fitting carburetor and Check the performance</li> </ul>   | General tools                 | <ul style="list-style-type: none"> <li>• Service Manual</li> <li>• NSQF Level 3 book</li> <li>• NSQF Level 4 book</li> </ul> |
| 12 | Dismantling, servicing                       | <ul style="list-style-type: none"> <li>• Follow safety precautions</li> <li>• Dismantling of Fuel system</li> </ul>   | General tools                 | <ul style="list-style-type: none"> <li>• Service Manual</li> <li>• NSQF</li> </ul>   |

|    |  |   |               |  |
|----|--|---|---------------|--|
|    | and assembling Fuel system                           | Follow the technical standard servicing Fitting and checking the performance  |               | Level 3 book<br>• NSQF Level 4 book                            |
| 13 | Tuning the engine for slow speed and check the smoke | Follow safety precautions<br>Follow the technical standard in tuning the engine<br>Checking the performance<br>Consult the authorities on if any replacement  | General tools | • Service Manual<br>• NSQF Level 3 book<br>• NSQF Level 4 book |
| 14 | Replacing the oil in recovery tank for Disc Brake    | Ensure availability and use the tools in the timely manner<br>Replacing the oil in recovery tank for Disc Brake By reviewing <ul style="list-style-type: none"> <li>• Technical data</li> <li>• Removal and Replacement procedures</li> <li>• Legal Requirement</li> <li>• Discuss within the Team and higher authority on need for replacement and its cost implication</li> </ul> Check for proper functionality / adjustment | General tools | • Service Manual<br>• NSQF Level 3 book<br>• NSQF Level 4 book |
| 15 | Replacing the Disc Brake                             | <ul style="list-style-type: none"> <li>• Ensure availability and use the tools in the timely manner</li> <li>• Carry out their dismantling and refitting of Disc Brake <ul style="list-style-type: none"> <li>• By reviewing</li> <li>• Technical data</li> <li>• Removal and Replacement procedures</li> </ul> </li> </ul>   | General tools | • Service Manual<br>• NSQF Level 3 book<br>• NSQF Level 4 book |

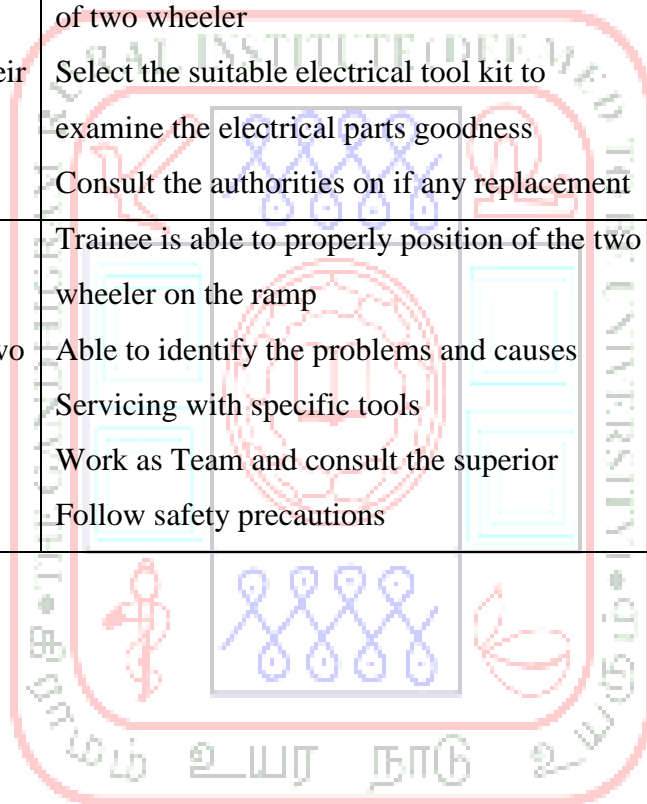
|    |  |  |                               |  |
|----|--|--|-------------------------------|--|
|    |  | <ul style="list-style-type: none"> <li>• Legal Requirement</li> <li>• Discuss within the Team and higher authority on need for replacement and its cost implication</li> <li>• Check for proper functionality / adjustment</li> </ul>  |                               |  |
| 16 | Dismantling and Assembling Continuous Variable transmission system | <ul style="list-style-type: none"> <li>• Ensure availability and use the tools in the timely manner</li> <li>• Carry out their dismantling and servicing of transmission system <ul style="list-style-type: none"> <li>• By reviewing</li> <li>• Technical data</li> <li>• Removal and Replacement procedures</li> <li>• Legal Requirement</li> </ul> </li> <li>• Check for proper functionality / adjustment</li> </ul> | General tools & Special tools | <ul style="list-style-type: none"> <li>• Service Manual</li> <li>• NSQF Level 3 book</li> <li>• NSQF Level 4 book</li> </ul> |
| 17 | Dismantling and Assembling the Multi-plate clutch                  | <ul style="list-style-type: none"> <li>• Ensure availability and use the tools in the timely manner</li> <li>• Carry out their dismantling and assembling of Multi-plate Clutch <ul style="list-style-type: none"> <li>• By reviewing</li> <li>• Technical data</li> <li>• Removal and Replacement procedures</li> <li>• Legal Requirement</li> </ul> </li> <li>• Check for proper functionality / adjustment</li> </ul> | General tools & Special tools | <ul style="list-style-type: none"> <li>• Service Manual</li> <li>• NSQF Level 3 book</li> <li>• NSQF Level 4 book</li> </ul> |
| 18 | Dismantling  | Ensure availability and use the tools in the   | General tools                 | • Service  |

|          |   |   |                               |  |
|----------|---|---|-------------------------------|--|
|          | and assembling Secondary drive in CVT   | timely manner<br>Carry out their dismantling and assembling of Centrifugal Clutch<br>Check for proper functionality / adjustment  | & Special tools               | Manual<br>• NSQF Level 3 book<br>• NSQF Level 4 book   |
| 19       | Dismantling and Assembling Constant mesh Gearbox                              | <ul style="list-style-type: none"> <li>• Ensure availability and use the tools in the timely manner</li> <li>• Carry out their dismantling and assembling of Gearbox</li> <li>• By reviewing</li> <li>• Technical data</li> <li>• Removal and Replacement procedures</li> <li>• Legal Requirement</li> <li>• Check for proper functionality / adjustment</li> </ul> | General tools & Special tools | <ul style="list-style-type: none"> <li>• Service Manual</li> <li>• NSQF Level 3 book</li> <li>• NSQF Level 4 book</li> </ul> |
| 20       | Servicing the clutch assembly   | <p>Follow safety precautions</p> <p>Dismantling the clutch assembly</p> <p>Follow the technical standard servicing</p> <p>Checking the performance of clutch assembly</p> <p>Consult the authorities on if any replacement</p> <p>Examine performance of clutch assembly</p>  | General tools & Special tools | <ul style="list-style-type: none"> <li>• Service Manual</li> <li>• NSQF Level 3 book</li> <li>• NSQF Level 4 book</li> </ul> |
| 21 to 22 | Dismantling the unserviceable engine-cleaning and inspecting the engine parts | <p>Follow safety precautions</p> <p>Dismantling the unserviceable engine</p> <p>Follow the technical standard servicing</p> <p>Checking the performance</p> <p>Consult the authorities on if any replacement</p> <p>Examine performance of the engine</p>   | General tools & Special tools | <ul style="list-style-type: none"> <li>• Service Manual</li> <li>• NSQF Level 3 book</li> <li>• NSQF Level 4 book</li> </ul> |
| 23-24    | Identify the  | Select, care and use of Personal Protective   | General tools                 | • Service Manual   |

|    |   |  |                               |  |
|----|---|--|-------------------------------|--|
|    | Engine parts  | Equipments [PPE] while carrying out dismantling engine parts<br>Ensure availability and use the tools in the timely<br>Team work in the shop floor   | & Special tools               | <ul style="list-style-type: none"> <li>• NSQF Level 3 book</li> <li>• NSQF Level 4 book</li> </ul>                           |
| 25 | Dismantling the Two stroke & Four stroke Engine           | <p>Select, care and use of Personal Protective Equipments [PPE] while carrying out dismantling engine parts</p> <p>Select the tools / equipments required tasks</p> <p>Ensure availability and use the tools in the timely manner</p> <p>Carry out their dismantling and assembling of components</p> <ul style="list-style-type: none"> <li>• By reviewing</li> <li>• Technical data</li> <li>• Removal and Replacement procedures</li> <li>• Legal Requirement</li> </ul> <p>Check for proper functionality / adjustment</p> | General tools & Special tools | <ul style="list-style-type: none"> <li>• Service Manual</li> <li>• NSQF Level 3 book</li> <li>• NSQF Level 4 book</li> </ul> |
| 26 | Check the Head Light, Tail light, Parking light           | <p>Trainee is able to identify the electrical parts of two wheeler</p> <p>Select the suitable electrical tool kit to examine the electrical parts goodness</p> <p>Consult the authorities on if any replacement</p>  | General tools                 | <ul style="list-style-type: none"> <li>• Service Manual</li> <li>• NSQF Level 3 book</li> <li>• NSQF Level 4 book</li> </ul> |
| 27 | Dismantle and assemble Ignition coil, Distributor and CDI | <p>Trainee is able to identify the electrical parts of two wheeler</p> <p>Dismantle the Ignition coil, Distributor and CDI with standard procedure</p> <p>Select the suitable method to examine the battery goodness</p>   | General tools                 | <ul style="list-style-type: none"> <li>• Service Manual</li> <li>• NSQF Level 3 book</li> <li>• NSQF Level 4 book</li> </ul> |

|          |  |  |                         |  |
|----------|--|--|-------------------------|--|
|          |  | Consult the authorities on if any replacement  |                         |  |
| 28       | Check the electrical components and signaling components   | Follow safety precautions<br>Check the electrical system<br>Consult the authorities on if any replacement  | General tools           | <ul style="list-style-type: none"> <li>• Service Manual</li> <li>• NSQF Level 3 book</li> <li>• NSQF Level 4 book</li> </ul> |
| 29       | Dismantling and assembling Battery coil Ignition System    | Ensure availability and use the tools in the timely manner<br>Carry out their dismantling and assembling of Battery coil and Ignition system<br>Check for proper functionality / adjustment                      | General tools           | <ul style="list-style-type: none"> <li>• Service Manual</li> <li>• NSQF Level 3 book</li> <li>• NSQF Level 4 book</li> </ul> |
| 30       | Dismantling and assembling Magneto coil Ignition System    | Ensure availability and use the tools in the timely manner<br>Carry out their dismantling and assembling of Magneto coil Ignition System<br>Check for proper functionality / adjustment                          | General tools           | <ul style="list-style-type: none"> <li>• Service Manual</li> <li>• NSQF Level 3 book</li> <li>• NSQF Level 4 book</li> </ul> |
| 31       | Fuel Injection System and check for trouble shooting in FI | Trainee is able to identify the electrical parts of two wheeler<br>Check the FI injection system with diagnostic tool or examine the FI system with FI station.<br>Consult the authorities on if any replacement | General tools & FI Tool | <ul style="list-style-type: none"> <li>• Service Manual</li> <li>• NSQF Level 3 book</li> <li>• NSQF Level 4 book</li> </ul> |
| 32 to 33 | Trouble shooting in sensors by using FI Diagnostic         | Trainee is able to identify the sensors of two wheeler<br>Examine the sensors with proper Diagnostic tool or FI Station<br>Consult the authorities on if any replacement   | General tools & FI Tool | <ul style="list-style-type: none"> <li>• Service Manual</li> <li>• NSQF Level 3 book</li> <li>• NSQF Level 4 book</li> </ul> |

|    | Tool   |  |                         |  |
|----|--|--|-------------------------|--|
| 34 | Check the working of ECU                               | <p>Trainee is able to identify the Electronic control unit of two wheeler</p> <p>Select the suitable method to examine the Electronic control unit</p> <p>Consult the authorities on if any replacement</p>  | General tools & FI Tool | <ul style="list-style-type: none"> <li>• Service Manual</li> <li>• NSQF Level 3 book</li> <li>• NSQF Level 4 book</li> </ul> |
| 35 | Identify the electrical parts & examine their goodness | <p>Work as Team and consult the superior</p> <p>Trainee is able to identify the electrical parts of two wheeler</p> <p>Select the suitable electrical tool kit to examine the electrical parts goodness</p> <p>Consult the authorities on if any replacement</p> | General tools & FI Tool | <ul style="list-style-type: none"> <li>• Service Manual</li> <li>• NSQF Level 3 book</li> <li>• NSQF Level 4 book</li> </ul> |
| 36 | Identify the Troubles in the given two wheeler         | <p>Trainee is able to properly position of the two wheeler on the ramp</p> <p>Able to identify the problems and causes</p> <p>Servicing with specific tools</p> <p>Work as Team and consult the superior</p> <p>Follow safety precautions</p>                    | General tools & FI Tool | <ul style="list-style-type: none"> <li>• Service Manual</li> <li>• NSQF Level 3 book</li> <li>• NSQF Level 4 book</li> </ul> |



## 7. STRUCTURE OF THE PROGRAMME

| Semester | Course Code | Name of the Course                               | Theory    | Practical | Total Credits | Duration of Exam | Evaluation in Percentage |            | Total Marks | Pass Mark<br>[Combined of<br>40% Theory<br>and 60%<br>Practical] |
|----------|-------------|--|-----------|-----------|---------------|------------------|--------------------------|------------|-------------|--|
|          |             |  |           |           |               |                  | Theory                   | Practical  |             |  |
| FIRST    | 21YTSC0101  | Fundamentals of Yamaha Two Wheeler Workshop      | 4         | 4         | 8             | 2                | 40                       | 60         | 100         | 40   |
|          | 21YTSC0102  | Major Technologies in Yamaha Bikes               | 4         | 4         | 8             | 2                | 40                       | 60         | 100         | 40   |
|          | 21YTSC0103  | Professional Ethics and Equipments               | 4         | 4         | 8             | 2                | 40                       | 60         | 100         | 40   |
|          | 21YTSC0104  | Employability skills                             | 6         | 0         | 6             | 2                | 40                       | 60         | 100         | 40   |
|          |             |  |           |           | <b>30</b>     |                  | 160                      | 240        | 400         |  |
| SECOND   | 21YTSC0205  | Engine & Transmission system for two wheelers    | 4         | 4         | 8             | 2                | 40                       | 60         | 100         | 40   |
|          | 21YTSC0206  | Major Electrical and Electronics in Two Wheelers | 4         | 4         | 8             | 2                | 40                       | 60         | 100         | 40   |
|          | 21YTSC0207  | Industrial Placement for On Job Training**       |           | 14        | 14            | 2                | 0                        | 100        | 100         | 40   |
|          |             |  |           | <b>30</b> |               | 80               | 220                      | 300        |             |  |
|          |             | <b>Total</b>                                     | <b>26</b> | <b>34</b> | <b>60</b>     |                  | <b>240</b>               | <b>460</b> | <b>700</b>  |  |

\*\* - Practical Examination will be conducted by GRI



## 8. SYLLABUS – FIRST SEMESTER

### COURSE -1: FUNDAMENTALS OF YAMAHA TWO WHEELER WORKSHOP

Course Code - 21YTSC0101

Credits: Theory – 4; Practicals – 4

Marks-100

**Objectives:** The main purpose of this course is to make the students acquainted with the Workshop situation and also to provide the students opportunities to get know about the Fundamental of the two wheeler servicing workshop and its environment.

#### Unit 1 – Explanation in Workshop & Demo Role Play

Introduction to 2 wheelers & history – Birth of Motorcycle & What is motorcycle – Safety – Safety in Workshop – Safety Precautions – usage of PPE – Accident and cause of industrial Accidents – Types of Hazardous and usage of fire extinguishers – 5S, CS & its Benefits.

#### Unit 2 – Tools and Equipments

Basic operation tools –Socket – Wrenches –Screw drivers –Hammers - How to use tools – Machine tools – Chisel, Files, etc -Special tools Types and Usages – Measuring tools- Vernier Caliper, Micrometer, Bore Dial Gauge – Multimeter – Battery Charger – Fuel injector Cleaning Machine.

#### Unit 3 – Yamaha Product Features

Yamaha Product features of R15, MT15, FZ -X, FZ FI, Ray ZR, Fascino, YBR, etc., Familiarization with Yamaha Technology – YRCS –SOHC – DOHC - FI System, D-Compression, etc

#### Unit 4 – Pre Delivery Inspection & Job Card Preparation

Importance of Pre Delivery Inspection, Objective of Pre Delivery Inspection, Basic steps of Pre Delivery Inspection – Customer vehicle observation slip – Vehicle Checking before job card making – job card making – job allocation

#### Unit 5 – Handling of two wheeler

Social responsibility of rider – Documents required for rider - Motorcycle & Driving Lesson – Introduction – Basic riding posture – Starting taking off Stopping – Braking – Gear change – Cornering – Uphill and Downhill - Ramp operation - Pollution norms.

#### Reference Books

1. Automotive service technician two wheeler (NSQF level 3), Participant Hand book, YAMAHA TRAINING SCHOOL.
2. Service manuals, product features, Parts catalogue, YAMAHA MOTOR PRIVATE LIMITED, INDIA
3. Basic Automotive Service [2&3 wheeler], 2010, NIMI, Government of India, Chennai
4. B. Kumaran, 2010, Motor Mechanic, Kumaran Publishers, Chennai
5. V.Ganesan, 2005, Internal Combustion Engines, Laxmi Publications [P] Limited, New Delhi

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## **COURSE – 2: MAJOR TECHNOLOGIES IN YAMAHA BIKES**

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**Course Code - 21YTSC0102    Credits: Theory – 4; Practicals – 4                    Marks-100**

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**Objectives:** The course aims to provide knowledge on the major systems in Two-Wheelers and also its functions, break-down and trouble shooting.

### **Unit I – Yamaha Engine technology**

Introduction – Engine classification – Internal combustion engine – Spark Ignition – Two Stroke – Four Stroke engine - Blue core Engine – Hybrid powered FI engine.

### **Unit II - Transmission system in Yamaha**

Introduction of power transmission – Clutch - Purpose of Clutch - Materials used for Clutch – Clutch Components & its Types - Gear box - Purpose of Gear box – Gear box Components & its Types – Continuously variable transmission.

### **Unit III – Cooling & Lubrication**

Cooling System – Purpose & its types – Radiator –thermostat valve- coolant -Lubrication System - Need of Lubrication System - Components & its Types.

### **Unit IV - Suspension**

Suspension system - Need of suspension - Types of suspension – Telescopic Front Fork - Working of TFF & its components- TFF oil grade and Quantity – Shock absorber – Components - Working of Shock absorber and its Types.

### **Unit V - Brakes & Wheels**

Brakes and its types- sources for brakes- mechanical brakes- pneumatic brakes- hydraulic brakes-Drum brake-Disc brake-ABS-Cornering ABS- CBS-Wheel- Types of wheel –Tyre- Types of tyre – Decoding the Tyre number.

### **Reference Books**

1. Automotive service technician two wheeler (NSQF level 3), Participant Hand book, YAMAHA TRAINING SCHOOL.
2. Service manuals, product features, Parts catalogue, YAMAHA MOTOR PRIVATE LIMITED, INDIA
3. B. Kumaran, 2010, Motor Mechanic, Kumaran Publishers, Chennai
4. SRI N. R. Hema Kumar, Automobile Chassis and Body Engineering [Unpublished Manual Prepared in Government Junior College, Palamaner, Andhra Pradesh - 2009]
5. David A Crolla, 2009, "Automotive Engineering-Power Train, Chassis System and Vehicle Body", Butterworth - Heinemann Publishers, New York.
6. Maintenance & Repair of Two Wheelers & Three Wheelers -II by State Council Of Educational Research & Training (SCERT), Government of Kerala, 2006.

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## **COURSE - 3 : PROFESSIONAL ETHICS AND EQUIPMENTS**

**Course Code - 21YTSC0103**

**Credits: Theory – 4; Practicals – 4**

**Marks-100**

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**Objective:** To enable the students by providing basic knowledge about general tools, special tools and main equipments of workshop.

### **Unit I: General tools**

Spanner and its types – Ratchet and offset handle – Socket and its sizes – center punch – chisel – pliers and its types – Hammer and its types – pile and its types – Compression gauge – Air gauge – L allen key T – allenkey – Multimeter and its usages.

### **Unit II : Special tools**

Purpose of special tools – Torque wrench – Yamaha Standard Special Tools for Motorcycles and Scooters – Fuel pump Pressure Gauge

### **Unit III : Servicing Equipments**

Water wash pumps and it types – Air compressor – Pneumatic gun & wrench – Hydraulic Ramp and its types – wheel balancer – Sparkplug cleaner machine and injector cleaner – Battery charging unit

### **Unit IV : Workshop maintenance and Check sheets**

5S and its benefits – Customer satisfaction – Job card - Pre-delivery Inspection – Periodic Maintenance Checksheets – Final Inspection chart – Tools auditing checksheet

### **Unit V: Two Wheeler workshop structure**

Importance of maintenance – general maintenance checkups and schedules - structure of servicing and maintenance workshop- first aid-management of two wheeler workshop.

### **Reference Books**

1. Automotive service technician two wheeler (NSQF level 3), Participant Hand book, YAMAHA TRAINING SCHOOL.
2. Service manuals, product features, Parts catalogue, YAMAHA MOTOR PRIVATE LIMITED, INDIA
3. B. Kumaran, 2010, Motor Mechanic, Kumaran Publishers, Chennai
4. Basic Automotive Service [2&3 wheeler], 2010, NIMI, Government of India Chennai
5. Maintenance & Repair of Two Wheelers & Three Wheelers -II by State Council Of Educational Research & Training (SCERT), Government of Kerala, 2006.
6. SRI N. R. Hema Kumar, Automobile Chassis and Body Engineering [Unpublished Manual Prepared in Government Junior College, Palamaner, Andhra Pradesh - 2009]

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## COURSE – 4: EMPLOYABILITY SKILLS

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**Course Code - 21YTSC0104**

**Credits: Theory –6**

**Marks-100**

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**Objective:** To enable the students by providing basic skills required for maintaining good relationship with customers through effective Communication in service sector.

### **Unit I - Introduction to Customer Support**

Importance of Customer - Types of Customers - their needs - Issues in dealing with the customers- Importance of maintaining good relations with customers in Service providing sector.

### **Unit II - Communication Skills for Customer Support**

Intra personal communication and Body Language - Inter personal Communication in Customer Relationships. Features of an effective Communication. Verbal and non-verbal Communication. Barriers and filters. Listening and active listening. Customer satisfaction - Feedback from Customers.

### **Unit III - Customer Relationship Skills**

Leadership Skills - Team work and public speaking with customer - Importance of maintaining good interpersonal relationship with Customer and co-workers - Effective communication in service delivery.

### **Unit IV - Personality Traits in delivering Service**

Self confidence - Attitude - Working in Group - Time Management - Effective Planning in service delivery - Working towards Goal - Meditation and concentration techniques in the stress situation.

### **Unit V - Practical Exercises:**

Role playing in Workshop [as Manager, Mechanic, Supervisor and also as customer]- Public speaking- Interview - work in a Team - Group Discussion - Discussion on Case Studies from shop Floor and Industry situation. Letter writing to the company- Interaction with Customers in person and also over phone. Listening to the Customer - This process will be carried out through demonstration by the teacher. This will be followed by repeating the process by the students. Every individual student will do all these exercises independently and individually.

### **Reference Books**

1. Stephen P. Robbins and Mary Coulter, 2012, Management [Eleventh Edition], Pearson Education, New Jersey
2. Balasubramanian. K, 2005, Essence of Customer Relationship Management, GIGO Publishing
3. Balaji , 2002, Service Marketing and Management, S.Chand Publishing
4. A. Sagadevan and H. Peeru Mohamed, 2002, Customer Relationship Management - A Step-By-Step Approach, Vikas Publishing, New Delhi
5. Kaushik Mukerjee, 2007, Customer Relationship Management, PHI Learning Private Limited, New Delhi.
6. Jill Dyché, 2001, The CRM Handbook: A Business Guide to Customer Relationship Management 1st Edition, Addison-Wesley, New York

## FIRST SEMESTER OJT REPORT

NAME :  
REG NO :  
INTERNSHIP PLACE :

50 Marks

1. Attendance : /10  
(Please give no of days present)
2. Record Work /10

| S.No | Conduct           | Result                |
|------|-------------------|-----------------------|
| 1    | Interest to learn | Fair /Good /Excellent |
| 2    | General Conduct   | Fair /Good /Excellent |
| 3    | Work Efficiency   | Fair /Good /Excellent |
| 4    | Team work         | Fair /Good /Excellent |
| 5    | Communication     | Fair /Good /Excellent |

Signature with Seal

## 9. SYLLABUS – SECOND SEMESTER

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### COURSE- 5: ENGINE & TRANSMISSION SYSTEM FOR TWO WHEELERS

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**Course Code -21YTSC0205 Credits: Theory – 4; Practical -4**

**Marks-100**

**Objectives:** The course aims to provide knowledge repairing and servicing Two-Wheelers and also its functions, break-down, overhauling and trouble shooting.

#### **Unit I – Maintenance Check sheet & Service**

Pre delivery inspection (PDI) – Periodical maintenance service (PMS) – Final Inspection - Free service – Paid service – Customer receiving & Vehicle Inspection – Vehicle Delivery – Professional Technicians

#### **Unit II – Minor Service**

Engine oil replacing - oil filter -- Engine lubrication and oil circulation – servicing of carburetor & its components – Idle RPM - Servicing of Drum Brakes - Fasteners and Torquening - General checkup for noise and leakage - Lock set replacement - Conventional chain and sealed chain slackness, cleaning and lubrication.

#### **Unit III –Major Service**

Steering bearing lubrication, replacing – TFF servicing and oil replacement - Engine troubleshooting – Fuel pump -- Servicing of Disc Brakes – Fuel pump pressure checking - Swing arm lubrication – Road test.

#### **Unit IV – Yamaha Motorcycle Engine Overhauling**

Overhauling of engine – Dismantle Engine, clutch, Gearbox– Cleaning and inspecting the parts - Bore - Valve seating - Piston rings – Piston rings end gap - Connecting rod - Crankshaft bearing replacement - Timing chain replacement - Inspection and assembling all the parts - Valve Timing Diagram – Valve overlap.

#### **Unit V - Yamaha Scooter Engine Overhauling**

Overhauling of engine – Dismantle Engine, CVT, Transmission – Cleaning and inspecting the parts - Bore - Valve seating - Piston rings – Piston rings end gap - Connecting rod - Crankshaft bearing replacement - Timing chain replacement - Inspection and assembling all the parts.

#### **Reference Books**

1. Automotive service technician two wheeler (NSQF level 4), Participant Hand book, YAMAHA TRAINING SCHOOL.
2. Service manuals, product features, Parts catalogue, YAMAHA MOTOR PRIVATE LIMITED, INDIA
3. Basic Automotive Service [2&3 wheeler], 2010, NIMI, Government of India Chennai
4. Tony Foale, 1996, Two wheeler Motorcycle Handling and Chassis Design, Spain.
5. Dennis Bailey and Keith Gates, 2009, Bike Repair & Maintenance [For Dummies], Wiley Publishing, Canada

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**COURSE – 6: MAJOR ELECTRICAL AND ELECTRONICS IN TWO WHEELERS**

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**Course Code -21YTSC0206****Credits: Theory – 4; Practicals – 4****Marks-100**

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**Objectives:** The course aims at introducing the basic knowledge of auto-electrical system. Provide opportunity to learn servicing by hands-on-experience in the industrial setting through electrical instruments.

**Unit I – Fundamentals of Electricals**

Electron - Current, Voltage, Resistance and measuring instruments – ohms law – watts law – Magnetic field – Electromagnetic force - Conductor – Semi Conductor – Insulator.

**Unit II – Major Electrical and Electronic components in Yamaha**

Battery Charging & Testing — Fuse –Components checkup – Head lamp, Tail lamp, Horn, Indicator, Starting motor , Starting relay, Charging coil, R.R Unit, CDI, TCI, Cut off relay, Instrumental Display.

**Unit III – Yamaha FI Sensors & Actuators**

Fuel Injection system & its generation - Crankshaft position sensor, Inlet Air Pressure, Inlet Air Temperature, Throttle Position Sensor, Oxygen sensor, Engine temperature sensor, Lean angle sensor, Wheel speed sensor, Side stand sensor – ECU - Ignition coil, Injector, Malfunction indication lamp, Radiator fan and FID- Error codes of sensors and Actuators.

**Unit IV –Major Wiring Circuits of Yamaha**

Parallel and Series connection- Ignition circuit– single relay starting circuit and Double relay starting circuit – Signaling circuit– Lighting circuit – Charging circuit -ABS Hydraulic unit and its circuit – Cooling system wiring connections

**Unit V – Hybrid & Electric vehicle**

Yamaha hybrid Technology - Basic needs of E Bike - Major Wiring circuit - Wheel hub Motor– Controller and 12V Convertor – Hall sensor - Bluetooth device connection – Application usage of connected interface – safety precautions – electrical parts maintenance

**Reference Books**

- Automotive service technician two wheeler (NSQF level 4), Participant Hand book, YAMAHA TRAINING SCHOOL.
- Service manuals, product features, Parts catalogue, YAMAHA MOTOR PRIVATE LIMITED, INDIA
- G.B.S. Narang, 2003, Automobile Engineering”, 10th Reprint, Khanna Publishers, New Delhi.
- Richard Stone and Jeffry K. Ball, 2004, Automobile Engineering Fundamentals, SAE International, Warredale.Pa.USA.
- George Lear and Lynn S. Mosher 1977, Motorcycle Mechanics, PRENTICE-HALL INC. New Jersey

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## COURSE – 7: INDUSTRIAL PLACEMENT FOR ON JOB TRAINING

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**Course Code -21YTSC0207**

**Credit - 14**

**Marks-100**

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### **Objective**

To provide practical training in the industrial environment to the students and create opportunity to gain Hands-on-Experience.

### **Strategies and Process**

- Record Work- Laboratory Work – Attending Practical Training
- The students will be placed in the identified Yamaha workshop for practical training and Hands-on-Experience
- The students will be placed for Internship once in Three months during the entire year; hence the assessment on the practical skill acquired will be done at the end of the second semester
- The placing for Internship will be done in consultation with Yamaha Motors as Industry Partner
- Attendance will be jointly maintained by Yamaha Training School and particular industrial unit
- Daily Dairy has to be prepared by the students
- Final Report has be submitted along with Record Work Book
- Examination will be based on these documents
- Jointly assessed by Yamaha Training School and particular Dealership of Yamaha.

### **The students should get exposed to the following:**

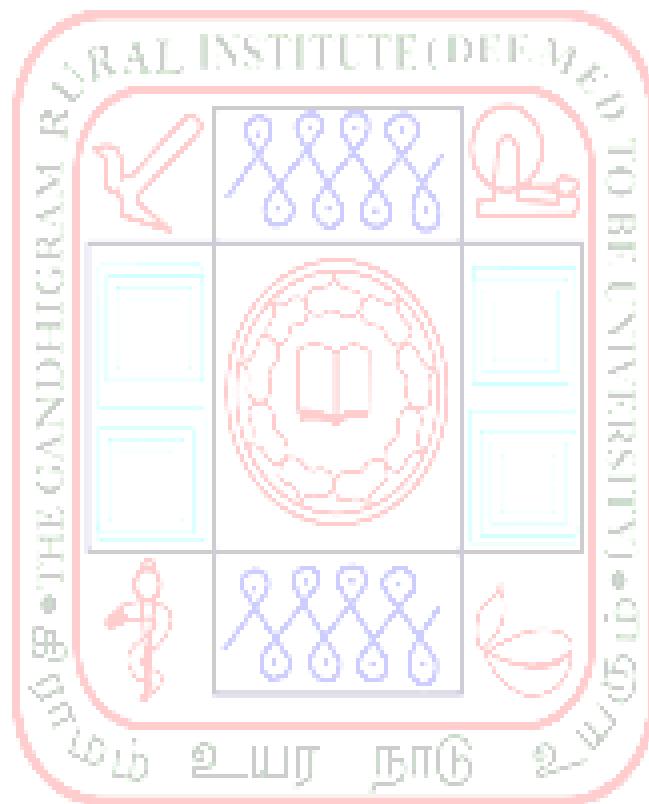
- Two wheeler chassis frame.
- Two wheeler SI Engine
- Two wheeler CI Engine.
- Valve timing and port timing diagram
- Brake and Clutch adjustment as per specification.
- Dismantling and assembling of two wheeler engine.
- Dismantling and assembling of two wheeler gear box.
- Two wheeler chain test.
- Two wheeler electrical systems.



## 10. LIST OF ASSETS

| S. N. | Type of Asset                              | Quantity |
|-------|--|----------|
| 1     | Motorcycle/Scooter with YTS                |          |
| a     | Ch.No. ME15TS0FZ29000020 (YBR) Blue & Red  | 1        |
| b     | ME1RG0S24P0000104 (SZ-R) Red               | 1        |
| c     | ME1RG0712E0000124 (FZ V 2.0) Red           | 1        |
| d     | ME11CK0SAC2000102 (R15) Green              | 1        |
| e     | ME11GCO15C2000259 (RAY) Pink               | 1        |
| f     | ME11GCO15C2000245 (RAY) White              | 1        |
| 2     | FI Station                                 | 1        |
| 3     | Motorcycle Cut Model                       |          |
| a     | ME1RG0722E0000107 (FZ-S Black & Green)     | 1        |
| 4     | Dummy Engine Cut Model                     |          |
| a     | 20P1-000047 (R15 Cut Section)              | 1        |
| 5     | Fuel Injector Cleaner M/C                  | 1        |
| 6     | Fuel Line Pressure Tester                  | 1        |
| 7     | 2nd Generation Tools                       | 1        |
| 8     | Ist Generation Tools                       | 1        |
| 9     | Electrical wiring Board x6Nos              | 1 set    |
| 10    | Tachometer                                 | 1        |
| 11    | Multi Meter - Mastech                      | 4        |
| 12    | Torque Wrench                              |          |
| a     | Torque Wrench (5-25 LBFT)                  | 1        |
| b     | Torque Wrench (20-100 LBFT)                | 1        |
| c     | Torque Wrench (40-160 LBFT)                | 1        |
| 13    | COMPRESSION GAUGE WITH ADEPTER - Imported  | 4        |
| 14    | TYRE PRESSURE GAUGE - IMPORTED             | 4        |
| 15    | LED TORCH - Every Ready                    | 4        |
| 16    | RULER 12" - Stainles Steel                 | 4        |
| 17    | Protective Covers for Scooter & Motorcycle |          |
| a     | Protective Covers R15 Old (Full Seat)      | 2        |
| b     | Protective Covers R15 New (Split Seat)     | 2        |

|    |  |   |
|----|--|---|
| c  | Protective Covers Ray                                      | 2 |
| d  | Protective Covers Gladiator                                | 2 |
| e  | Protective Covers SZ                                       | 2 |
| f  | Protective Covers FZ                                       | 2 |
| 18 | Special Service Tools For New Dealer( Refer list no 1- 2 ) | 1 |
| 19 | General Tool Kit (Refer List No 1-3 General Tools )        | 4 |
| 20 | Allen Key Set (Refer list No 1- 4)                         | 4 |



## 11. WORKSHOP EQUIPMENTS & GENERAL TOOLS

| S. No | WORKSHOP EQUIPMENTS  | QUANTITY |
|-------|--|----------|
| 1     | Hydraulic Scissor type bike lift                                       | 4        |
| 2     | Front Wheel Locking Vice (New Design)                                  | 4        |
| 3     | Hydraulic Power Pack With Canopy And Solenoid Valve Control (1:4)      | 1        |
| 4     | Hydraulic Accessories :- Tubing,Fittings,Hose Pipes,Clamps,Etc.        | 4        |
| 5     | Work Station Panel Board With Logo & Tool Box                          | 4        |
| 6     | CBU Tools Trolley (New Design with 5 Drawer)                           | 4        |
| 7     | Insert For CBU Trolley   | 4        |
| 8     | Chain Cum Filter Cleaner Made Of S.S.                                  | 1        |
| 9     | Spark Plug Cleaner & Tester  | 1        |
| 10    | Impact Wrench (I.R. Make)  | 4        |
| 11    | Socket & Bits Set For Impact Wrench                                    | 4        |
| 12    | Filter Regulator Lubricator (F.R.L.)                                   | 4        |
| 13    | Quick Release Coupler (Qrc)  | 8        |
| 14    | P.U. Coiled Hose For Impact Wrench                                     | 4        |
| 15    | P.U. Coiled Hose With Blow Gun   | 4        |
| 16    | Tyre In / De Flator Gauge (Digital Automatic)                          | 1        |
| 17    | Special Service Tool Board Back On Table (Size:- 6x3) + Standard Board | 2        |
| 18    | Part Rack (MS Tube)  | 3        |
| 19    | Bench Grander  | 1        |
| 20    | Bench Vice 6"  | 1        |
| 21    | 3 HP Air Compressor  | 1        |
| 22    | Washing Unit Motor   | 1        |
| 23    | Table 3X6  | 3        |
| 24    | Work Table With Aluminum Checkered Sheet On Top & Inside               | 1        |
| 25    | Pneumatic Line From Air Compressor To All Equipments                   | 6        |
| 26    | Engine Revolving Stand (For Cut section Engine)                        | 1        |
| 27    | Trolley For Battery Charger  | 1        |
| 28    | Trolley For Inject Cleaner Machine                                     | 1        |
| 29    | Trolley For Wheel Balancer With Drawer                                 | 1        |
| 30    | Centre Stand   | 2        |

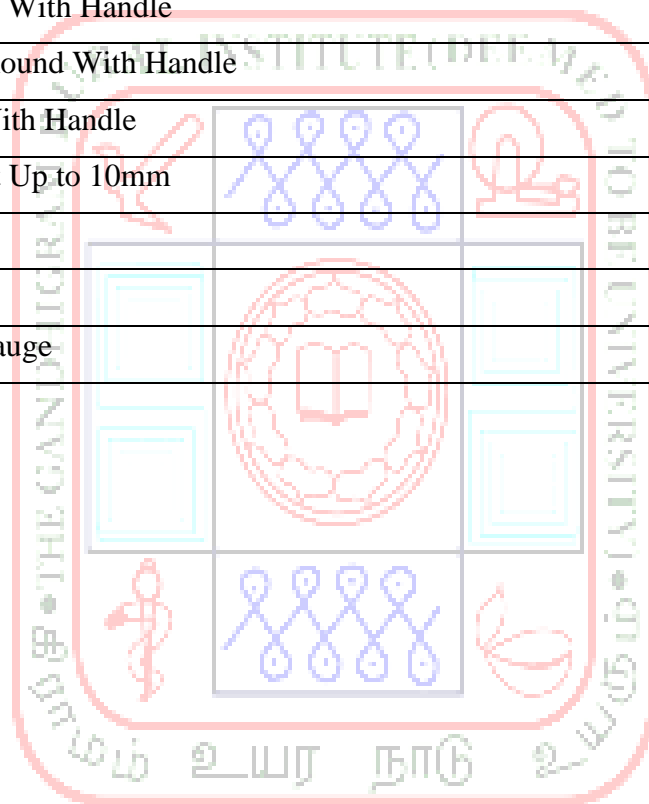
|    |   |    |
|----|---|----|
| 31 | Allen key Set With Stand                              | 4  |
| 32 | Wooden Plunk  | 4  |
| 33 | Red Tray (Make: Neel Kamal, Model Number (CC43120-NA) | 6  |
| 34 | Measuring Jug   | 4  |
| 35 | Oil Can   | 4  |
| 36 | Funnel  | 4  |
| 37 | Bucket (Red & Green)                                  | 2  |
| 38 | Sponge (Red & Green)                                  | 4  |
| 39 | Grease (Make: Skf)                                    | 1  |
| 40 | Battery charger 2 channel with load tester            | 1  |
| 41 | Water Bottle (For Battery)                            | 3  |
| 42 | Stands For Electrical wiring Boards                   | 2  |
| 43 | Aluminum Checkered Sheet 1Foot / 1Foot                | 20 |
| 44 | <b>Allen key sets</b>                                 |    |
| a) | Allenkey-2.5mm  | 4  |
| b) | Allenkey-3mm  | 4  |
| c) | Allenkey-4mm  | 4  |
| d) | Allenkey-5mm  | 4  |
| e) | Allenkey-6mm  | 4  |
| f) | Allenkey-8mm  | 4  |
| g) | Allenkey-10mm   | 4  |
| h) | Allenkey-12mm   | 4  |
| i) | Allenkey-14mm   | 4  |
| j) | Stand For Allen key                                   | 4  |
| 45 | <b>Special Tools</b>                                  |    |
| 1. | Piston Pin Replacer                                   | 1  |
| 2. | T-Handle  | 1  |
| 3. | T-Handle  | 1  |
| 4. | Rear Shock Absorber Adjuster                          | 1  |
| 5. | Clutch Hub Holder                                     | 1  |
| 6. | Spanner - Speedometer Gear Nut                        | 1  |
| 7. | Crank Case Separator                                  | 1  |
| 8. | Crank Case Installer                                  | 1  |

|     |                                    |   |
|-----|------------------------------------|---|
| 9.  | Base For YSST - 266                | 1 |
| 10. | TFF Oil Seal Remover               | 1 |
| 11. | TFF Oil Seal Installation Tool     | 1 |
| 12. | New Magneto Holder                 | 1 |
| 13. | Valve Spring Compressor            | 1 |
| 14. | Valve Spring Compressor Attachment | 1 |
| 15. | Piston Base                        | 1 |
| 16. | Piston Pin Replacer                | 1 |
| 17. | Rocker Arm Shaft Puller M8         | 1 |
| 18. | Small Screw Driver                 | 1 |
| 19. | Torx Bit (T-30)                    | 1 |
| 20. | Main Switch Steering Lock (T-30)   | 1 |
| 21. | Scraper                            | 1 |
| 22. | Feeler Gauge (0.08, 0.10)          | 1 |
| 23. | Cup - A                            | 1 |
| 24. | Cup - B                            | 1 |
| 25. | Cup - C                            | 1 |
| 26. | Cup - D                            | 1 |
| 27. | Oil Seal Installing Tool           | 1 |
| 28. | Bearing Puller 6201                | 1 |
| 29. | Bearing Puller 6202                | 1 |
| 30. | Bearing Puller 6203                | 1 |
| 31. | Center Plug Spanner                | 1 |
| 32. | Upper & Lower Face Installer       | 1 |
| 33. | New Magneto Holder                 | 1 |
| 34. | New Magneto Puller                 | 1 |
| 35. | Spokes Bit                         | 1 |
| 36. | Fixing Tool Bearing Steering Lower | 1 |
| 37. | Magneto Holder M8X80               | 1 |
| 38. | Magneto Puller M16, 30             | 1 |
| 39. | Tappet Screw Holder                | 1 |
| 40. | Tappet Adjusting Socket Hex 8      | 1 |
| 41. | T-Handle (Hex 19)                  | 1 |

|     |                                     |   |
|-----|-------------------------------------|---|
| 42. | Feeler Gauge (0.10, 0.20)           | 1 |
| 43. | Socket Steering Nut                 | 1 |
| 44. | Mechanical Seal / Bearing Installer | 1 |
| 45. | Water Pump Bearing Remover          | 1 |
| 46. | Clutch Hub Holder                   | 1 |
| 47. | Drive Chain Cutting & Riveting Tool | 1 |
| 48. | Rim Tape Installing Tool            | 1 |
| 49. | Tubeless Tyre Puncture Kit          | 1 |
| 50. | Holder Puller Chain                 | 1 |
| 51. | TFF Oil Seal Installation Tool      | 1 |
| 52. | Co Checking Adopter                 | 1 |
| 53. | Magneto Holder Universal R60        | 1 |
| 54. | Tappet Adjusting Socket Hex 10      | 1 |
| 55. | T-Handle (Hex 28)                   | 1 |
| 56. | Feeler Gauge (0.08, 0.12)           | 1 |
| 57. | Rear Shock Absorber Adjuster        | 1 |
| 58. | Bearing Puller                      | 1 |
| 59. | Fixing Tool Bearing Steering Lower  | 1 |
| 60. | TFF Oil Seal Installation Tool      | 1 |
| 61. | Starter Cable Nut Spanner           | 1 |
| 62. | Rear Shock Absorber Adjuster        | 1 |
| 63. | Disc Brake Face Out                 | 1 |
| 64. | Plate Bearing Installer             | 1 |
| 65. | Bush                                | 1 |
| 66. | Bearing Punch Set                   | 1 |
| 67. | Lower Bearing Inner Race Installer  | 1 |
| 68. | Clutch Spring Compressor            | 1 |
| 69. | Clutch Carrier Nut Socket           | 1 |
| 70. | Steering Nut Socket                 | 1 |
| 71. | Clutch Housing Holder               | 1 |
| 72. | Cam Sprocket Holder                 | 1 |
| 73. | Spark Plug Spanner                  | 1 |
| 74. | Kick Spring Installer               | 1 |

|     |                                       |    |
|-----|---------------------------------------|----|
| 75. | Steering C - Spanner                  | 1  |
| 76. | Magneto Puller                        | 1  |
| 77. | Crankshaft Cap                        | 1  |
| 78. | Kick Shaft Oil Seal Punch             | 1  |
| 79. | Starter Cable Nut Spanner             | 1  |
| 80. | Rotor Holder Tool                     | 1  |
| 81. | Adopter For Valve Spring Compressor   | 1  |
| 82. | Wheel Axle Bearing Installer Puller   | 1  |
| 83. | Wheel Axle Seal Punch                 | 1  |
| 84. | Clutch Cover Bearing Remover          | 1  |
| 85. | Funnel With Long Tail                 | 1  |
| 86. | Crankshaft Installer                  | 1  |
| 87. | T-Handle Front Fork Top Plug Spanner  | 1  |
| 88. | Pilot Driver                          | 1  |
| 89. | Engine Stand                          | 1  |
| 90. | Special Pliers                        | 1  |
| 91. | Wheel Balancer                        | 1  |
| 92. | Wooden Plunk                          | 1  |
| 46  | <b>GENERAL TOOLS</b>                  |    |
| 1.  | Double End Spanner (6 To 32mm)        | 40 |
| 2.  | Ring Spanner (6 To 32mm)              | 40 |
| 3.  | Combination Spanner (8,10,12,14,17mm) | 20 |
| 4.  | Screw Driver (7 Pc.)                  | 4  |
| 5.  | Combination Pliers                    | 4  |
| 6.  | Nose Pliers                           | 4  |
| 7.  | Cutter Pliers                         | 4  |
| 8.  | Lock Pliers (Inner)                   | 4  |
| 9.  | Lock Pliers (Outer)                   | 4  |
| 10. | Adjustable Pliers                     | 4  |
| 11. | Hammer 200Gm.                         | 4  |
| 12. | Hammer 500Gm.                         | 4  |
| 13. | Hammer Nylon 30Mm                     | 4  |

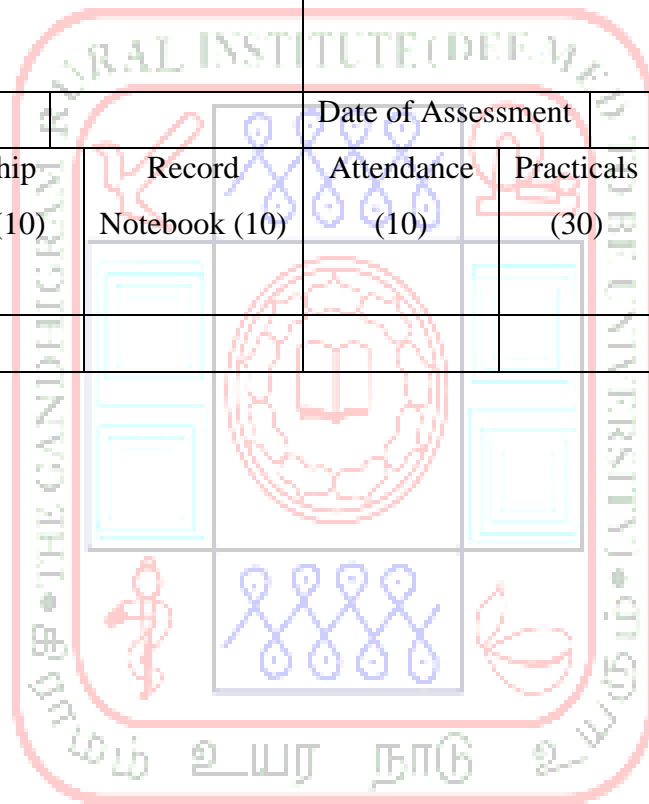
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|-----|--------------------------------|----|
| 14. | T-Handle (8,10,12)             | 12 |
| 15. | Socket (8 To 32Mm)             | 88 |
| 16. | Deep Socket 16Mm               | 4  |
| 17. | Offset handle                  | 4  |
| 18. | Ratchet Handle                 | 4  |
| 19. | Extension 10"                  | 4  |
| 20. | Extension 5"                   | 4  |
| 21. | Universal Joint                | 4  |
| 22. | File 8" Round With Handle      | 4  |
| 23. | File 8" Half Round With Handle | 4  |
| 24. | File 8" Flat With Handle       | 4  |
| 25. | Allen Key Set Up to 10mm       | 4  |
| 26. | Chisel 8"                      | 4  |
| 27. | Centre Punch                   | 4  |
| 28. | Spark Plug Gauge               | 4  |





## 12. FORMAT FOR INTERNAL ASSESSMENT

|  |                           |                         |                    |                    |                        |                              |  |
|--|---------------------------|-------------------------|--------------------|--------------------|------------------------|------------------------------|--|
| Name of the Candidate                  |                           |                         |                    |                    | Register No            |                              |  |
| Candidate Father Name                  |                           |                         |                    |                    |                        |                              |  |
| Address                                |                           |                         |                    |                    |                        |                              |  |
| Name & Address of the Internship place |                           |                         |                    |                    |                        |                              |  |
| Semester                               |                           |                         | Date of Assessment |                    |                        |                              |  |
| Theory<br>(40)                         | Internship<br>Report (10) | Record<br>Notebook (10) | Attendance<br>(10) | Practicals<br>(30) | Viva -<br>Voce<br>(10) | <b>Total Marks<br/>(100)</b> |  |
|  |                           |                         |                    |                    |                        |                              |  |



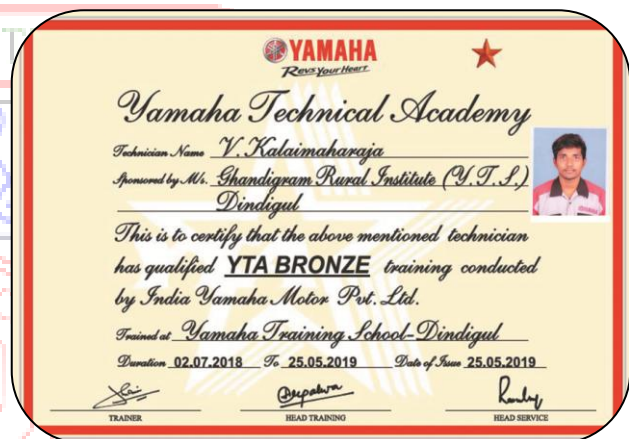
### 13. CERTIFICATE DETAILS

Those who had completed one year Certificate in Two Wheeler Technician course offered by Department of Lifelong Learning and Extension,GRI with collaboration of Yamaha Motors India Pvt Ltd., will get the following certificates.

1. Certificate from Gandhigram Rural Institute – Deemed to be University
2. Yamaha Bronze Certification from Yamaha Motors India Pvt Ltd.,
3. ASDC Certificate from Automotive Skill Development Council



Certificate from ASDC



Certificate from YAMAHA

Certificate from GRI - DTUB

