ICSE

YEAR 2027

INDIAN CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

AUTO SERVICE TECHNICIAN (96)

February 2025

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Council for the Indian School Certificate Examinations (CISCE)

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ETHOS OF CISCE

- Trust and fair play.
- Minimum monitoring.
- Allowing schools to evolve their own niche.
- Catering to the needs of the children.
- Giving freedom to experiment with new ideas and practices.
- Diversity and plurality - the basic strength for evolution of ideas.
- Schools to motivate pupils towards the cultivation of:
  Excellence - The Indian and Global experience.
  Values - Spiritual and cultural - to be the bedrock of the educational experience.
- Schools to have an 'Indian Ethos', strong roots in the national psyche and be sensitive to national aspirations.

AUTO SERVICE TECHNICIAN

(Subject Code:96)

(Sector: AUTOMOTIVE)

OVERVIEW

This course fulfils the needs of the students willing to learn activities related to the Automotive Service Technician job role. Due to rapid growth of the automobile and auto component industry, there is a great demand for automobile technicians. Automobile engineering alias automotive engineering or vehicle engineering is one of the most challenging careers in the field of engineering, with a wide scope.

OUTCOMES:

On completion of the course, students should be able to:

- identify the principal components of a computer system;
- identify and control hazards in the workplace that pose a danger or threat to their safety or health, or that of others;
- demonstrate self-management skills;
- demonstrate the ability to provide self-analysis in context of entrepreneurial skills and abilities;
- demonstrate the knowledge of the importance of green skills in meeting the challenges of sustainable development and environment protection;
- communicate effectively with the customers;
- greet, escort, seat the customers and offer refreshments (tea/coffee);
- enquire and understand customer queries related to vehicle type, model, specifications;
- identify features of different elements of engineering such as mechanical, electrical, electronic, software and safety engineering;
- repair and service automobiles such as cars, trucks, motorcycles, scooters, etc.;
- understand the mechanism of vehicle chassis, internal combustion engine, electrical systems, motor transport affairs, workshop technology.

Class IX

*There will be **one** written paper of **two hours** duration carrying 100 marks and Internal Assessment of Practical of 100 marks.*

COURSE STRUCTURE:

PART I: THEORY – 100 MARKS
Employability Skills – 30 Marks
Unit 1: Communication Skills – I
Unit 2: Self-management Skills – I
Unit 3: Basic Information and Communication Technology Skills – I
Unit 4: Entrepreneurial Skills – I
Unit 5: Green Skills – I
Section B: Vocational Skills – 70 Marks
Unit 6: History and Evolution of Automobiles
Unit 7: Various Types of Automobiles
Unit 8: Major Systems & Components of an Automobile
Unit 9: Road Safety
Unit 10: Automobiles and our Environment
Unit 11: Introduction to Vehicle Maintenance & Servicing
Unit 12: Innovations & Developments in Automobiles
PART II: INTERNAL ASSESSMENT (PRACTICAL) – 100 MARKS
Practical Work – 70 Marks
Practical Examination – 40 Marks
Practical File – 10 Marks
Viva Voce (based on Practical Examination/File) – 20 Marks
Project Work- 30 Marks
Report of Field Visit/Project – 10 Marks
Student Portfolio – 10 Marks
Viva Voce (based on Report of Field Visit/Student Portfolio/Project) – 10 Marks

PART I: THEORY – 100 MARKS

Employability Skills

Unit-1: Communication Skills – I

Learning Outcome 1.1: Demonstrate knowledge of various methods of communication

Theory	Practical
1. Methods of communication: (i) Verbal (ii) Non-verbal (iii) Visual	▪ Writing pros and cons of written, verbal, and non-verbal communication ▪ Listing dos and don'ts for avoiding common body language mistakes

Learning Outcome 1.2: Identify elements of communication cycle

Theory	Practical
1. Meaning of communication 2. Importance of communication skills 3. Elements of communication cycle: (i) Sender (ii) Ideas (iii) Encoding (iv) Communication channel (v) Receiver (vi) Decoding (vii) Feedback	▪ Draw a diagram of communication cycle ▪ Role plays on communication process related to the sector/job role

Learning Outcome 1.3: Identify the factors affecting our perspectives in communication

Theory	Practical
1. Perspectives in communication 2. Factors affecting perspectives in communication: (i) Visual perception (ii) Language (iii) Past experience (iv) Prejudices (v) Feelings (vi) Environment	▪ Group discussion on factors affecting perspectives in communication ▪ Sharing of experiences on factors affecting perspectives ▪ Sharing experiences on factors affecting communication at workplace

Learning Outcome 1.4: Demonstrate the knowledge of basic writing skills	
Theory	**Practical**
1. Writing skills related to the following: (i) Phrases (ii) Kinds of sentences (iii) Parts of sentence (iv) Parts of speech (v) Use of articles (vi) Construction of a paragraph	▪ Demonstration and practice of writing sentences and paragraphs on topics related to the subject

Unit-2: Self-management Skills – I

Learning Outcome 2.1: Describe the meaning and importance of self-management	
Theory	**Practical**
1. Meaning of self-management 2. Positive results of self-management 3. Self-management skills	▪ Identification of self-management skills ▪ Strength and weakness analysis

Learning Outcome 2.2: Identify the factors that help in building self-confidence	
Theory	**Practical**
1. Factors that help in building self-confidence – social, cultural, and physical factors 2. Self-confidence building tips – getting rid of negative thoughts, thinking positively, staying happy with small things, staying clean, hygienic, and smart, chatting with positive people, etc.	▪ Role play exercises on building self-confidence ▪ Use of positive metaphors/words ▪ Positive stroking on waking up and before going to bed ▪ Helping others and working for community

Unit-3: Basic Information and Communication Technology Skills – I

Learning Outcome 3.1: Demonstrate the knowledge of the role of Information and Communication Technology (ICT) in day-to-day life and workplace

Theory	Practical
1. Introduction to ICT 2. Role and importance of ICT in personal life and at the workplace 3. ICT in our daily life (examples) 4. ICT tools – mobile, tab, radio, TV, email, etc.	▪ Discussion on the role and importance of ICT in personal life and at the workplace ▪ Preparing posters/collages for showing the role of ICT at workplace

Learning Outcome 3.2: Identify components of basic computer system and their functions

Theory	Practical
1. Computer system – Central Processing Unit (CPU), memory, motherboard, storage devices 2. Hardware and software of a computer system 3. Role and functions of Random Access Memory (RAM) and Read-only Memory (ROM) 4. Role and functions of Central Processing Unit 5. Procedure for starting and shutting down a computer	▪ Connecting the cables and peripherals to the Central Processing Unit ▪ Starting and shutting down a computer ▪ Group discussion on the various aspects of hardware and software

Learning Outcome 3.3: Demonstrate use of various components and peripherals of computer system

Theory	Practical
1. Peripherals devices and their uses – mouse, keyboard, scanner, webcam, etc. of a computer system	▪ Identification of various parts and peripherals of a computer ▪ Demonstration and practice on the use of a mouse ▪ Demonstration and practice on the use of a keyboard ▪ Demonstration of the use of printers, webcams, scanner, and other peripheral devices ▪ Drawing a diagram of a computer system and labelling it

Learning Outcome 3.4: Demonstrate basic computer skills	
Theory	**Practical**
1. Primary operations on a computer system – input, process, storage, output, communication, networking, etc.	▪ Identification of the various input and output units and explanation of their purposes

Unit-4: Entrepreneurial Skills – I

Learning Outcome 4.1: Identify various types of business activities	
Theory	**Practical**
1. Types of businesses – service, manufacturing, hybrid 2. Types of businesses found in our community business activities around us	▪ Prepare posters of business activities found in cities/villages, using pictures ▪ Discuss the various types of activities, generally adopted by small businesses in a local community ▪ Best out of waste ▪ Costing of the product made from waste ▪ Selling of items made from waste materials Prepare list of businesses that provides goods and services in exchange for money

Learning Outcome 4.2: Demonstrate the knowledge of distinguishing characteristics of entrepreneurship	
Theory	**Practical**
1. Meaning of entrepreneurship development 2. Distinguishing characteristics of entrepreneurship 3. Role and rewards of entrepreneurship	▪ Prepare charts showing advantages of entrepreneurship over wages ▪ Group discussions on role and features of entrepreneurship ▪ Lectures/presentations by entrepreneurs on their experiences and success stories ▪ Identify core skills of successful entrepreneurs

Unit-5: Green Skills – I

Learning Outcome 5.1: Demonstrate the knowledge of the factors influencing natural resource conservation	
Theory	**Practical**
1. Introduction to the environment 2. Relationship between society and environment, ecosystem and factors causing imbalance 3. Natural resource conservation 4. Environment protection and conservation	▪ Group discussion on hazards of deteriorating environment ▪ Prepare posters showing environment conservation ▪ Discussion on various factors that influence our environment

Learning Outcome 5.2: Describe the importance of green economy and green skills	
Theory	**Practical**
1. Definition of green economy 2. Importance of green economy	▪ Discussion on the benefits of green skills and importance of green economy ▪ Prepare a poster showing the importance of green economy with the help of newspaper/magazine cuttings

Vocational Skills

Unit-6: History and Evolution of Automobile

Learning Outcome 6.1: Describe the invention of wheel, invention of wheel cart and animal powered (horse) cart, invention of automobiles and evaluation till date, invention of automobile (Post World War II)	
Theory	**Practical**
1. Invention of wheel, invention of wheel cart and animal powered cart 2. Use of horse cart and horsepower 3. Invention of automobiles and evolution till date 4. Invention of automobile and evolution post World War II	▪ Able to describe the invention of wheel, wheel cart, able to explain use of horsepower ▪ Able to describe invention of automobiles and evolution till date ▪ Able to describe invention of automobile and evolution post World War II

Unit-7: Various Types of Automobiles

Learning Outcome 7.1: Able to identify two-wheelers three-wheelers, passenger vehicle, commercial vehicle, agricultural vehicle, construction equipment vehicle, special vehicles

Theory	Practical
1. Special vehicle, make and model, specifications 2. Parts/components of special vehicles	▪ Able to identify three-wheelers used, make drawing of three-wheelers ▪ Able to identify passenger vehicles used, make a drawing of passenger vehicle ▪ Able to identify commercial vehicle used, make a drawing of commercial vehicle ▪ Able to identify agricultural vehicle used, make drawing of agricultural vehicle ▪ Identify construction equipment vehicle used, make drawing of construction equipment vehicle ▪ Able to identify special vehicles used, make drawing of special vehicles

Unit-8: Major Systems & Components of an Automobile

Learning Outcome 8.1: Identify and discuss major systems and components of an automobile

Theory	Practical
1. Use of chassis and auto body 2. Use of engine and its components 3. Use of lubrication system 4. Use of cooling system 5. Use of fuel supply system 6. Use of transmission system 7. Use of front and rear axle 8. Use of steering 9. Use of suspension system 10. Use of wheels and tyres 11. Use of brake 12. Use of electrical & electronic systems 13. Use of air conditioning system 14. Use of active and passive safety	▪ Able to identify and describe the importance of chassis and auto body ▪ Able to make a drawing of the chassis and auto body ▪ Able to identify and describe the importance of the engine and its components ▪ Able to make a drawing of the engine and its components ▪ Able to identify and describe the importance of the lubrication and its components ▪ Able to make a drawing of the lubrication system and its components ▪ Able to identify and describe the importance cooling system ▪ Able to make a drawing of the cooling system ▪ Able to identify and describe importance of

	fuel supply system ▪ Able to make a drawing of the fuel supply system ▪ Able to identify and describe importance of transmission system ▪ Able to make a drawing of the transmission system ▪ Able to identify and describe the importance of front and rear axle ▪ Able to make a drawing of the front and rear axle ▪ Able to identify and describe the importance of steering ▪ Able to make drawing of steering ▪ Able to identify and describe importance of suspension system ▪ Able to make a drawing of the suspension system ▪ Able to identify and describe the importance wheels and tyres ▪ Able to make drawing of wheels and tyres ▪ Able to identify and describe importance of brake ▪ Able to make drawing of brake ▪ Able to identify and describe the importance of the electrical & electronic systems ▪ Able to make a drawing of the electrical & electronic systems ▪ Able to identify and describe the importance of air conditioning system ▪ Able to make a drawing of air conditioning system ▪ Able to identify and describe importance of active and passive safety ▪ Able to make a drawing of active and passive safety

Unit-9: Road Safety

Learning Outcome 9.1: Importance of road safety rules, safe and responsible driving road signs, driving rules and registration of a vehicle, driving license

Theory	Practical
1. Importance of road safety rules and safe practices 2. Safe and responsible driving 3. Road signs, traffic signals and rules 4. Driving rules and registration 5. License rules	▪ Able to list the safety rules to be followed ▪ Able to use safe practices while driving ▪ Able to list the safe and responsible driving procedures ▪ Able to identify various road signs, traffic signals and describe the rules ▪ Able to make sketch of various road signs, traffic signals and describe the rules ▪ Able to describe driving rules ▪ Able to fill forms for driving and registration ▪ Able to describe different license forms ▪ Able to write license rules ▪ Able to fill forms for license

Unit-10: Automobiles and Our Environment

Learning Outcome 10.1: Air pollution Auto Emissions and EU/ BS Standards, PUC Certification

Theory	Practical
1. Air pollution and its norms 2. Air pollution and automobiles 3. Auto emissions and EU/BS standards 4. PUC certification	▪ Able to list air pollution norms ▪ Able to observe air pollution and automobiles ▪ Able to identify various standards like EU/ BS, PUC certification ▪ Able to make list of various standards ▪ Able to describe about PUC certification

Unit-11: Introduction to Vehicle Maintenance and Servicing

Learning Outcome 11.1: Importance of vehicle maintenance and servicing tips to extend the life of vehicles, introduction to vehicle servicing procedure	
Theory	**Practical**
1. Importance of vehicle maintenance and servicing 2. Tips to extend the life of vehicles 3. Procedures during vehicle servicing	▪ Able to perform basic procedures for vehicle maintenance ▪ Able to describe vehicle maintenance ▪ Able to list tips to extend the life of vehicles ▪ Able to check the tips Able to list procedures during vehicle servicing

Unit-12: Innovation and Development in Automobiles

Learning Outcome 12.1: Explain innovation and development	
Theory	**Practical**
1. Importance of innovation and development	▪ Able to identify innovation in automobiles ▪ Able to understand about new developments

PART II: INTERNAL ASSESSMENT (PRACTICAL) – 100 MARKS

To be assessed internally by the school.

For guidelines for Internal Assessment refer to Class X.

Class X

*There will be **one** written paper of **two hours** duration carrying 100 marks and Internal Assessment of Practical of 100 marks.*

COURSE STRUCTURE:

PART I: THEORY – 100 MARKS
Employability Skills – 30 Marks
Unit 1: Communication Skills – II
Unit 2: Self-management Skills – II
Unit 3: Basic Information and Communication Technology Skills – II
Unit 4: Entrepreneurial Skills – II
Unit 5: Green Skills – II
Vocational Skills – 70 Marks
Unit 6: Automobile and Its Components
Unit 7: Automobile Service Tools
Unit 8: Vehicle Servicing
Unit 9: Customer Sales Care
Unit10: Innovation and Development
PART II: INTERNAL ASSESSMENT (PRACTICAL) – 100 MARKS
Practical Work – 70 Marks
Practical Examination – 40 Marks
Practical File – 10 Marks
Viva Voce (based on Practical Examination/File) – 20 Marks
Project Work – 30 Marks
Report of Field Visit /Project – 10 Marks
Student Portfolio – 10 Marks
Viva Voce (based on Report of Field Visit/Student Portfolio/Project) – 10 Marks

PART I: THEORY – 100 MARKS

Employability Skills

Unit-1: Communication Skills – II

Learning Outcome 1.1: Demonstrate knowledge of various methods of communication

Theory	Practical
1. Methods of communication: (i) Verbal (ii) Non-verbal (iii) Visual	▪ Writing pros and cons of written, verbal, and non-verbal communication ▪ Listing dos and don'ts for avoiding common body language mistakes

Learning Outcome 1.2: Provide descriptive and specific feedback

Theory	Practical
1. Communication cycle and importance of feedback 2. Meaning and importance of feedback 3. Descriptive feedback – written comments or conversations 4. Specific and non-specific feedback	▪ Constructing sentences for providing descriptive and specific feedback

Learning Outcome 1.3: Apply measures to overcome barriers in communication

Theory	Practical
1. Barriers to effective communication – types and factors 2. Measures to overcome barriers in effective communication	▪ Enlisting barriers to effective communication ▪ Applying measures to overcome barriers in communication

Learning Outcome 1.4: Apply principles of communication

Theory	Practical
1. Principles of effective communication 2. 7Cs of effective communication	▪ Constructing sentences that convey all facts required by the receiver ▪ Expressing in a manner that shows respect to the receiver of the message ▪ Exercises and games on applying 7Cs of effective communication

Learning Outcome 1.5: Demonstrate basic writing skills	
Theory	**Practical**
1. Writing skills to the following: (i) Sentence (ii) Phrase (iii) Kinds of Sentences (iv) Parts of Sentence (v) Parts of Speech (vi) Articles (vii) Construction of a paragraph	▪ Demonstration and practice of writing sentences and paragraphs on topics related to the subject

Unit-2: Self-management Skills – II

Learning Outcome 2.1: Apply stress management techniques	
Theory	**Practical**
1. Meaning and importance of stress management 2. Stress management techniques – physical exercise, yoga, meditation 3. Enjoying going to vacations and holidays with family and friends 4. Taking nature walks	▪ Exercises on stress management techniques – yoga, meditation, physical exercises ▪ Preparing a write-up or an essay on experiences during a holiday trip

Learning Outcome 2.2: Demonstrate the ability to work independently	
Theory	**Practical**
1. Importance of the ability to work independently 2. Describe the types of self-awareness 3. Describe the meaning of self-motivation and self-regulation	▪ Demonstration on working independently on goals ▪ Planning of an activity ▪ Executing tasks in a specific period, with no help or directives ▪ Demonstration on the qualities required for working independently

Unit-3: Basic Information and Communication Technology Skills – II

Learning Outcome 3.1: Distinguish between different operating systems

Theory	Practical
1. Classes of operating systems 2. Menu, icons, and taskbar on the desktop 3. File concept, file operations, file organization, directory structures, and file-system structures 4. Creating and managing files and folders	▪ Identification of taskbar, icons, menu, etc. ▪ Demonstration and practice of creating, renaming, and deleting files and folders, saving files in folders and sub-folders, restoring files and folders from recycle bin

Learning Outcome 3.2: Apply basic skills for care and maintenance of a computer

Theory	Practical
1. Importance and need of care and maintenance of computer 2. Cleaning computer components 3. Preparing maintenance schedule 4. Protecting computer against viruses Scanning and cleaning viruses and removing SPAM files, temporary files, and folders	▪ Demonstration of the procedures to be followed for cleaning, care and maintenance of hardware and software

Unit-4: Entrepreneurial Skills – II

Learning Outcome 4.1: List the characteristics of a successful entrepreneur

Theory	Practical
1. Entrepreneurship and society 2. Qualities and functions of an entrepreneur 3. Role and importance of an entrepreneur 4. Myth about entrepreneurship 5. Entrepreneurship as a career option	▪ Writing a note on entrepreneurship as a career option ▪ Collecting success stories of first generation and local entrepreneurs ▪ Listing the entrepreneurial qualities – analysis of strength and weaknesses ▪ Group discussion of self-qualities that students feel are needed to become successful entrepreneurs ▪ Collect information and related data for a business ▪ Making a plan in teams for setting up a business

Unit-5: Green Skills – II

Learning Outcome 5.1: Demonstrate the knowledge of importance, problems and solutions related to sustainable development

Theory	Practical
1. Definition of sustainable development 2. Importance of sustainable development 3. Problems related to sustainable development	▪ Identify the problems related to sustainable development in the community ▪ Group discussion on the importance of respecting and conserving indigenous knowledge and cultural heritage ▪ Discussion on the responsibilities and benefits of environmental citizenship, including the conservation and protection of environmental values ▪ Preparing models on rainwater harvesting, drip/sprinkler irrigation, vermin-compost, solar energy, solar cooker, etc.

Vocational Skills

Unit-6: Automobile and Its Components

Learning Outcome 6.1: Identify chassis, body, engine, lubrication system, cooling system, fuel supply system, transmission system, front axle, steering, rear axle, suspension system, wheel, and tyre brake

Theory	Practical
1. Chassis 2. Body and use 3. Engine and its components 4. Lubrication system 5. Cooling system 6. Fuel supply system 7. Transmission system 8. Front axle 9. Steering 10. Rear axle 11. Suspension system 12. Wheels and tyres 13. Brake	▪ Able to identify and describe chassis ▪ Able to understand details of chassis ▪ Able to identify and describe body ▪ Able to understand details of body ▪ Able to identify and describe engine and its type ▪ Able to understand details of engine

Unit-7: Automobile Service Tools

Learning Outcome 7.1: Identify hand tools, measuring tools, electrical tools, special tools, service, workshop machine

Theory	Practical
1. Able to identify hand tools used 2. Drawing of hand tools 3. Measurement tools – make, model, specifications 4. Parts/components of measurement tools 5. Electrical tools – make, model, specifications 6. Parts/components of electrical tools 7. Special tools – make, model, specifications 8. Parts/components of special tools 9. Service workshop equipment – make, model, specifications 10. Parts/components of hand tools	▪ Identify and handle hand tools ▪ Parts/components of hand tools ▪ Able to identify measurement tools used ▪ Drawing of measurement tools ▪ Able to identify electrical tools used ▪ Drawing of electrical tools ▪ Able to identify special tools ▪ Drawing of special tools ▪ Able to identify service workshop equipment ▪ Drawing of hand tools

Unit-8: Vehicle Servicing

Learning outcome 8.1: Washing of a vehicle, changing of oil and oil filter, changing of air filter, changing of fuel filter, changing of coolant

Theory	Practical
1. Washing of a vehicle 2. Changing of oil and oil filter 3. Changing of air filter 4. Change the fuel filter 5. Changing of coolant	▪ Able to understand washing procedure of a vehicle ▪ Able to do washing of a vehicle ▪ Able to understand procedure of changing of oil and oil filter ▪ Able to change the oil and oil filter ▪ Able to understand procedure of changing of air filter ▪ Able to change air filter ▪ Able to understand procedure of fuel filter changing ▪ Able to change fuel filter ▪ Able to understand procedure of changing of coolant ▪ Able to change coolant

Unit-9: Customer Sales Care

Learning Outcome 9.1: Customer service	
Theory	**Practical**
1. Customer service	▪ Able to understand the meaning of customer service ▪ Able to list duties of an automobile salesperson

Unit-10: Innovation and Development

Learning Outcome 10.1: Explain about innovation and development in automobile	
Theory	**Practical**
1. Importance of innovation and development	▪ Able to identify innovation in automobile ▪ Able to understand about new development

PART II: INTERNAL ASSESSMENT (PRACTICAL) – 100 MARKS

Practical Work

- Practical Examination – 40 Marks
- Practical File – 10 Marks
- Viva Voce (based on Practical Examination/File) – 20 Marks

The Practical Work allows candidates to demonstrate that they have knowledge and understanding of performing a task. This will include the hands-on Practical Examination and viva-voce. In addition, candidates will be required to maintain a practical file of the work done throughout the year.

*Candidates will be required to perform any **two** practicals selected by the external examiner. The two practicals selected by the external examiner will be from different units of the syllabus.*

Project Work

- Report of Field Visit/Project – 10 Marks
- Student Portfolio – 10 Marks
- Viva Voce (based on Report of Field Visit/Student Portfolio/Project) – 10 Marks

Project Work aims at assessing the practical skills of candidates over a certain period of time. This includes report of field visits, project undertaken, student portfolio along with viva-voce.

*Candidates are required to have completed **one** project on a topic of their choice from any topic/allied aspect covered in the syllabus. The project may include case study (example, study of a local industry/business), survey, model making, poster making/creation of audio-visual aids, interview of an entrepreneur from the local industry, etc.*

Candidates should maintain record of the field visits undertaken during the year. This should include subject-specific information obtained from the experts/observations made during the field visits.

The student portfolio is a compilation of work done by the candidate throughout the year, and may include reports, articles, photos of products prepared by the candidate in relation to the unit of competency.

EVALUATION

The practical and project work is to be evaluated by the subject teacher and by an External Examiner. The External Examiner shall be nominated by the Head of the school and may be a teacher from the faculty, but not teaching the subject in the relevant section/class.

The Internal Examiner and the External Examiner will assess the candidate's work independently.

Award of Marks	(100 Marks)
Subject Teacher (Internal Examiner)	50 marks
External Examiner	50 marks

The total marks obtained out of 100 are to be sent to the CISCE by the Head of the school.

The Head of the school will be responsible for the online entry of marks on the CISCE's CAREERS portal by the due date.

Teaching-learning Activities

For effective transaction of the subject content a combination of classroom activities, practical work and field visits/educational tours are to be used by the teacher.

Special emphasis should be laid on occupational safety, health and hygiene while conducting the teaching-learning activities.

Classroom Activities

Classroom activities, including, interactive lecture sessions followed by discussions should be conducted by the subject teachers, using a variety of instructional or teaching aids, such as audio-video materials, colour slides, charts, diagrams, models, exhibits, hand-outs, online teaching materials, etc.

Practical Work

Practical work may include but not be limited to hands-on training, simulated training, role play, case-based studies, exercises, etc. Equipment and supplies should be provided to enhance hands-on learning experience of students. Only trained personnel should teach specialized techniques.

Field Visits/Educational Tours

Students should be taken for field visits to give them an opportunity to interact with experts and to expose them to the various tools, equipment, materials, procedures, and operations in the workplace. During field visits, students should obtain subject-specific information from the experts or make a record of the activities observed.

A checklist of observations to be made by the students during the field visits should be developed by the teachers for systematic collection of information by the students on the various aspects.

For example, a visit may be organised to an automobile showroom and service centre. During the visit, students may be asked to make observations and obtain information from the owner or the supervisor of the showroom on the following:

- Activity of automobile showroom
- Different sections of the showroom and the service centre
- Service centre activity
- Number of vehicles sold annually
- Power transmission section of engine
- Type of engine and technology
- Automation system
- Denting and painting section
- Electrical section
- Auto electrical system

Similarly, visits may also be organised to automobile fairs.

In a year, at least 3 field visits/educational tours should be organised for the students to expose them to the activities in the workplace. Schools may identify different opportunities for field visits within a short distance from the school and make necessary arrangements for the same.

List of Equipment and Materials

The list given below is suggestive. An exhaustive list should be prepared by the teacher. Only basic tools, equipment and accessories should be procured by the school so that the routine tasks can be performed by the students regularly for practice and acquiring adequate practical experience.

S. No.	Equipment Required	Quantity
	TOOLS AND EQUIPMENT'S AND TRAINING MATERIALS	
1.	Compressor	
2.	Spark plug cleaning machine	
3.	Screwdriver (star & minus)	
4.	Double-end ring spanner	
5.	Open and close (fix) spanner	
6.	Socket (*goti*) spanner	
7.	Plier	
8.	Monkey plier	
9.	Outer and inner plier	
10.	Toolbox	
11.	T-spanner (tommy) set	
12.	Allen key set	
13.	Tappet puller	
14.	Tappet gauge	
15.	Multimeter	
16.	Tachometer	
17.	Hammer	
18.	Compressor gauge	
19.	Oil measure container, funnel	
20.	Oil can	
21.	Tools trolley	
22.	Magnetic bar	
	BASIC TOOLBOX	
1.	Workshop tool/equipment: drain pan, oil can, jack hydraulic, bench vice, ramp, pneumatic tool, equipment stands, etc.	
2.	Pressure indicators: oil pressure gauges, tire pressure gauges etc.	

S. No.	Equipment Required	Quantity
3.	Specialty wrenches: alignment wrenches, chain wrenches, locking wrenches, lug wrenches etc.	
4.	Trim or moulding tools: carbon scrapers, gasket scrapers, scrapers, spoons, etc.	
5.	Measuring equipment: vernier, calipers, micrometer, feeler gauges, multi-meter, flow meter, temp gauge, dial gauge, etc.	
6.	Other tools: hand tools, power tools, lifting and jacking equipment, tensioning equipment, brake roller tester, chassis dynamometer, suspension activation, security activator, etc.	
7.	Tools for other tasks such as cleaning of vehicles, tools, equipment, and workshop	
8.	Personal protection equipment: gloves, safety shoes, goggles, ear plugs, boiler suit	
9.	Workshop safety: fire extinguishers	
10.	First aid	
CONSUMABLE ITEMS		
1.	Cotton waste, petrol/diesel, lubricant, grease, storage containers, air filters, oil filters, spark plugs, glow plugs, etc.	
2.	Worn out/defective/spurious samples: seal, gaskets, clutch plate, brake shoes, brake pads, spark plug, oil filter, air cleaner, etc.	
TEACHING AIDS		
1.	Charts, CBTs, LCD projector and videos	
2.	Cleaning equipment and solutions	
3.	SOP charts on safety norms and drills	
4.	Charts of dos and don’ts in work area.	
5.	Audio/video on English, Hindi or local language course	
6.	Reference books	
7.	Workbooks	
8.	Study for soft skills	
9.	CBTs on working on a computer	
10.	Computer system	
11.	UPS	
12.	Vehicle service manuals, vehicle handbook, job card, work order, completion material requests, technical reference books	

S. No.	Equipment Required	Quantity
LIST OF CUT SECTION WORKING MODEL **Name of working automotive model**		
1.	Four stroke working petrol engines or diesel engine model	1
2.	Old second-hand radiator	1
3.	Old second-hand pressure cap	1
4.	Old second-hand thermostat	1
5.	Old second-hand disc brake	1
6.	Four-wheeler old second-hand vehicle	1
7.	MPFI working model system	1
8.	Old second-hand motorcycle	1

Teacher Qualifications

The suggestive qualifications and minimum competencies for the subject teacher are as follows:

- Degree in Automobile Engineering/Mechanical Engineering from a recognized Institute/University, with at least 1 year work/teaching experience

  OR

  Diploma in Automobile Engineering/Mechanical Engineering from a recognized Institute/University, with at least 3 years work/teaching experience
- Effective communication skills (oral and written)
- Basic computing skills
- Technical competencies.