

**Syllabi & Courses of Study  
of  
Vocational Subjects  
for  
Class 11th (Level-3)**



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# **SCHEME OF EXAMINATION**

## **Details of Assessment Plan**

1. There will be two components of evaluation:
  - a) Knowledge/Theory Test
  - b) Practical Test
  
2. The marks allocated for each evaluation will be as under:
  - a) Knowledge/Theory Test – 50 marks
  - b) Practical Test – 50 marks

<b>S.No.</b>	<b>Method of Assessment</b>	<b>Weightage (Max. Marks)</b>	<b>Minimum Pass Marks</b>	<b>Evaluator</b>
1	Theory/Written Test	50	18	JKBOSE
2	Practical Test & Oral Test/Viva	50	25	Sector Skill Council(SSC)/JKBOSE
<b>TOTAL</b>		<b>100 Marks</b>		

# **PRACTICAL ASSESSMENT**

## **EXTERNAL ASSESSMENT:**

<b>DISTRIBUTION</b>	<b>MARKS</b>
Hands on Skill	15
Written Test	10
Viva Voce	15
Practical File / Student's Portfolio	10
<b>TOTAL</b>	<b>50</b>

## QUESTION DISTRIBUTION

**Class: 11<sup>th</sup> (Level-3)**

**Max. Marks: 50**

**Duration: 02:30 Hrs**

<b>PATTERN</b>	<b>MARKS</b>	<b>QUESTIONS</b>	<b>TOTAL</b>
Very Short Questions	01	10	10 Marks
Short Type-I Questions	02	05	10 Marks
Short Type-II Questions	03	05	15 Marks
Long Type Questions	05	03	15 Marks
<b>TOTAL</b>		<b>23</b>	<b>50 Marks</b>

# 1. IT/ITeS

*Job Role: Junior Software Developer*

*Level-3(11<sup>th</sup>)*

## SCHEME OF ASSESSMENT

This course is a planned sequence of instructions consisting of Units meant for developing employability and vocational competencies of students of Class 11<sup>th</sup> & 12<sup>th</sup> opting for vocational subject along with general education subjects.

The unit-wise distribution of hours and marks for Class 11<sup>th</sup> is as follows:

Class 11 <sup>th</sup>			
Module Part & Name	Unit Name	No. of Hours for Theory and Practical (300)	Max. Marks Theory and Practical (100)
Part - A Employability Skills	Communication & Self-Management Skills-I	45	5
	Basic ICT, Entrepreneurship & Green Skills-I	65	5
<b>Total</b>		<b>110</b>	<b>10</b>
Part – B Vocational Skills	Software Construction Essentials	40	12
	Operating System and Computer Network	40	12
	Data Structure	20	4
	Python Programming-I	25	4
	Database Management System	40	8
<b>Total</b>		<b>165</b>	<b>40</b>
Part - C Practical Work	Practical Examination	06	15
	Written Test	01	10
	Viva Voce	03	10
<b>Total</b>		<b>10</b>	<b>35</b>
Part-D Project Work /Field Visit	Practical File / Student Portfolio	10	10
	Viva Voce	05	05
<b>Total</b>		<b>15</b>	<b>15</b>
<b>Total</b>		<b>300</b>	<b>100</b>

## **Theory: 50 Marks**

### ***“Part – A”***

#### **Employability Skills----- (10 Marks)**

##### **Unit – I Communication Skills and Self-Management Skills-I (05 Marks)**

Communication, Types of communication, Communication Styles, Greetings & Introduction. Strength and Weakness Analysis, Grooming, Personal Hygiene, Team Work, Goal Setting, Time Management.

##### **Unit – II Basic ICT, Entrepreneurship & Green Skills-I (05 Marks)**

Introduction to ICT and ITeS, Word Processing (Create, Edit, Insert, Header/Footer, Save, Close and Print a document in Word Processor).

Entrepreneur and Entrepreneurship, Values of an Entrepreneur, Coming up with a business idea, Understanding the market.

Sectors of Green Economy, Policies for a Green Economy (Green India Mission (GIM)), Stakeholders in Green Economy (Government, Non-Governmental Organisations (NGOs) & Business and Industry).

### ***“Part – B”***

#### **Vocational Skills----- (40 Marks)**

##### **Unit – III Software Construction Essentials (12 Marks)**

**Introduction to Computers:** Computer, Input and output devices, Computer memory, Types of memory: primary, cache and secondary memory.

**Number System:** Binary, Decimal, Octal and Hexadecimal number system, Conversion: binary to decimal and decimal to binary.

**Algorithms and Flowcharts:** Algorithm, Why do we need an algorithm, Characteristics of a good algorithm, Flowchart, Pseudocode, Benefits of pseudocode.

**Programming Language Concepts:** Steps for problem solving, Concept of a program, Need for writing programs, Concept of High level/low level/ assembly level programming languages. Translators: compiler, interpreter and assembler.

##### **Unit – IV Operating System and Computer Network (12 Marks)**

**Operating System:** Operating System, Functions of operating system, Types of Operating System: batch operating system, time sharing operating system, multiprocessing operating system, real time operating system, distributed operating system.

**Computer Networks:** Introduction to computer networks, Types of networks: personal area network(PAN),local area network(LAN), metropolitan area network(MAN), wide area network(WAN), Network devices: Ethernet card, switch, router, hub, gateway, Network topologies: mesh topology, ring

topology, bus topology, star topology, hybrid topology, Concept of client and server, Basics of MAC and IP address.

**Network Security:** Threats and prevention, Malware: virus, worms, ransomware, trojan, spyware, adware, key loggers, Combating malware, Antivirus, Spam, HTTP vs HTTPS, Firewall, Cookies, Hackers and crackers.

## **Unit – V Data Structure**

**(04 Marks)**

**Concepts of Data Structure:** Data Structure, Primitive (Integer, float, char, pointer) and Non-primitive (Arrays, Stacks, Queues, Graphs, Trees) data structure, Concept of searching (linear search, binary search) and Sorting (bubble sort, selection sort).

**Stack and Queue:** Stack: introduction, applications and operations, Queue: introduction, applications and operations, Deque: introduction, applications and operations.

## **Unit – VI Python Programming-I**

**(04 Marks)**

**Introduction:** Introduction to python programming, Features of python, Character set, Tokens: Keywords, Identifiers (names), Literals/values, Operators, Punctuators, Barebones of a python program, Create a variable, Multiple assignments.

**Data Handling:** Data types, Mutable and immutable types, Operators: arithmetic, relational, assignment, logical, identity, bitwise, Expressions: precedence of operators, Statement, input and output, Type conversion: explicit and implicit conversion, Errors: syntax, logical and runtime errors.

**Conditional Statements:** Introduction, Types of statements of python, Statement flow control, The if statements of python: the if-statement, the if-else statement, the nested if statement.

## **Unit – VII Database Management System**

**(08 Marks)**

**Concepts of Database:** Introduction to file system, Limitations of file system, Data base management system: Introduction to DBMS, Advantages of DBMS, Relational data model, Concept of: attribute, tuple, domain, degree, cardinality and schema.

**Key Concepts:** Candidate key, Primary key, Alternate key and Foreign key.

**Structured Query Language:** Introduction to structured query language (SQL), Data definition language, Data manipulation language, Data types, Constraints.

**Create and Process Table:** Data definition: CREATE database/table, ALTER table, Describe table, DROP database/table. Data manipulation: INSERTION of records, Data query: SELECT statement, Data updation and deletion, Aggregate functions.



## **Practical (External):50 Marks**

### **A. Hands on Skill**

**(15 Marks)**

1. Write a Program that displays “Welcome to the world of python programming”.
2. Write a Program to add two integers.
3. Write a Program to swap two integers.
4. Write a Program to print a name (entered by the user).
5. Write a Program to check whether a number is even or odd.
6. Create a student table (roll no, name, fathers name, mothers name, class, residence, phone no.) in MySQL with student roll no. as primary key.
7. Add new column (aadhaar no.) to student table.
8. Fetch (name, class, residence, phone no.) from student table using select statement.

### **B. Written Test**

**(10 Marks)**

### **C. Viva Voce**

**(15 Marks)**

### **D. Student Portfolio / Practical Notebook**

**(10 Marks)**

## 2. Retail

*Job Role: Trainee Associate*

*Level-3(11<sup>th</sup>)*

### SCHEME OF ASSESSMENT

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The unit-wise distribution of hours and marks for Class 11<sup>th</sup> is as follows:

Class 11 <sup>th</sup>			
Module Part and Name	Unit Name	No. of Hours for Theory and Practical (300)	Max. Marks Theory and Practical (100)
<b>Part - A Employability Skills</b>	Communication & Self-Management Skills-I	45	05
	Basic ICT, Entrepreneurship & Green Skills-I	65	05
<b>Total</b>		<b>110</b>	<b>10</b>
<b>Part – B Vocational Skills</b>	Fundamentals of Retailing	40	12
	Display of stock for sale	40	12
	Visual Merchandising Display	20	04
	Products arrangement for Sale	25	04
	Health, Hygiene and Safety Measures	40	08
<b>Total</b>		<b>165</b>	<b>40</b>
<b>Part - C Practical Work</b>	Practical Examination	06	15
	Written Test	01	10
	Viva Voce	03	10
<b>Total</b>		<b>10</b>	<b>35</b>
<b>Part-D Project Work/ Field Visit</b>	Practical File / Student Portfolio	10	10
	Viva Voce	05	05
<b>Total</b>		<b>15</b>	<b>15</b>
<b>Total</b>		<b>300</b>	<b>100</b>

## Theory: 50 Marks

### *“Part – A”*

#### **Employability Skills----- (10 Marks)**

#### **Unit – I Communication Skills and Self-Management Skills-I (05 Marks)**

Communication, Types of communication, Communication Styles, Greetings & Introduction. Strength and Weakness Analysis, Grooming, Personal Hygiene, Team Work, Goal Setting, Time Management.

#### **Unit – II Basic ICT, Entrepreneurship & Green Skills-I (05 Marks)**

Introduction to ICT and ITeS, Word Processing (Create, Edit, Insert, Header/Footer, Save, Close and Print a document in Word Processor).

Entrepreneur and Entrepreneurship, Values of an Entrepreneur, Coming up with a business idea, Understanding the market.

Sectors of Green Economy, Policies for a Green Economy (Green India Mission (GIM)), Stakeholders in Green Economy (Government, Non-Governmental Organisations (NGOs) & Business and Industry).

### *“Part – B”*

#### **Vocational Skills----- (40 Marks)**

#### **Unit – III Fundamentals of Retailing (12 Marks)**

**Retail business:** Concept of retailing, Organised and Unorganised retailing , Types of retail business establishment, Functions and essential requirements of retailers , Retailer’s services to customers.

**Customer and Consumer: Introduction** customer and consumer ,Difference between customer and consumer , Customer service and Customer satisfaction .

**Concept of Skill and Skill Development:** Essentials of skill development , Skills for trainee associate .

**Concept of Trainee Associate :**Duties of trainee associate , Responsibilities of trainee associate , Special activities of trainee associate.

#### **Unit– IV Display of Stock for Sale (04 Marks)**

**Display :**Meaning of display , Features of display , Factors affecting retail merchandising , Resources use for display , Types of merchandise displays, Importance of merchandise display.

**Merchandise Display :** Concept of merchandise display , Forms of merchandise display , Essentials for successful merchandise display , Legal requirements for merchandise display .

**Labeling and packaging:** Concept of labelling , Types of labelling , Labelling techniques in retail stores , Precautions should be taken care for labelling , Meaning of packaging , Importance of packaging

,Techniques of packaging in merchandising display .

**Set up and dismantle of display :** Meaning of Set up and Dismantle , Procedure of set up and dismantle of display , Importance of cleanliness in retail store , Importance of storage in merchandise displays , Tools for storing merchandising displays .

## **Unit– V Visual Merchandising Display**

**(04 Marks)**

**Concepts of Visual Merchandising:** Meaning of Design brief , Purpose and style of the design brief for display , Importance of design brief , Potential places for visual display , Features of merchandising in retail displays , Importance of light, colour, texture, shape and dimensions in visual display .

**Display:** Role of dress in-store merchandising , Company's visual design policy , Purpose and style of display , Lighting in design brief , Dressing mannequins , Display of different types of merchandise , Safety guidelines for visual display , Dressing techniques for different types of merchandise .

**Window Display :**Meaning of window display , Importance of evaluation of retail display , Grouping of merchandising under design brief , Reporting arrangements for sorting out problems and reducing risks .

**Dismantle the displays and store equipments :**Meaning and importance of dismantling of display , Protect the parts of displays from damages during dismantling , Returning of the display , Rid of unwanted materials safely and keep the records , Safe and cleaning material and equipments .

## **Unit–VI Products Arrangement for Sale**

**(12 Marks)**

**Introduction:** Meaning of arrangement of products for sale in store , Need for arranging products , Tools required for products arrangement for sales , Shelf techniques in arranging products for sales in stores , Safety measures while displaying the products .

**Manufacturer's instructions for arrangement of products:** Manufacturer's instructions for product arrangement, Methods of arranging goods for sale, Hierarchy of products arranging in retail store, Difficulties in arranging products.

**Company procedures for dealing with damaged goods:** Meaning of the damaged goods, Identify the damaged goods , Reasons of damages in retail store , Procedure of dealing with damaged goods , Waste management in retail .

**Selling process and salesmanship:** Meaning of selling process , Steps of selling process, Personal selling and salesmanship, Modern concept of salesmanship, Importance of salesmanship, Qualities of successful salesman , Differentiate between personal selling and salesmanship

## **Unit–VII Health, Hygiene and Safety Measures**

**(08 Marks)**

**Health and Safety:**Meaning of Health and Safety , Company procedures and legal requirement for reducing health safety at work place , Study the ways to encourage colleagues to follow the health and safety norms , Types of equipment and materials used in the stores for health and safety.

**Handle goods safely , Equipment and Materials :**Meaning of risk and types of risks in retailing , Lifting and handling techniques , Safety measures for lifting and handling goods , Company guidelines and manufacturer instruction for using lifting and handling equipments , Plan a safe and efficient route for moving goods .

**Accidents and Emergencies:** Meaning of accidents and emergencies , Dealing with Accidents and Emergencies , System of reporting accidents and emergencies to the right person, Follow instructions of senior in emergencies , Company procedures for evacuation , Meaning of Reporting , Retailers procedures and legal requirements to deal with accidents and emergencies .

**Store Clean and Hygiene:** Keep work surface clean - equipment and material use for clean surface - position cleaning equipment and material - risk of spillages , Get rid of waste and little - Use suitable equipments - Check fitness of equipments - Company procedure for get rid of waste , Meaning of personal hygiene - Personal protective equipments .

## **Practical (External):50 Marks**

### **A. Hands on Skill**

**(30 Marks)**

#### **Unit 1**

- Observing and sharing communication styles of friends, teachers and family members
- Group discussion on qualities of a good team
- Demonstration of impressive appearance and groomed personality

#### **Unit 2**

- Demonstration and practice listing the features of word processing , Editing the text , Word wrapping and alignment
- Take up a product and suggest how its features can be improved
- Writing a two-page essay on important initiatives taken in India for promoting green economy

#### **Unit 3**

- To observe the basic functions and requirements of retailers in the retail store
- To understand Duties and Responsibilities of trainee associate
- To demonstrate the various customer services for convincing and satisfying the customer

#### **Unit 4**

- To know company policy for display
- To demonstrate the role of merchandise display with the help of role play
- To Demonstrate the various labelling techniques in retail stores

#### **Unit 5**

- To Prepare a chart on design brief
- To Prepare a poster on safety guidelines for visual display
- To identify different types of merchandise as per the segments of products

#### **Unit 6**

- Draw a chart containing shelf techniques and tools required for arranging products for sales in stores
- Role play on approach in case of difficulty in arranging products
- Identify and pickup the damaged goods from given goods

#### **Unit 7**

- To Demonstrate the company procedures and legal requirement for reducing health
- Prepare a chart on Company procedures for evacuation
- Prepare a list of equipment and material of cleaning

### **B. Viva Voce**

**(10 Marks)**

### **C. Student Portfolio/Practical Notebook**

**(10 Marks)**

### **3. Tourism & Hospitality**

*Job Role: Customer Service Executive (Meet & Greet)*

*Level-3(11th)*

#### **SCHEME OF ASSESSMENT**

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The unit wise distribution of hours and marks for class 11<sup>th</sup> is as follows:

Class 11 <sup>th</sup>			
Module Part and Name	Unit Name	No. of Hours for Theory and Practical (300)	Max. Marks Theory and Practical (100)
<b>Part - A Employability Skills</b>	Communication & Self-Management Skills-I	45	5
	Basic ICT, Entrepreneurship & Green Skills-I	65	5
<b>Total</b>		<b>110</b>	<b>10</b>
<b>Part – B Vocational Skills</b>	Introduction to the Tourism Industry	45	12
	Introduction to Hospitality Industry	45	12
	Customer Service	40	08
	Prepare for Providing Customer Service	35	08
<b>Total</b>		<b>165</b>	<b>40</b>
<b>Part - C Practical Work</b>	Practical Examination	06	15
	Written Test	01	10
	Viva Voce	03	10
<b>Total</b>		<b>10</b>	<b>35</b>
<b>Part-D Project Work/ Field Visit</b>	Practical Examination	10	10
	Viva Voce	05	05
<b>Total</b>		<b>15</b>	<b>15</b>
<b>Total</b>		<b>300</b>	<b>100</b>

## **Theory: 50 Marks**

### ***“Part – A”***

#### **Employability Skills----- (10 Marks)**

##### **Unit – I Communication Skills and Self-Management Skills-I (05 Marks)**

Communication, Types of communication, Communication Styles, Greetings & Introduction. Strength and Weakness Analysis, Grooming, Personal Hygiene, Team Work, Goal Setting, Time Management.

##### **Unit – II Basic ICT, Entrepreneurship & Green Skills-I (05 Marks)**

Introduction to ICT and ITeS, Word Processing (Create, Edit, Insert, Header/Footer, Save, Close and Print a document in Word Processor).

Entrepreneur and Entrepreneurship, Values of an Entrepreneur, Coming up with a business idea, Understanding the market.

Sectors of Green Economy, Policies for a Green Economy (Green India Mission (GIM)), Stakeholders in Green Economy (Government, Non-Governmental Organisations (NGOs) & Business and Industry).

### ***“Part – B”***

#### **Vocational Skills----- (40 Marks)**

##### **Unit – III Introduction to the tourism industry (12 Marks)**

- 1: Concept of Tourism Session
- 2: Types and Forms of Tourism Session
- 3: Components and Constituents of Tourism Session
- 4: Recent Trends in Tourism Activities and Tourist Attractions of India

##### **Unit – IV Introduction to Hospitality Industry (12 Marks)**

- 1: Types of Accommodation in Tourism and Hospitality Industry Session
- 2: Categorisation of Hotels Session
- 3: Type of Rooms and Guest Services Session
- 4: Functions and Services of Front Office

##### **Unit – V Customer Service (08 Marks)**

- 1: Meet and Greet Services for Guests on Arrival and Departure Session
- 2: Communication with Colleagues and Customers Session
- 3: Significance of Tourism Industry in Economic Development Session
- 4: Role of Travel Agencies and Travel Desk

##### **Unit – VI Prepare for Providing Customer Service (08 Marks)**

- 1: Prepare for Providing Customer Service (Meet and Greet)
- 2: Prepare for Meeting Customers

## **Practical (External):50 Marks**

### **A. Hands on Skill**

**(15 Marks)**

1. Meet & Greet practices in school Laboratory
2. Receiving & seeing off the guests
3. After dining activities
4. Reception service activities at front office.
5. Role play of all the activities related to meet & greet services.
6. Telephone etiquettes demonstration.
7. Field visit report submission.
8. Guest lecture feedback report making
9. Communication skill related to guest services.

### **B. Written Test**

**(10 Marks)**

### **C. Viva Voce**

**(15 Marks)**

### **D. Student Portfolio / Practical Notebook**

**(10 Marks)**



### **3. Tourism & Hospitality**

*Job Role: Food & Beverage Service Steward*

*Level-3(11<sup>th</sup>)*

#### **SCHEME OF ASSESSMENT**

This course is a planned sequence of instructions consisting of Units meant for developing employability and vocational competencies of students of Class 11<sup>th</sup> & 12<sup>th</sup> opting for vocational subject along with general education subjects.

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<b>Class 11<sup>th</sup></b>			
<b>Module Part and Name</b>	<b>Unit Name</b>	<b>No. of Hours for Theory and Practical (300)</b>	<b>Max. Marks Theory and Practical (100)</b>
<b>Part - A Employability Skills</b>	Communication & Self-Management Skills-I	45	5
	Basic ICT, Entrepreneurship & Green Skills-I	65	5
<b>Total</b>		<b>110</b>	<b>10</b>
<b>Part – B Vocational Skills</b>	Introduction to Food Service Industry & its Scope	20	4
	Plan & Prepare for the Food & Beverage Products	45	12
	Greeting, Welcoming & Other Services to the Guest	30	6
	Surfaces Used for Dining & Serving Food & Their Cleaning Procedure	40	12
	Dealing with Customer Payments.	30	6
<b>Total</b>		<b>165</b>	<b>40</b>
<b>Part - C Practical Work</b>	Practical Examination	6	15
	Written Test	1	10
	Practical File / Student Portfolio	3	10
<b>Total</b>		<b>10</b>	<b>35</b>
<b>Part-D Project Work /Field Visit</b>	Practical Examination	10	10
	Viva Voce	5	05
<b>Total</b>		<b>15</b>	<b>15</b>
<b>Total</b>		<b>300</b>	<b>100</b>

## **Theory: 50 Marks**

### ***“Part – A”***

#### **Employability Skills----- (10 Marks)**

##### **Unit – I Communication Skills and Self-Management Skills-I (05 Marks)**

Communication, Types of communication, Communication Styles, Greetings & Introduction. Strength and Weakness Analysis, Grooming, Personal Hygiene, Team Work, Goal Setting, Time Management.

##### **Unit – II Basic ICT, Entrepreneurship & Green Skills-I (05 Marks)**

Introduction to ICT and ITeS, Word Processing (Create, Edit, Insert, Header/Footer, Save, Close and Print a document in Word Processor).

Entrepreneur and Entrepreneurship, Values of an Entrepreneur, Coming up with a business idea, Understanding the market.

Sectors of Green Economy, Policies for a Green Economy (Green India Mission (GIM)), Stakeholders in Green Economy (Government, Non-Governmental Organisations (NGOs) & Business and Industry).

### ***“Part – B”***

#### **Vocational Skills----- (40 Marks)**

##### **Unit III: Introduction To Food Service Industry And Its Scope. (04 Marks)**

History of Food service. Status of Food Service. Classification of food service. Factor affecting the growth of Industry. Challenges faced by the Industry. Modern Trends in the Industry.

##### **Unit IV: Plan and Prepare For The Food & Beverage Products. (12 Marks)**

Getting ready for the service of the guest (Mise-en-place)- (1)Checking of the area to serve F&B items to guests, (2) Checking of the Service trolleys and counters used in the F& B areas, (3) Checking of tables, chairs and the furnitures, (4) Checking of the sideboards

Type of services commonly (elaborated) used in the restaurant. Workplace Procedures and assessment of the cutlery, Crockery and Table wares.

Importance of Mise-en Scene-(1) Checking of cleanliness of the area, (2) Checking of the electrical appliances and Accessories, (3) Checking of linen and stocking of linens.

Assembling and filling of various accompaniments like Pickles, salads, sauce etc.

Waste disposal procedures and sanitation of restaurant areas.

Importance of menu and menu planning. Menu card and its presentations. Menu as promotional tools and menu Liaisoning. Role of Personal hygiene and dress code. Types of Layout used in F&B area.

Food standards and its role in Industry.- (1) Food standard, food hygiene and its implementation.(2) Standard of service in F& B areas. (3) Follow SOP for work completion, duty performance and disposal of broken chairs and tables.

**Unit V: Greeting, Welcome and Other Service to the Guest****(06 Marks)**

Welcoming and greeting of guest.. Booking of table reservations and table allocation to guest. Guest assistance and escorting of the guest.

Pre-meal services. Delivering proper information about-(1) F&B items available (2) Special dish of the day.

Delivering of knowledge of local, culture food with dietary advantages.

Suggestive selling of F&B items of the restaurant. Branding and promotion of the dish. Special requirements of guest fulfilled by the duty chef.

Inventory of CCG and other F&B accessories. Pick up of food and assistance in service. Meal Experience and guest satisfaction and its role in repeat business.

**Unit VI: Surfaces Used For Dining And Serving Food And Their Cleaning Procedure. (12 Marks)**

SOP for cleaning of CCG, Tableware and Hollowware. Post meal services, cleaning of table and resetting of table for next course like desserts. Use of linens like naprons and table cloth. Napkin folding and removal of all table linen after service.

SOP for serving fingerbowl and mouth freshening products. Presentation of bills/checks. Delivery of soiled CCG, HW, TW to sink area.

Deposition of soiled linen, receiving fresh and stocking. Store receiving and maintenance of its record.

Receiving of food items from store like sausage accompaniments mouth fresheners an linens. Closing of shift and cleaning of all area with table and chairs.

Opening of shift, checking and getting ready for operation. Checking of FFE. Follow a precautions and safety concerns during service of guests. Waste disposable procedure in F&B area.

**Unit VII: Dealing With Customer Payments.****(06 Marks)**

Checking of payment machine. Checking and use of Internet connection for payment. Taking of payment card from guest and assurance about the payment. Problem sharing with senior and colleagues about the net connection or card problem. Dealing with customers during payments and getting ready for payment procedure (Checking of machine etc.)

Collection of payments, modes of payments like Cash, Cheque, Credit Card etc. Precautions and safety procedures to follow while dealing with chip and pin base transactions. Farewell and see-off the guest and Procedure to follow in guest see-off and departure.

Payment collections via. Cash and deposit in counters. Receiving of paid bills on counter and handing over to guest with remaining amount. Record keeping of payment weather the Soft or Hard copy.

## **Practical (External):50 Marks**

### **A. Hands on Skill**

**(15 Marks)**

1. Display different greeting gestures prevalent in Kashmir Valley.
2. Show how to create a document in MS word.
3. Demonstrate how to clean the table before service.
4. Demonstrate how to operate a vacuum cleaner.
5. Show the process of escorting VIP guests.
6. Demonstrate the SOP for serving Finger bowl.
7. Display the handling of waste in F&B area.
8. Show how to operate swipe machine for receiving payments from customers.

### **B. Written Test**

**(10 Marks)**

### **C. Viva Voce**

**(15 Marks)**

### **D. Student Portfolio / Practical Notebook**

**(10 Marks)**

## 4.Agriculture

*Job Role: Organic Grower*

*Level-3(11<sup>th</sup>)*

### SCHEME OF ASSESSMENT

This course is a planned sequence of instructions consisting of Units meant for developing employability and vocational competencies of students of Class 11<sup>th</sup> & 12<sup>th</sup> opting for vocational subject along with general education subjects.

The unit wise distribution of hours and marks for class 11<sup>th</sup> is as follows:

Class 11 <sup>th</sup>			
Module Part and Name	Unit Name	No. of Hours for Theory and Practical (300)	Max. Marks Theory and Practical (100)
<b>Part -A Employability Skills</b>	Communication & Self-Management Skills-I	45	5
	Basic ICT, Entrepreneurship & Green Skills-I	65	5
<b>Total</b>		<b>110</b>	<b>10</b>
<b>Part-B Vocational Skills</b>	Introduction to Crops and Cropping Systems	40	10
	Introduction to Organic Farming	45	14
	Water, Nutrients and Pest Management in Organic Farming	40	10
	Package of Practices for Organic Farming	40	06
<b>Total</b>		<b>165</b>	<b>40</b>
<b>Part -C Practical Work</b>	Practical Examination	6	15
	Written Test	1	10
	Practical File / Student Portfolio	3	10
<b>Total</b>		<b>10</b>	<b>35</b>
<b>Part-D Project Work /Field Visit</b>	Practical Examination	10	10
	Viva Voce	5	05
<b>Total</b>		<b>15</b>	<b>15</b>
<b>Total</b>		<b>300</b>	<b>100</b>

## **Theory: 50 Marks**

### ***“Part – A”***

#### **Employability Skills----- (10 Marks)**

##### **Unit – I Communication Skills and Self-Management Skills-I (05 Marks)**

Communication, Types of communication, Communication Styles, Greetings & Introduction. Strength and Weakness Analysis, Grooming, Personal Hygiene, Team Work, Goal Setting, Time Management.

##### **Unit – II Basic ICT, Entrepreneurship & Green Skills-I (05 Marks)**

Introduction to ICT and ITeS, Word Processing (Create, Edit, Insert, Header/Footer, Save, Close and Print a document in Word Processor).

Entrepreneur and Entrepreneurship, Values of an Entrepreneur, Coming up with a business idea, Understanding the market.

Sectors of Green Economy, Policies for a Green Economy (Green India Mission (GIM)), Stakeholders in Green Economy (Government, Non-Governmental Organisations (NGOs) & Business and Industry).

### ***“Part – B”***

#### **Vocational Skills----- (40 Marks)**

##### **Unit – III Introduction to Crops and Cropping Systems (10 Marks)**

Identify the major agriculture crops and differentiate between specialty and commodity crop; Introduction to agriculture(Definition and branches) –;Major agriculture crops of India grown under organic farming(Paddy, wheat, maize, pulses, tea, coffee, tomato, potato, rose, marigold and carnation);importance of organically grown crops; Describe the different types of farming systems (Pure organic farming; Integrated farming system; Mixed farming);Describe the various cropping systems; Production of crops ( Monoculture; Multiple cropping; Intercropping; Mixed cropping; Relay cropping; Sequential cropping; Ratoon cropping ;Alley cropping.

##### **Unit – IV Introduction to Organic Farming (14 Marks)**

Introduction to organic farming, Principles and components of organic farming; Advantages of organic farming, limitations of organic farming, Detrimental effects of chemical based farming system –depletion of soil health, environment pollution, reduction of natural enemies, pesticide consumption, threat to biodiversity, etc. ;Natural v/s organic foods ;Types of organic farming – pure and integrated organic farming systems ;Recycling nutrients in organic farming; organic manures ; Types of organic manures– Farm Yard Manure, vermicompost, Method of preparation of Farm Yard Manure ;Method of composting and Vermicomposting ;Livestock production system – types and characteristics ; Importance of dairy farming, sheep poultry farming, apiculture; Factors influencing livestock farming ;Role and benefits of livestock in organic farming – nutrient recycling, pest management, etc.

**Unit – V Water, Nutrients and Pest Management in Organic Farming****(10 Marks)**

Introduction to irrigation; Sources and methods of irrigation; Micro irrigation – drip and sprinkler irrigation systems ; Advantages and disadvantages of drip and sprinkler irrigation ; Factors affecting irrigation interval; Describe the types and use of biofertilizers; Classification of biofertilizers – nitrogen fixing, phosphorus solubilising, and plant growth promoting Rhizobacteria; Methods of application of biofertilizers – seed treatment, seedling root dip, direct application in soil;Precautions in use of bio-fertilizers; Classification of essential plant Nutrients, weed definition and methods of weed control; Cultural; Mechanical ;Biological and physical methods of weed control ; Enlist the various pest control methods(brief idea );Plant based extracts (e.g. neem, garlic, pongamia, etc. used for pest control;

**Unit – VI Package of Practices for Organic Farming****(06 Marks)**

Describe the package of practices for organic farming, popular varieties of vegetable crops grown under organic farming (tomato; potato;brinjal;cabbage); Popular varieties of flowering crops viz. rose, chrysanthemum, marigold. ;protected cultivation and its application in growing crops organically ;Types of greenhouses, based on shape, construction, material, and ventilation; Crops commonly grown in greenhouses/Polyhouses – rose, gerbera, carnation, strawberry, cucumber; tomato and capsicum.

**Practical (External):50 Marks****A. Hands on Skill****(15 Marks)**

- 1.Visit to various websites to study the major agricultural crops, including crops grown locally.
2. Studyofthe agronomic map of India.
- 3.Preparation of charts, collages, posters depicting importance of different crops,including organically grown crops - food grain crops, oil seed crops, cash crops, pulses, vegetable crops, fruit crops, plantation crops, etc.
4. Preparation of charts on components of organic farming system .
5. Group discussion on the nutrient content and method of preparation of organic manures.
- 6.Methods of prepration of compost, Vermicompost
7. Group discussion on effect of chemical fertilizerson on soil and microorganisms

**B. Written Test****(10 Marks)****C. Viva Voce****(15 Marks)****D. Student Portfolio / Practical Notebook****(10 Marks)**

## 4.Agriculture

*Job Role: Dairy Farmer*

*Level-3(11<sup>th</sup>)*

### SCHEME OF ASSESSMENT

This course is a planned sequence of instructions consisting of Units meant for developing employability and vocational competencies of students of Class 11<sup>th</sup> & 12<sup>th</sup> opting for vocational subject along with general education subjects.

The unit wise distribution of hours and marks for class 11<sup>th</sup> is as follows:

Class 11 <sup>th</sup>			
Module Part and Name	Unit Name	No. of Hours for Theory and Practical (300)	Max. Marks Theory and Practical (100)
Part – A Employability Skills	Communication & Self-Management Skills-I	45	5
	Basic ICT, Entrepreneurship & Green Skills-I	65	5
<b>Total</b>		<b>110</b>	<b>10</b>
Part – B Vocational Skills	Introduction to Dairy Farming	40	10
	Livestock Accommodation	45	14
	Establishing Livestock within Accommodation	40	06
	Providing Feed and Water for Livestock	40	10
<b>Total</b>		<b>165</b>	<b>40</b>
Part -C Practical Work	Practical Examination	6	15
	Written Test	1	10
	Practical File / Student Portfolio	3	10
<b>Total</b>		<b>10</b>	<b>35</b>
Part-D Project Work /Field Visit	Practical Examination	10	10
	Viva Voce	5	05
<b>Total</b>		<b>15</b>	<b>15</b>
<b>Total</b>		<b>300</b>	<b>100</b>



## **Theory: 50 Marks**

### ***“Part – A”***

#### **Employability Skills----- (10 Marks)**

##### **Unit – I Communication Skills and Self-Management Skills-I (05 Marks)**

Communication, Types of communication, Communication Styles, Greetings & Introduction. Strength and Weakness Analysis, Grooming, Personal Hygiene, Team Work, Goal Setting, Time Management.

##### **Unit – II Basic ICT, Entrepreneurship & Green Skills-I (05 Marks)**

Introduction to ICT and ITeS, Word Processing (Create, Edit, Insert, Header/Footer, Save, Close and Print a document in Word Processor).

Entrepreneur and Entrepreneurship, Values of an Entrepreneur, Coming up with a business idea, Understanding the market.

Sectors of Green Economy, Policies for a Green Economy (Green India Mission (GIM)), Stakeholders in Green Economy (Government, Non-Governmental Organisations (NGOs) & Business and Industry).

### ***“Part – B”***

#### **Vocational Skills----- (40 Marks)**

##### **Unit – III Introduction to Dairy Farming (10 Marks)**

Importance of dairy farming, employment potential in dairy, agriculture and processed food products export development authority (apeda), Important breeds of cattle, indigenous cattle breeds of economic importance, exotic cattle breeds, crossbred cattle, Indian buffalo breeds, performance of important buffalo breeds of india.

##### **Unit – IV Livestock Accommodation (14 Marks)**

Introduction, basics of animal housing, key aspects of animal housing, types of livestock housing, loose housing system, flooring in loose housing system, benefits of loose housing system, conventional housing system, equipment and machinery required for livestock housing, standard workplace procedures followed in a dairy farm, grouping of cattle in a herd . layout of animal housing, layout plan of a large dairy farm, animal she , housing for heifers and young males, dairy section, fodder production sec tions, manual disposal area, schedule of daily farm operations.

##### **Unit –V Establishing Livestock within Accommodation (06 Marks)**

Introduction standard practices for maintaining health of cattle, vaccination schedule of cattle, documentation of vaccination, establishing suitable environmental conditions in a dairy farm, minimising stress in dairy animals, transportation in dairy animals, loading and unloading ramps for livestock, safety measures for farm workers and disposal of manure, common PPE used by dairy workers, vermicomposting, composting.

## **Unit – VI Providing Feed and Water For Livestock**

**(10 Marks)**

Animal feedstuff, feed composition and its quality, assessing the overall quality of animal feed, measurement of energy quality in animal feed, measurement of protein quality in animal feed, feeding of livestock, feeding of dairy animals, feed requirement based on thumb rule method, feed requirements based on scientific feed standards, major ingredients for feed preparation, basic equipment /machines required for the preparation of concentrate mixture, preparation of feed at the farm, maintaining feed inventory, safe and scientific storage of animal feed, water requirement of dairy animals, cause of feed wastage and measures to minimise it.

### **Practical (External):50 Marks**

#### **A. Hands on Skill**

**(15 Marks)**

- 1.Evaluate the potential for employment in dairy farming in India.
- 2.Identify the various breeds of cows and buffaloes in a dairy farm.
- 3.Examine the housing design of nearby dairy farm.
- 4.Note down the dimension of various housing structure present in the dairy farm.
- 5.Note down the daily schedule of nearby dairy farm.
- 6.Identify sick animals and note down the symptoms of disease in them.
- 7.Make the list of feed ingredients and fodder in a dairy farm.

#### **B. Written Test**

**(10 Marks)**

#### **C. Viva Voce**

**(15 Marks)**

#### **D. Student Portfolio / Practical Notebook**

**(10 Marks)**

## 5. Telecommunication

*Job Role: Optical Fibre Technician*

*Level-3(11<sup>th</sup>)*

### SCHEME OF ASSESSMENT

This course is a planned sequence of instructions consisting of Units meant for developing employability and vocational competencies of students of Class 11<sup>th</sup> & 12<sup>th</sup> opting for vocational subject along with general education subjects.

The unit wise distribution of hours and marks for class 11<sup>th</sup> is as follows:

Class 11 <sup>th</sup>			
Module Part and Name	Unit Name	No. of Hours for Theory and Practical (300)	Max. Marks Theory and Practical (100)
<b>Part – A Employability Skills</b>	Communication and Self-Management Skills-I	45	05
	Basic ICT, Entrepreneurship & Green Skills-I	65	05
<b>Total</b>		<b>110</b>	<b>10</b>
<b>Part – B Vocational Skills</b>	Fundamentals of optical fiber technology	50	12
	Tools, Equipment and Components	40	08
	Conditional Maintenance and Safety Measures	40	12
	Site Visit and Optical Networking	35	08
<b>Total</b>		<b>165</b>	<b>40</b>
<b>Part -C Practical Work</b>	Practical Examination	6	15
	Written Test	1	10
	Practical File / Student Portfolio	3	10
<b>Total</b>		<b>10</b>	<b>35</b>
<b>Part-D Project Work /Field Visit</b>	Practical Examination	10	10
	Viva Voce	5	05
<b>Total</b>		<b>15</b>	<b>15</b>
<b>Total</b>		<b>300</b>	<b>100</b>

## **Theory: 50 Marks**

### ***“Part – A”***

#### **Employability Skills----- (10 Marks)**

##### **Unit – I Communication Skills and Self-Management Skills-I (05 Marks)**

Communication, Types of communication, Communication Styles, Greetings & Introduction. Strength and Weakness Analysis, Grooming, Personal Hygiene, Team Work, Goal Setting, Time Management.

##### **Unit – II Basic ICT, Entrepreneurship & Green Skills-I (05 Marks)**

Introduction to ICT and ITeS, Word Processing (Create, Edit, Insert, Header/Footer, Save, Close and Print a document in Word Processor).

Entrepreneur and Entrepreneurship, Values of an Entrepreneur, Coming up with a business idea, Understanding the market.

Sectors of Green Economy, Policies for a Green Economy (Green India Mission (GIM)), Stakeholders in Green Economy (Government, Non-Governmental Organisations (NGOs) & Business and Industry).

### ***“Part – B”***

#### **Vocational Skills----- (40 Marks)**

##### **Unit III: Fundamentals of Optical Fiber Technology 12 Marks**

History and evolution of fiber optics, Advantages/disadvantages of fiber optics, Basics of a fiber optic communications system, Applications of fiber optics, Nature of light Propagation, Characteristics of light, Electromagnetic spectrum, Snell’s law, critical angle, Reflection, Refraction, Total internal reflection, Refractive index, Acceptance angle, Acceptance cone, Numerical aperture, Structure of optical fiber, Fiber optic – glass fibers, plastic fibers, fiber sizes, Types of fiber based on modes of propagation – single mode and multi-mode fiber, step index and graded index fiber, Attenuation and dispersion, Buffering and types of buffering, Types of cables – cordage, distribution cable, breakout cable, Armoured cable, messenger cable, ribbon cable, submarine cable, short and long run cables, hybrid, composite cables.

##### **Unit IV: Tools, Equipment and Components 08 Marks**

Structure of LED & its types (surface emitting LED, Edge emitting LED), Advantages and disadvantages of LED, Fiber-LED coupling, LASERS diode & its types, Uses of LASER, Basic Hand Tools – screwdriver, cable cutting knife, Plier, scissors, round tube cutter, Electrical tape, optical fiber stripper, Splicing tools – optical fiber splicing machine, cleaver, protection sleeve, mechanical splice connector, Matching Gel, clamp spring, Cleaning Tools – Cleaning swab, gloves, Tissue paper, Isopropyl alcohol, Testing tools – OTDR, Termination Kit – Optical connectors and its types, Tools for installing cables – Tubing cutter, Rotary cable slitting and ringing tool, cable jacket stripper, Buffer tube stripper.

##### **Unit V: Conditional Maintenance and Safety Measures 12 Marks**

Testing optical fibre – visual fault locator, Inspection microscope, Cleaning fibre ends, Bare fibre test, Optical return loss test, Methods for measuring return Loss, Optical time domain reflectometers (OTDRs) – Elements & specification, Fibre optic power meters, Insertion loss tests, Requirement of splicing,

Parameters to be considered to perform splicing, Types of splicing – Fusion splicing, Mechanical splicing, Selecting the splicing method, Safety precautions in handling optical fibre, Safety precautions related to optical fibre fire safety, Precautions for optical fibre workmanship safety, Important safety guidelines for workman, Cleanliness and safe work surroundings.

### **Unit VI: Site Visit and Optical Networking**

**08 Marks**

OFC route plan, Route inspection, Route diagrams, Different site conditions, Advantages of an effective route inspection, Safety and security of site, Various parameters to inspect the site, Fibre optic link power budget, Optical technologies – FTTX, Multiplexing.

### **Practical (External):50 Marks**

#### **A. Hands on Skill**

**(15 Marks)**

1. Demonstrate an experiment for propagation of light.
2. Verify the laws of reflection and refraction, total internal reflection.
3. Draw the diagram of cable and name the different parts of cable.
4. Identify and name the various types of cable.
5. Identify and name the tools in fiber optics tool kit.
6. Procedure to check the continuity of the optical fibre cable with Visual Fault Inspector.
7. To test insertion loss in optical fibre.
8. Demonstrate to handle the tools and equipment safely.
9. Demonstrate the first aid.

#### **B. Written Test**

**(10 Marks)**

#### **C. Viva Voce**

**(15 Marks)**

#### **D. Student Portfolio / Practical Notebook**

**(10 Marks)**

## 6. Media and Entertainment

*Job Role: Texturing Artist*

*Level-3(11<sup>th</sup>)*

### SCHEME OF ASSESSMENT

This course is a planned sequence of instructions consisting of Units meant for developing employability and vocational competencies of students of Class 11<sup>th</sup> & 12<sup>th</sup> opting for vocational subject along with general education subjects.

The unit wise distribution of hours and marks for class 11<sup>th</sup> is as follows:

Class 11 <sup>th</sup>			
Module Part and Name	Unit Name	No. of Hours for Theory and Practical (300)	Max. Marks Theory and Practical (100)
<b>Part – A Employability Skills</b>	Communication & Self-Management Skills-I	45	5
	Basic ICT, Entrepreneurship & Green Skills-I	65	5
<b>Total</b>		<b>110</b>	<b>10</b>
<b>Part – B Vocational Skills</b>	Color Theory	40	10
	Digital Still Photography and Preproduction	25	10
	Drawing and Painting Tools using Adobe Photoshop	70	14
	Lighting for Photography	30	6
<b>Total</b>		<b>165</b>	<b>40</b>
<b>Part – C Practical Work</b>	Practical Examination	6	15
	Written Test	1	10
	Viva Voce	3	10
<b>Total</b>		<b>10</b>	<b>35</b>
<b>Part-D Project Work/ Field Visit</b>	Practical File / Student Portfolio	10	10
	Viva Voce	5	05
<b>Total</b>		<b>15</b>	<b>15</b>
<b>Total</b>		<b>300</b>	<b>100</b>

## **Theory: 50 Marks**

### ***“Part – A”***

#### **Employability Skills----- (10 Marks)**

##### **Unit – I Communication Skills and Self-Management Skills-I (05 Marks)**

Communication, Types of communication, Communication Styles, Greetings & Introduction. Strength and Weakness Analysis, Grooming, Personal Hygiene, Team Work, Goal Setting, Time Management.

##### **Unit – II Basic ICT, Entrepreneurship & Green Skills-I (05 Marks)**

Introduction to ICT and ITeS, Word Processing (Create, Edit, Insert, Header/Footer, Save, Close and Print a document in Word Processor).

Entrepreneur and Entrepreneurship, Values of an Entrepreneur, Coming up with a business idea, Understanding the market.

Sectors of Green Economy, Policies for a Green Economy (Green India Mission (GIM)), Stakeholders in Green Economy (Government, Non-Governmental Organisations (NGOs) & Business and Industry).

### ***“Part – B”***

#### **Vocational Skills----- (40 Marks)**

##### **Unit – III Colour Theory (10 Marks)**

History of principles of colour theory ,Terms related to colour theory, The types of colour wheels ,Types of colours, Digital colour wheel , Print media colour wheel, RGB display mechanism , Pixel , Resolution, Monochromatic colour scheme , Analogous colour scheme , Complimentary colour scheme , Warm and cool colours.

##### **Unit – IV Digital Still Photography and Pre-Production (10 Marks)**

Camera angles , Interface of camera movements and its modes including depth of field, zoom, exposure, focus, etc., Pre-production and its importance of it in the production pipeline , Live action and animation , Storyboard ,Character design, Model sheets , Animatic.

##### **Unit – V Drawing and Painting Using Adobe Photoshop (14 Marks)**

Adobe Photoshop – colour mode and use of backgrounds, Selection and manipulation of tools ,Painting and retouching tools ,Text and shape tools ,Colour channels, picker, swatches, history, text and all the tools in tool bars

Use of blending modes : Blending modes: (i) Multiply (ii) Screen (iii) Overlay (iv) Various other modes, Various colour modes - RGB, CMYK, Grey Scale, Bitmap and Index colour modes,

Correction tools for image adjustment; and Adjusting the brightness, contrast and saturation of the image.

Steps for creating digital matte painting.

Purpose of composition ,Rule of third and balancing element.

## Unit – VI Lighting for Photography

(6 Marks)

High key and low key light ,White balance. Effective Lighting for Photography.

### Practical (External):50 Marks

#### A. Hands on Skill

(15 Marks)

- 1.Demonstrate the use of artistic colour wheel.
- 2.Demonstrate the use of digital wheel colour.
- 3.Describe the RGB display mechanism.
- 4.Demonstrate camera angles and movements.
- 5.Demonstrate the use and knowledge for the process of Pre Production.
- 6.Demonstrate the use Adobe Photoshop.
- 7.Demonstrate the use different drawing and painting tools.
- 8.Demonstrate the use different blending modes.
- 9.Demonstrate image adjustment and colour correction.
10. Demonstrate steps for digital Matte Painting.
- 11.Demonstrate the Knowledge of Frame Composition.
- 12.Demonstrate the knowledge of effective lighting for photography.

#### B. Written Test

(10 Marks)

#### C. Viva Voce

(15 Marks)

#### D. Student Portfolio / Practical Notebook

(10 Marks)



## 7. Beauty and Wellness

*Job Role: Beauty Therapist*

*Level-3(11th)*

### SCHEME OF ASSESSMENT

This course is a planned sequence of instructions consisting of Units meant for developing employability and vocational competencies of students of Class 11<sup>th</sup> & 12<sup>th</sup> opting for vocational subject along with general education subjects.

The unit wise distribution of hours and marks for class 11<sup>th</sup> is as follows:

Class 11 <sup>th</sup>			
Module Part and Name	Unit Name	No. of Hours for Theory and Practical (300)	Max. Marks Theory and Practical (100)
<b>Part - A Employability Skills</b>	Communication & Self-Management Skills-I	45	5
	Basic ICT, Entrepreneurship & Green Skills-I	65	5
<b>Total</b>		<b>110</b>	<b>10</b>
<b>Part – B Vocational Skills</b>	Introduction to beauty and wellness industry and beauty therapy	40	10
	Skin care service	50	12
	Manicure and Pedicure service	50	12
	Depilation services	25	6
<b>Total</b>		<b>165</b>	<b>40</b>
<b>Part - C Practical Work</b>	Practical Examination	6	15
	Written Test	1	10
	Viva Voce	3	10
<b>Total</b>		<b>10</b>	<b>35</b>
<b>Part-D Project Work /Field Visit</b>	Practical File / Student Portfolio	10	10
	Viva Voce	5	05
<b>Total</b>		<b>15</b>	<b>15</b>
<b>Total</b>		<b>300</b>	<b>100</b>

## **Theory: 50 Marks**

### ***“Part – A”***

#### **Employability Skills----- (10 Marks)**

##### **Unit – I Communication Skills and Self-Management Skills-I (05 Marks)**

Communication, Types of communication, Communication Styles, Greetings & Introduction. Strength and Weakness Analysis, Grooming, Personal Hygiene, Team Work, Goal Setting, Time Management.

##### **Unit – II Basic ICT, Entrepreneurship & Green Skills-I (05 Marks)**

Introduction to ICT and ITeS, Word Processing (Create, Edit, Insert, Header/Footer, Save, Close and Print a document in Word Processor).

Entrepreneur and Entrepreneurship, Values of an Entrepreneur, Coming up with a business idea, Understanding the market.

Sectors of Green Economy, Policies for a Green Economy (Green India Mission (GIM)), Stakeholders in Green Economy (Government, Non-Governmental Organisations (NGOs) & Business and Industry).

### ***“Part – B”***

#### **Vocational Skills----- (40 Marks)**

##### **Unit III: Introduction to Beauty And Wellness Industry And Beauty Therapy (10 Marks)**

Services in beauty therapy :( Pedicure , Manicure ,Threading ,Waxing ,Bleach ,Face clean up , Make up , Hairdo , Mehendi) , Preparation of work area , Maintenance of record cards , Sterilizations and disinfection ,Personal presentation and behavior ,Safe disposal of waste , Storage of tools and equipment , Introduction to beauty and wellness industry, Beauty and wellness sub-segments

##### **Unit IV: Skin Care Service (12 Marks)**

Structure of the skin – epidermis, dermis, subcutaneous layer, hair follicle, hair shaft, sebaceous gland, arrector pili muscle, sweat gland, and sensory nerve endings ,Functions of the skin - protection, thermoregulation, hormone synthesis, excretion, immunological function,and sensory function , Characteristics of the skin and skin types – oily, dry, combination skin ,Types of skin masks and their effects , Importance of patch test and bleach

##### **Unit V: Manicure and Pedicure Services (12 Marks)**

Structure of the nail , Nail growth and structure ,Preparing the work area , Equipment and materials used for Manicure, Identification of nail conditions and contraindications, Manicure procedure, Applying nail polish ,Preparing the work area ,equipment and materials used for Pedicure , Contraindications for Pedicure , After care advice

## **Unit VI: Depilation Services**

**(06 Marks)**

Types of hair , Structure of hair , Growth cycle of hair ,After care advice for waxing , Guidelines for waste disposal , Guidelines for work area preparation, Equipment and products required for waxing , Benefits of threading , Types of tools and materials used for threading - e.g. scissors, disposable eye brow brush etc. materials: thread .

### **Practical (External):50 Marks**

#### **A. Hands on Skill**

**(15 Marks)**

- 1: Demonstration of preparing client for treatment
- 2: Demonstration of sterilization and disinfection of tools and equipment
- 3:Group activities on understanding the structure and functions of skin
- 4: Showing videos related to ageing process of skin and mask application
- 5: Demonstration of patch test
- 6: Analysis of skin sensitivity
- 7: Demonstration of bleach preparation and application.
- 8: Demonstration of toning and moisturizing of skin
- 9: Demonstration on identification of nail shape, nail condition (texture, disease, etc.)
- 10: Demonstration on preparing client for manicure and pedicure services
- 11: Identification of products and tools suitable for carrying out manicure services and pedicure services

#### **B. Written Test**

**(10 Marks)**

#### **C. Viva Voce**

**(15 Marks)**

#### **D. Student Portfolio / Practical Notebook**

**(10 Marks)**

## 8. Physical Education and Sports

*Job Role: Fitness Trainer*

*Level-3(11th)*

### SCHEME OF ASSESSMENT

This course is a planned sequence of instructions consisting of Units meant for developing employability and vocational competencies of students of Class 11<sup>th</sup> & 12<sup>th</sup> opting for vocational subject along with general education subjects.

The unit wise distribution of hours and marks for class 11<sup>th</sup> is as follows:

Class 11 <sup>th</sup>			
Module Part and Name	Unit Name	No. of Hours for Theory and Practical (300)	Max. Marks Theory and Practical (100)
<b>Part - A Employability Skills</b>	Communication & Self-Management Skills-I	45	5
	Basic ICT, Entrepreneurship & Green Skills-I	65	5
<b>Total</b>		<b>110</b>	<b>10</b>
<b>Part – B Vocational Skills</b>	Introduction to Fitness	65	15
	Role and responsibilities of fitness trainer	40	10
	Starting and Managing a Fitness Centre	60	15
<b>Total</b>		<b>165</b>	<b>40</b>
<b>Part - C Practical Work</b>	Practical Examination	6	15
	Written Test	1	10
	Viva Voce	3	10
<b>Total</b>		<b>10</b>	<b>35</b>
<b>Part-D Project Work /Field Visit</b>	Practical File / Student Portfolio	10	10
	Viva Voce	5	05
<b>Total</b>		<b>15</b>	<b>15</b>
<b>Total</b>		<b>300</b>	<b>100</b>

## **Theory: 50 Marks**

### ***“Part – A”***

#### **Employability Skills----- (10 Marks)**

##### **Unit – I Communication Skills and Self-Management Skills-I (05 Marks)**

Communication, Types of communication, Communication Styles, Greetings & Introduction. Strength and Weakness Analysis, Grooming, Personal Hygiene, Team Work, Goal Setting, Time Management.

##### **Unit – II Basic ICT, Entrepreneurship & Green Skills-I (05 Marks)**

Introduction to ICT and ITeS, Word Processing (Create, Edit, Insert, Header/Footer, Save, Close and Print a document in Word Processor).

Entrepreneur and Entrepreneurship, Values of an Entrepreneur, Coming up with a business idea, Understanding the market.

Sectors of Green Economy, Policies for a Green Economy (Green India Mission (GIM)), Stakeholders in Green Economy (Government, Non-Governmental Organisations (NGOs) & Business and Industry).

### ***“Part – B”***

#### **Vocational Skills----- (40 Marks)**

##### **Unit - III: Introduction to Fitness 15 Marks**

Meaning of Fitness and physical fitness.

Components of Fitness. Cardio vascular endurance, Muscular endurance, Muscular strength, Muscular power, Flexibility, balance, Speed, Reaction time, Agility, Body composition.

Benefits and importance's of physical Fitness.

Career opportunities in fitness field.

Personal trainer, Athletic trainer, Gym assistant, Health club manager, Physical therapist, Fitness model, certified strength and conditioning specialist, Group Exercise Instructor.

##### **Unit - IV: Roles and Responsibilities Of a Fitness Trainer 10 Marks**

Meaning of Trainer and Fitness Trainer.

Role and duties of a Fitness trainer.

Essential knowledge and eligibility of a fitness trainer

Qualities and skills to be required by a fitness trainer and a personal trainer.

Differentiate the role of physical trainer and personal trainer.

##### **Unit V: Starting and Managing A Fitness Centre 15 Marks**

***Establishment of a fitness centre:***

Infrastructure and Facilities in a fitness center.

Maintenance of a fitness centre.

Equipment's used in fitness centre

Meaning and Definition of management.  
Principles of Management  
Need and importance of management  
Qualities of a good Manager.

### **Practical (External):50 Marks**

<b>A. Hands on Skill</b>	<b>30 Marks</b>
1. Physical Fitness Test	15 Marks
2. Skill Test of games and Sports student Choice	15 Marks
<b>B. Viva Voce</b>	<b>10 Marks</b>
<b>C. Student Portfolio/Practical Notebook.</b>	<b>10 marks</b>

## 9. Automotive

*Job Role: Automotive Service Technician L-4*

*Level-3(11th)*

### SCHEME OF ASSESSMENT

This course is a planned sequence of instructions consisting of Units meant for developing employability and vocational competencies of students of Class 11<sup>th</sup> & 12<sup>th</sup> opting for vocational subject along with general education subjects.

The unit wise distribution of hours and marks for class 11<sup>th</sup> is as follows:

Class 11 <sup>th</sup>			
Module Part and Name	Unit Name	No. of Hours for Theory and Practical (300)	Max. Marks Theory and Practical (100)
<b>Part - A Employability Skills</b>	Communication & Self-Management Skills-I	45	5
	Basic ICT, Entrepreneurship & Green Skills-I	65	5
<b>Total</b>		<b>110</b>	<b>10</b>
<b>Part – B Vocational Skills</b>	Introduction to Engineering Geometrics and Drawing	20	4
	Fasteners	15	4
	Materials	20	4
	Measuring instrument	20	6
	Regular maintenance of an Engine	15	4
	Regular maintenance of Transmission system	20	4
	Regular Maintenance of Gear Box	20	4
	Service of Wheels	25	8
	Regular Maintenance of Brakes	10	2
<b>Total</b>		<b>165</b>	<b>40</b>
<b>Part -C Practical Work</b>	Practical Examination	6	15
	Written Test	1	10
	Viva Voce	3	10
<b>Total</b>		<b>10</b>	<b>35</b>
<b>Part-D Project Work /Field Visit</b>	Practical File / Student Portfolio	10	10
	Viva Voce	5	05
<b>Total</b>		<b>15</b>	<b>15</b>
<b>Total</b>		<b>300</b>	<b>100</b>

## **Theory: 50 Marks**

### ***“Part – A”***

#### **Employability Skills----- (10 Marks)**

##### **Unit – I Communication Skills and Self-Management Skills-I (05 Marks)**

Communication, Types of communication, Communication Styles, Greetings & Introduction. Strength and Weakness Analysis, Grooming, Personal Hygiene, Team Work, Goal Setting, Time Management.

##### **Unit – II Basic ICT, Entrepreneurship & Green Skills-I (05 Marks)**

Introduction to ICT and ITeS, Word Processing (Create, Edit, Insert, Header/Footer, Save, Close and Print a document in Word Processor).

Entrepreneur and Entrepreneurship, Values of an Entrepreneur, Coming up with a business idea, Understanding the market.

Sectors of Green Economy, Policies for a Green Economy (Green India Mission (GIM)), Stakeholders in Green Economy (Government, Non-Governmental Organisations (NGOs) & Business and Industry).

### ***“Part – B”***

#### **Vocational Skills----- (40 Marks)**

##### **Unit III: Engineering Drawing (04 Marks)**

###### ***Basic Geometric Constructions:***

Tools for Making Geometrical Constructions

###### ***Tools of Engineering Drawing:***

- Engineering Drawing
- Basic Line Types
- Projections
- Isometric projection
- Orthographic projection
- First Angle Projection
- Third Angle Projection
- Dimensioning
- Drawing Sheet Layout
- Title Block

##### **Unit IV: Fasteners (04 Marks)**

###### ***Automotive Bolts and Machine Screws:***

- Thread on the Bolt
- Basic Thread Terms

###### ***Automotive Nuts:***

- Thread Profile in Nut



- Dimensions of Nut
- Material of Nuts
- Types of Nuts (Hex, Jam, Wing, Flange, Square)

***Automotive Studs:***

- Wheel Studs( Screw -in and Press-in)

***Automotive Washers and Rivets:***

- Types of Washers ( Flat, Finishing, Square plate, Dock)
- Rivets and its types
- 

**Unit V: Material**

**(04 Marks)**

***Engineering Material:***

- Classification of Engineering Material
- Metals(Ferrous and Non Ferrous)
- Ferrous( Steel, Cast iron and Wrought iron)
- Non ferrous( Metals and Alloys)

***Basic Manufacturing Processes:***

- Machining
- Forming
- Rolling
- Forging
- Extrusion

**Unit VI: Measuring Equipment**

**(06 Marks)**

***Handling and Usage of Direct and Indirect Measuring Instruments:***

- Measuring Instruments
- Direct Measuring Instruments( Steel-scale or ruler, Steel tape, Verniercaliper, Micrometer)

***Angular Measuring Instruments:***

- Protractor
- Blade Protractor
- Universal Protractor

***Dial Indicator or Gauge and other Gauges:***

- Digital Dial Indicator or Gauge
- Telescopic Gauge
- Screw Pitch Gauges

***Instruments on the Dashboard of a Vehicle:***

- Important Components of Dashboard
- Speedometer
- Tachometer
- Odometer
- Fuel gauge
- Temperature gauge
- Malfunction indicator lamp
- Automotive navigation system
- Driver information system (DIS)

## **Unit VII: Regular Maintenance of an Engine**

**(04 Marks)**

### ***Inspection of an Engine***

- Selective Procedure to Check the Leakage in a Vehicle's Engine
- Air cooled system leakage
- Fuel leakage
- Leakage of combustion gases
- Lubricating oil leakage

### ***Washing of an Engine***

- Material and Equipment Required to Clean Engine
- Steps to clean or wash the engine

### ***Tuning of Fuel System of an Engine***

- Steps for fuel tuning
- Setting idle speed of an engine
- Nozzle pressure test

### ***Tuning of Ignition System of an Engine***

- Basic Steps for Tuning of Ignition System

### ***Tuning of Lubrication System of an Engine***

- Tuning Procedure
- Changing the Oil
- Changing of Oil Filter
- Measuring Oil Pressure

### ***Tuning of Cooling System of an Engine***

- Steps Involved in Checking the Cooling System
- Reading of Temperature Gauge
- Parts of Cooling System
  - Checking circulation of water in cooling System
  - Checking of coolant leakage
  - Setting of cooling fan belt tension

## **Unit VIII: Regular Maintenance of Transmission System**

**(04 Marks)**

### ***Transmission System***

- Clutch
- Gearbox or Transmission
- Propeller Shaft
- Differential Unit

### ***Clutch Maintenance and Adjustment***

- Clutch Maintenance
- Clutch Adjustments (free ply Adjustments 2 wheelers & 4 wheelers)

## **Unit IX: Regular Maintenance of Gearbox**

**(04 Marks)**

### ***Lubrication of Gearbox***

- Steps for Changing Lubrication of Gearbox
- Changing the Lubricating Oil

## *Setting of Gearbox*

### **Unit X : Servicing of Wheels**

**(08 Marks)**

#### *Importance of Wheels.*

- Types of Wheels

#### *Importance of Hub Greasing and Bearing Play Adjustment*

- Wheel Hub
- Stub Axle
- Steps for Removing Wheel from Axle

#### *Tyre and Tube Maintenance*

- Tyre and its types
- Advantages of tubeless tyres
- Maintenance of Tyres and Tubes

#### *Repairing of Punctured Tube*

- Repairing of Punctured Tube
- Cold Patch Method
- Hot Patch Method

### **Unit XI: Maintenance of Brakes**

**(02 Marks)**

#### *Brake and its Maintenance*

- Principle of Braking
- Functions of a Good Braking System
- Different types of Brakes ( Mechanical, Hydraulic, Pneumatic )
- Servicing and Repairing of Mechanical Brakes
- Steps for repairing Mechanical Brakes.

### **Practical (External):50 Marks**

#### **A. Hands on Skill**

**(15 Marks)**

1. Identify and describe drawing tools, Draw geometric construction.
2. Identification of engineering material used in automobiles, Writing of list of process used in Manufacturing System
3. Reading the verniercaliper and measuring the diameter of the cylinder
4. Measuring the dimensions of an object using Micrometer
5. Tracing the different leakages like oil, coolant, and combustion gases.
6. Identify the different units of the transmission system.
7. Identify different types of wheels and practice removing the wheel from axle.
8. Identify the different components of different types of brakes.

#### **B. Written Test**

**(10 Marks)**

#### **C. Viva Voce**

**(15 Marks)**

#### **D. Student Portfolio / Practical Notebook**

**(10 Marks)**

## 10. Apparel Made-ups and Home Furnishing

*Job Role: Specialized Sewing Machine Operator*

*Level-3(11th)*

### SCHEME OF ASSESSMENT

This course is a planned sequence of instructions consisting of Units meant for developing employability and vocational competencies of students of Class 11<sup>th</sup> & 12<sup>th</sup> opting for vocational subject along with general education subjects.

The unit wise distribution of hours and marks for class 11<sup>th</sup> is as follows:

Class 11 <sup>th</sup>			
Module Part and Name	Unit Name	No. of Hours for Theory and Practical (300)	Max. Marks Theory and Practical (100)
<b>Part - A Employability Skills</b>	Communication & Self-Management Skills-I	45	5
	Basic ICT, Entrepreneurship & Green Skills-I	65	5
<b>Total</b>		<b>110</b>	<b>10</b>
<b>Part – B Vocational Skills</b>	Production Technology	40	12
	Introduction to Industrial Sewing Machines	40	12
	Machines For Seam Finishes and Ornamental Stitches	20	4
	Machine's For Attachments	25	4
	Personal Hygiene And Cleaning And Maintenance Of Workplace	40	8
<b>Total</b>		<b>165</b>	<b>40</b>
<b>Part - C Practical Work</b>	Practical Examination	06	15
	Written Test	01	10
	Viva Voce	03	10
<b>Total</b>		<b>10</b>	<b>35</b>
<b>Part-D Project Work /Field Visit</b>	Practical File / Student Portfolio	10	10
	Viva Voce	05	05
<b>Total</b>		<b>15</b>	<b>15</b>
<b>Total</b>		<b>300</b>	<b>100</b>

## **Theory: 50 Marks**

### ***“Part – A”***

#### **Employability Skills----- (10 Marks)**

##### **Unit – I Communication Skills and Self-Management Skills-I (05 Marks)**

Communication, Types of communication, Communication Styles, Greetings & Introduction. Strength and Weakness Analysis, Grooming, Personal Hygiene, Team Work, Goal Setting, Time Management.

##### **Unit – II Basic ICT, Entrepreneurship & Green Skills-I (05 Marks)**

Introduction to ICT and ITeS, Word Processing (Create, Edit, Insert, Header/Footer, Save, Close and Print a document in Word Processor).

Entrepreneur and Entrepreneurship, Values of an Entrepreneur, Coming up with a business idea, Understanding the market.

Sectors of Green Economy, Policies for a Green Economy (Green India Mission (GIM)), Stakeholders in Green Economy (Government, Non-Governmental Organisations (NGOs) & Business and Industry).

### ***“Part – B”***

#### **Vocational Skills----- (40 Marks)**

##### **Unit – III Production Technology (12 Marks)**

Garment Production system, Types of garment production system. a. Individual system b. Group system, Evaluation of Production systems, Describe garment Operating Procedure, Introduction to Garment operating Procedure, Need of process flow Chart in garment Production, Assembly sequence of Long sleeve shirt and Trouser.

##### **Unit – IV Introduction to Industrial Sewing Machine (12 Marks)**

Types of threads, Thread classification based on: a. fibre type, b. manufacturing c. finishing ,d. their end uses, Terminology related to sewing threads, Suitability of threads for: a. fabrics, b. machines, Identify parts of needle, selection and needle system ,Introduction to sewing machine needles for specialized machines, Types of needles: a. Standard needles, b. decorative needles, c. special purpose Needle, Choose appropriate Needle for fabric and Machine, Needle system

##### **Unit – V Machines for Seam Finishes and Ornamental Stitches (04 Marks)**

Introduction and Importance of lock Stitch machine, Single needle lock stitch Machine, Double needle lock Stitch machine, Parts of single needle Lock stitch machine, Maintenance of machine, Introduction and Importance of Overlock stitch Machine, Classification of Overlock machine, Types of Overlock Stitches, Parts of Overlock stitch Machine. Introduction and types of embroidery machines Types of computerized

embroidery machines Advantages for high speed motorized machines for embroidery, Introduction to zigzag machine, Different parts of Zigzag sewing machine, Operating steps of Zigzag sewing.

### **Unit - VII Machines for Attachments**

**(04 Marks)**

Introduction to belt-loop sewing Machine, Introduction and importance of button sewing machine, Parts of button sewing machine, Threading and operating steps of button sewing machine, Introduction and Importance of Buttonhole sewing Machine, Different parts of Buttonhole sewing Machine, Threading and operating steps of buttonhole sewing machine.

### **Unit – VIII Personal Hygiene & Cleaning and Maintenance at Workplace**

**(08 Marks)**

Introduction and importance to health and hygiene, factors affect the maintenance of good health: physical well-being mental and emotional well-being social being, Characteristics of well-adjusted people Common danger signals of mal-adjustment, importance of cleaning and maintenance at workplace, Introduction to maintenance, types of maintenance:,Benefits of maintenance, Benefits of clean environment, importance of specialized sewing machines , Steps of cleaning and oiling of specialized sewing machine.

## **Practical (External):50 Marks**

### **A. Hands on Skill**

**(15 Marks)**

1. Prepare assembly sequence chart on garment like: Long sleeve shirt and Trouser.
2. Prepare a chart on selection of thread, type and needle size for industrial sewing machines, Use various needles and threads and prepare samples, paste in practical file.
3. Labelling the parts of lock stitch machine in practical file.
4. Labelling the parts of overlock stitch machine in practical file.
5. Prepare samples of overlock stitch machine and paste in practical file.
6. Threading and needling embroidery machine, Prepare samples from embroidery machine and paste in practical,
7. Prepare samples from zigzag sewing machine and paste in practical file.
8. Sewing practices on buttonhole sewing machine and prepare samples and paste in practical file.
9. Prepare a chart on factors affecting maintenance of good health.
10. Prepare a chart for cleaning and oiling of sewing machine, Prepare maintenance checklist.

### **B. Written Test**

**(10 Marks)**

### **C. Viva Voce**

**(15 Marks)**

### **D. Student Portfolio / Practical Notebook**

**(10 Marks)**

# 11. Electronics and Hardware

*Job Role: Field Technician Air Conditioner*

*Level-3(11th)*

## SCHEME OF ASSESSMENT

This course is a planned sequence of instructions consisting of Units meant for developing employability and vocational competencies of students of Class 11<sup>th</sup> & 12<sup>th</sup> opting for vocational subject along with general education subjects.

The unit wise distribution of hours and marks for class 11<sup>th</sup> is as follows:

Class 11 <sup>th</sup>			
Module Part and Name	Unit Name	No. of Hours for Theory and Practical (300)	Max. Marks Theory and Practical (100)
<b>Part - A Employability Skills</b>	Communication & Self-Management Skills-I	45	5
	Basic ICT, Entrepreneurship & Green Skills-I	65	5
<b>Total</b>		<b>110</b>	<b>10</b>
<b>Part – B Vocational Skills</b>	Basic Electricity	30	10
	Basic Electronics	40	10
	Compressor Technology	40	8
	Installation Of Air Conditioner	40	8
	Workplace Safety Measures	15	4
<b>Total</b>		<b>165</b>	<b>40</b>
<b>Part - C Practical Work</b>	Practical Examination	06	15
	Written Test	01	10
	Viva Voce	03	10
<b>Total</b>		<b>10</b>	<b>35</b>
<b>Part-D Project Work /Field Visit</b>	Practical File / Student Portfolio	10	10
	Viva Voce	05	05
<b>Total</b>		<b>15</b>	<b>15</b>
<b>Total</b>		<b>300</b>	<b>100</b>

## **Theory: 50 Marks**

### ***“Part – A”***

#### **Employability Skills----- (10 Marks)**

##### **Unit – I Communication Skills and Self-Management Skills-I (05 Marks)**

Communication, Types of communication, Communication Styles, Greetings & Introduction. Strength and Weakness Analysis, Grooming, Personal Hygiene, Team Work, Goal Setting, Time Management.

##### **Unit – II Basic ICT, Entrepreneurship & Green Skills-I (05 Marks)**

Introduction to ICT and ITeS, Word Processing (Create, Edit, Insert, Header/Footer, Save, Close and Print a document in Word Processor).

Entrepreneur and Entrepreneurship, Values of an Entrepreneur, Coming up with a business idea, Understanding the market.

Sectors of Green Economy, Policies for a Green Economy (Green India Mission (GIM)), Stakeholders in Green Economy (Government, Non-Governmental Organisations (NGOs) & Business and Industry).

### ***“Part – B”***

#### **Vocational Skills----- (40 Marks)**

##### **Unit – III Basic Electricity (10 Marks)**

Definition of electricity, Types of electricity – AC, DC Current, Voltage, Resistance Concept of frequency and time period Electrostatics and its laws Concept of magnetic field Comparison between magnetic circuit and electric circuit Electromagnetic induction Electromagnetic force (E.M.F) Ohm’s law, Kirchhoff’s law, Faraday’s law Resistors, Capacitors, Inductors- types and types of connections. Concept of resonance circuit, Series RLC and parallel RLC circuit Concept of filter circuit Band stop and band pass filter circuits Power, Maximum power transfer theorem AC motors, DC motors.

##### **Unit – IV Basic Electronics (10 Marks)**

Relay, contractor and switches. Color code of resistors and capacitors. Measuring instruments – Multimeter analog and digital, Cathode Ray Oscilloscope (CRO). Semiconductors, PN Diodes, Concept of zener diode, schottky diode, light emitting diode, photo diode, thermistor Bipolar transistors, Field effect transistors, Transistor biasing, Transistor amplifier, CE, CB and CC amplifiers, Power amplifier Oscillators, Multi vibrators. Rectifiers, half wave and full wave rectifiers, Regulated power supply using, zener diode. Integrated Circuits (IC) Classification of Integrated Circuits, Parameters of Integrated Circuits. Introduction to digital electronics Number systems, logic gates, arithmetic circuits, Half adder, full adder. Concept of transducer, Classification of transducer, Thermocouple transducer, NTC, PTC, Inductive transducer, Capacitive transducer, Microphone and loudspeaker



## **Unit – V Compressor Technology**

**(08 Marks)**

Definition of compressor, Functioning of compressor, Type of compressor. Internal parts of compressor – stator winding, cylinder, piston, valve plate, suction rid, discharge rid, Various terms associated with reciprocating compressor compression stroke, suction stroke, compression ratio, Top dead centre (TDC), Bottom dead centre (BDC), clearance pocket, bypass capacity control, volumetric efficiency, compression speed, capacity control methods. Materials used for compressor components Lubrication of compressor Compressor efficiency Factors affecting compressor Efficiency.

## **Unit – VI Installation of Air Conditioner**

**(08 Marks)**

Definition of air Conditioner, Requirement of air Conditioner, Calculation of heat load, Tone of refrigeration and British Thermal Unit (BTU). Refrigeration cycle, Different types of AC, Various brands and models of AC, Different features and functionalities of various AC Models, Energy efficiency ratings (EER) of AC. Definition of refrigerants Characteristics of refrigerants, Safe economical and efficient refrigerants. Refrigerant numbering and color codes, Different types refrigerants such as R22, R32, R410, R600a, R134a, R290, Refrigerant cylinders and valves. Ozone layer and green house effect. Different tools – tester, spanner, wrench, measuring tape, drill machine, pliers, hammer, hacksaw, pipe cutter, screw driver and testing equipment like clamp meter, voltmeter, and other installation and repair tools, Spare parts of AC, Concept of route plan for maximum target achievement. Site visit for AC installation, Wiring diagram, wiring layout for installation, Types of wire to be used as per the current drawing capacity of air conditioner, Pre-installation arrangements, Installation of window and split, AC as per the installation manual. Cost estimation, possible solution and related cost, Customer awareness about the product details, model, specification, functioning, warranty, replacement cost.

## **Unit – VII Workplace Safety Measures**

**(04 Marks)**

Electrical Earthing, Different hazards related to installation and repair of AC. Safety guidelines while installation and repair of AC. Workplace safety policies and general guidelines. Electrical safety guidelines by using proper personal protective equipment (PPE). Safety and protection equipment such as fire extinguisher, safety instrument and clothing Basic first aid, Types of accident injury or hazard.

## **Practical (External):50 Marks**

### **A. Hands on Skill**

**(15 Marks)**

1. Listing do's and don'ts for avoiding common body language mistakes
2. Role plays on communication styles.
3. Demonstrate the features and functions of word processor.
4. Prepare posters on green skills.
5. Demonstrate the experiment of magnetic attraction.
6. Verify the ohm's law by using ohm's experiment.
7. Verify the Kirchhoff's law by using experiment
8. Connect the resistor in series and parallel combination and measure effective resistance.
9. Perform an experiment to demonstrate the working of AC motor and DC motor.
10. Determine the value of resistance by using color code.
11. Measure the given AC, DC voltage and current by using multi-meter
12. Demonstrate the functioning of compressor.
13. Visit the shop or website of AC and list functions of various air conditioners
14. Identify the different refrigerants by using color codes. Prepare a chart of the codes.
15. Demonstrate the use of safety and protection equipment and first aid.

### **B. Written Test**

**(10 Marks)**

### **C. Viva Voce**

**(15 Marks)**

### **D. Student Portfolio / Practical Notebook**

**(10 Marks)**

## 12. Plumbing

*Job Role: Plumber (General-II)*

*Level-3(11th)*

### SCHEME OF ASSESSMENT

This course is a planned sequence of instructions consisting of Units meant for developing employability and vocational competencies of students of Class 11<sup>th</sup> & 12<sup>th</sup> opting for vocational subject along with general education subjects.

The unit wise distribution of hours and marks for class 11<sup>th</sup> is as follows:

Class 11 <sup>th</sup>			
Module Part and Name	Unit Name	No. of Hours for Theory and Practical (300)	Max. Marks Theory and Practical (100)
<b>Part - A Employability Skills</b>	Communication & Self-Management Skills-I	45	05
	Basic ICT, Entrepreneurship & Green Skills-I	65	05
<b>Total</b>		<b>110</b>	<b>10</b>
<b>Part – B Vocational Skills</b>	Installation of Basic Sanitary Fittings	40	10
	Tools for Plumbing	40	06
	Use of Power Tools & Machines at site	20	06
	Performing various plumbing related operations/procedures	25	10
	Repair of Basic Fittings & Fixtures	40	08
<b>Total</b>		<b>165</b>	<b>40</b>
<b>Part - C Practical Work</b>	Practical Examination	06	15
	Written Test	01	10
	Viva Voce	03	10
<b>Total</b>		<b>10</b>	<b>35</b>
<b>Part-D Project Work /Field Visit</b>	Practical File / Student Portfolio	10	10
	Viva Voce	05	05
<b>Total</b>		<b>15</b>	<b>15</b>
<b>Total</b>		<b>300</b>	<b>100</b>

## **Theory: 50 Marks**

### ***“Part – A”***

#### **Employability Skills----- (10 Marks)**

##### **Unit – I Communication Skills and Self-Management Skills-I (05 Marks)**

Communication, Types of communication, Communication Styles, Greetings & Introduction. Strength and Weakness Analysis, Grooming, Personal Hygiene, Team Work, Goal Setting, Time Management.

##### **Unit – II Basic ICT, Entrepreneurship & Green Skills-I (05 Marks)**

Introduction to ICT and ITeS, Word Processing (Create, Edit, Insert, Header/Footer, Save, Close and Print a document in Word Processor).

Entrepreneur and Entrepreneurship, Values of an Entrepreneur, Coming up with a business idea, Understanding the market.

Sectors of Green Economy, Policies for a Green Economy (Green India Mission (GIM)), Stakeholders in Green Economy (Government, Non-Governmental Organisations (NGOs) & Business and Industry).

### ***“Part – B”***

#### **Vocational Skills----- (40 Marks)**

##### **Unit-III: Installation of Basic Sanitary Fittings: (10 Marks)**

*Plumbing fittings and its types:* Collar, Elbow, Gasket, Union, Reducer, Tee, Nipple, Trap, Cross, Offsets.

*Plumbing fixtures and its types:* Bathtub, Washbasin, Water Closet, Faucet, Sink, Flushing Cistern, Geysers.

Installation of plumbing fittings and fixtures Solvent Cementing and its procedure.

##### **Unit-IV: Tools for Plumbing: (06 Marks)**

Introduction to tools used in plumbing, Different types of tools used in plumbing viz Holding tools, Fitting tools, Cutting tools, Pipe bending tools, Method of handling different tools, Precautions to be taken while handling the tools.

##### **Unit-V: Use of Power Tools & Machines at site: (06 Marks)**

Introduction to Plumbing tools & machines, Methods/Techniques of application of plumbing tools & machines, Precautions to be taken while handling such tools, Selection criteria for appropriate tools & machines for the job, Selection of raw material, Cost calculation of materials, labour & tools/machines used.

## **Unit-VI: Performing various plumbing related operations/procedures**

**(10 Marks)**

Introduction to building components & their importance, selection of appropriate material & fixtures to be used, different plumbing activities carried out at different places in a building viz installation of fixtures & fittings, storage of water, transportation of water, disposal of water.

Techniques of measurement: Important units of measurements, Measurement of various quantities viz length, density & pressure.

**Preparing material as per job requirements:** Selection of type & quantity of material, selection of tool for a particular job, safety methods to be adopted.

Fixing & testing of bath-wares & tap-wares: Bath-ware & tap-ware, their properties importance & types, techniques of their installation, & precautions during installation

Testing of installed systems: Methods of testing air, water pressure, identification & rectification of defects, reading of manual of items.

Storage of tools & materials: Need for storage, methods of storage & maintenance of proper record & stock registers.

## **Unit-VII: Repair of Basic Fittings & Fixtures:**

**(08 Marks)**

Importance & use of plumbing fittings, types & properties of plumbing fittings, tools required for fixing plumbing fittings like elbow, reducer, union, valve, trap etc.

Importance & use of plumbing joints, types & properties of plumbing joints, procedure of fixing joints.

Defects in fittings & fixtures, Reasons for defect, Methods of identifying the defects, Procedures for replacement & repair of various fittings & fixtures.

Safety precautions to be adopted during repair/replacement, testing of repaired or replaced items.

## **Practical (External):50 Marks**

### **A. Hands on Skill**

**(15 Marks)**

1. Name & identify & draw different types of plumbing tools.
2. Learn & carryout safe handling practices of various plumbing tools.
3. List & identify various plumbing materials.
4. Practical demonstration of use various plumbing tools viz drill, pipe wrench, hacksaw, threading die etc.
5. Setting out layout of pipeline, marking of alignment & marking of positions of important fixtures.
6. Performing of basic operations like cutting, threading, joining of pipes and pipe fixtures.

### **B. Written Test**

**(10 Marks)**

### **C. Viva Voce**

**(15 Marks)**

### **D. Student Portfolio / Practical Notebook**

**(10 Marks)**