BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

School of Electrical Skills

Session: 2021-22 (Summer Semester)

B. Voc. ELE Program, I Semester,

2nd In-Sem. Examination

Course Code: ELE1101 **Time: 1 Hour**

Course Name: Construction Electrician **Max. Marks: 20**

Instruction: Answer all questions from each and every section. Section A, each question carries one mark, section B, each question carries two marks and in section C, each question carries three marks. Scientific calculator is allowed.

Section – A

05X01 = 05 Marks

1. Which is the resistivity of superconductors?
   a) 0 b) 1
   c) ∞ d) None of these
2. What is the unit of conductivity?
   a) (Ω/m) b) $(\Omega \cdot m)^{-1}$
   c) (Ω·m) d) None of these
3. Which is the insulating material?
   a) Copper b) Gold
   c) Wood d) Silver
4. The fan regulator should be connected with the switch in ____.
   a) Parallel b) Series
   c) Both (a) and (b) d) None of these
5. The electrical equipments should be connected in the _____ for electrical wiring.
   a) Parallel b) Series
   c) Both (a) and (b) d) None of these

Section – B

03X02 = 06 Marks

1. Differentiate between conductor and insulator with examples.
2. Explain the casing-capping electrical wiring.
3. Describe the staircase wiring circuit with the wiring diagram.

Section – C

03X03 = 09 Marks

1. Write advantages and disadvantages of concealed conduit wiring.
2. Explain the conductivity and resistivity with the formulas.
3. Describe any 6 types of wire joints in detail.

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

School of Electrical Skills

Session: 2020-21 (Summer Semester)

B. Voc. Program, I Semester,

2nd In-Sem. Examination

Course Code: ELE1101 **Time: 1 Hour**

Course Name: Construction Electrician **Max. Marks: 20**

Instruction: Answer all questions from each and every section. Section A, each question carries one mark, section B, each question carries two marks and in section C, each question carries three marks. Scientific calculator is allowed.

Answer Key

Section – A

05X01 = 05 Marks

1. (a) 0
2. (b) $(\Omega \cdot m)^{-1}$
3. (c) Wood
4. (b) Series
5. (a) Parallel

Section – B

03X02 = 06 Marks

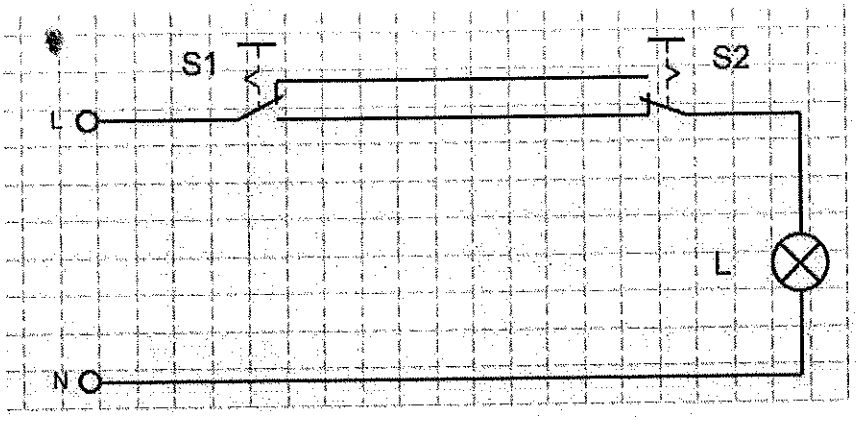
1.

i. **Conductor:** A conductor is an object or type of material that allows the flow of an electrical current by using free electron of conductors. Materials which made of metal are common electrical conductors.
Some common conductors are copper, aluminium, gold, silver and iron.

ii. **Insulator:** Non-metallic solids are said to be good insulators, having extremely high resistance to the flow of charge through them. Most atoms hold on to their electrons tightly are called insulators.
Some common insulators are glass, air, plastic, rubber, and wood.

2. Casing and Capping Wiring: It was quite popular in the past but it is considered obsolete these days due to the popularity of the conduit and sheathed wiring system. The cables used in this electric wiring were PVC, VIR or any other approved insulated cables. The cables were carried through the wooden casing enclosures, where the casing was made of a strip of wood with parallel grooves cut lengthwise for accommodating the cables.

3. Staircase wiring: Two-way switch connection is generally used in Stair case wiring for controlling a lamp or any load from two different locations.



Section – C

03X03 = 09 Marks

1.

Advantages

- It is a safe wiring system
- Safe from chemical effects, humidity and other external factors
- No risk of shock
- It is aesthetically appealing
- No risk of wear and tear, fire or damaged cable insulation
- Quite reliable
- Renovations can be easily performed as you can replace old wires easily

Disadvantages

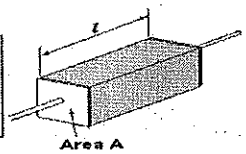
- Expensive as compared to surface conduit wiring
- Changing the location of switches or appliances is difficult
- Installation is complex
- Hard to find defects in the wiring
- Adding additional conduit in future is a tedious task

2. Conductivity: It is the ability of conductor or any material to allow the electric current. It is denoted by sigma(σ). The unit of conductivity is $(\Omega \cdot m)^{-1}$ or siemens per meter.

It is the reciprocal of Resistivity.

For 1 ohm resistance, 1 meter length and 1 $meter^2$ cross sectional area the conductivity will be 1 $(\Omega \cdot m)^{-1}$.

$$\sigma = \frac{l}{RA}$$



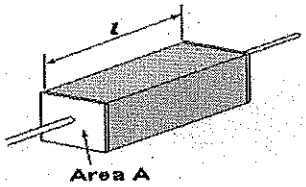
$$\sigma = \frac{1}{\rho}$$

Resistivity: The electrical resistivity of a material may also be known as its specific electrical resistance.

It is a measurement of how strongly a material opposes the flow of electric current. "It is the ability of a material to resist the electric current". It is denoted by Rho (ρ).

The unit of resistivity is ohm meter (Ω·m).

$$\rho = R\frac{A}{l}$$



$$\rho = \frac{1}{\sigma}$$

3. Wire Joints:

Pig-tail/Rat-tail/Twisted joint: This joint is suitable for pieces where there is no mechanical stress on the conductors, as found in the junction box or conduit accessories box. However, the joint should maintain good electrical conductivity.

Married joint: A married joint is used in places where appreciable electrical conductivity is required, along with compactness.

As the mechanical strength is less, this joint could be used at places where the tensile stress is not too great.

Tee joint: This joint could be used in overhead distribution lines where the electrical energy is to be tapped for service connections.

Britannia joint: This joint is used in overhead lines where considerable tensile strength is required. It is also used both for inside and outside wiring where single conductors of diameter 4 mm or more are used.

Britannia tee joint: This joint is used for overhead lines for tapping the electrical energy perpendicular to the service lines.

Western union joint: This joint is used in overhead lines for extending the length of wire where the joint is subjected to considerable tensile stress.

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

School of Electrical Skills

Session: 2021-22 (Summer Semester)

B. Voc. ELE Program, I Semester,

2nd In-Sem. Examination

Course Code: ELE1102 **Time: 1 Hour**

Course Name: Electrical Drawing **Max. Marks: 20**

Instruction: Answer all questions from each and every section. Section A, each question carries one mark, section B, each question carries two marks and in section C, each question carries three marks. Scientific calculator is allowed.

Section – A

05X01 = 05 Marks

1. The 1 foot is equal to _____?
   a) 12 inches b) 30 inches
   c) 10 inches d) None of these
2. CAD stands for_____.
   a) Computer All Drawing b) Computer Aided Design
   c) Common Aided Design d) None of these
3. What is the size of A3 sheet in mm x mm?
   a) 210 x 297 b) 297 x 420
   c) 148 x 210 d) None of these
4. What do you understand by mili prefix used with the units in the drawings?
   a) 10^{-3} b) 10^{6}
   c) 10^{-6} d) 10^{3}
5. Which command is used to modify units of the current drawing?
   a) Ribbon b) Overkill
   c) Unit d) None of these

Section – B

03X02 = 06 Marks

1. What points should be considered before taking up domestic wiring.
2. Describe the AutoCAD with the applications?
3. What is the use of layer tool/command in the AutoCAD.

Section – C

03X03 = 09 Marks

1. Explain the general practices should be followed when using electric tools.
2. Explain line, Circle and Polygon draw commands of AutoCAD.
3. Explain move, mirror and trim modify commands of AutoCAD.

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

School of Electrical Skills

Session: 2021-22 (Summer Semester)

B. Voc. Program, I Semester,

2nd In-Sem. Examination

Course Code: ELE1102 **Time: 1 Hour**

Course Name: Electrical Drawing **Max. Marks: 20**

Instruction: Answer all questions from each and every section. Section A, each question carries one mark, section B, each question carries two marks and in section C, each question carries three marks. Scientific calculator is allowed.

Answer Key

Section – A

05X01 = 05 Marks

1. (a) 12 inches
2. (b) Computer Aided Design
3. (b) 297 x 420
4. (a) 10^{-3}
5. (c) Unit

Section – B

03X02 = 06 Marks

1. Points to be considered before taking up domestic wiring:

While planning an installation, consideration should be given to the anticipated increase in the use of electricity for lighting, general purpose socket-outlet, kitchen, heating etc. Otherwise, the householder may be tempted to carry out extension of the installation himself or to rely upon the use of multi-plug adaptors and long flexible cords, both of which are against the electric supply rules. Fundamentally safe installation may be rendered dangerous, if extended in this way.

2. Applications of AutoCAD:

There is virtually no limit to the kinds of line drawings using AutoCAD. If a drawing can be created by hand, it can be generated by AutoCAD. Here are a few of the applications of the AutoCAD:

- Architectural drawing of all kinds
- Interior design and facility planning
- Work-flow charts and organizational diagrams
- Proposals and presentations
- Graphs of all kinds
- Drawings for electronic, chemical, civil, mechanical, automotive and aerospace engineering applications
- Topographic maps and nautical charts
- Yacht design
- Plots and other representations of mathematical and scientific functions

Theater set-lighting designs

- Musical scores
- Technical illustrations and assembly diagrams
- Company logos
- Greeting cards
- Line drawings for the fine art

3. AutoCAD Layers:

- The layer command is used to control and manage the drawings in AutoCAD for different purposes.
- It increases the display performance of the AutoCAD by hiding the portion of our drawing when needed. It also improves the visual complexity of the drawing.
- We are required to create a set of layers having different properties. For example, in a floor plan or house plan, we can create separate layers for doors, walls, etc.
- We can create many layers by specifying the name for the corresponding layer. We can also control the order of the layers.
- The shortcut command of the layer is 'LA'.

Section – C

03X03 = 09 Marks

1. Electric Tools:

The following general practices should be followed when using electric tools:

- Electric tools should be operated within their design limitations.
- Gloves and safety footwear are recommended during use of electric tools.
- When not in use, tools should be stored in a dry place.
- Electric tools should not be used in damp or wet locations.
- Work areas should be well lighted.
- Frayed cords are required to be taken out of service and replaced.
- Electric cords shall be inspected periodically and kept in good condition. Heavy-duty plugs that clamp to the cord should be used to prevent strain on the current-carrying parts, if the cord is accidentally pulled.
- Although no guards are available for drill bits, some protection is afforded if drill bits are carefully chosen for the work to be done, such as being no longer than necessary to do the work.
- Where the operator must guide the drill by hand, the drill is required to be equipped with a sleeve that fits over the drill bit. Oversized bits shall not be ground down to fit small electric drills; instead, an adapter should be used that will fit the large bit and provide extra power through a speed reduction gear; however, this again is an indication of improper drill size. When drills are used, the pieces of work are to be clamped or anchored to prevent whipping.

Electric saws are usually well guarded by the manufacturer, but employees must be trained to use the guard as intended. The guard should be checked frequently to be sure that it operates freely and encloses the teeth completely when it is cutting.

- Circular saws shall not be jammed or crowded into the work. The saw is to be started and stopped outside the work.

2. Commands:

Line Command:

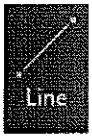
The line in AutoCAD is drawn by specifying the starting and ending point through the cursor. When we place the cursor on the Line icon, a window appears as shown in the below image:

The window here will specify the characteristics of a line.

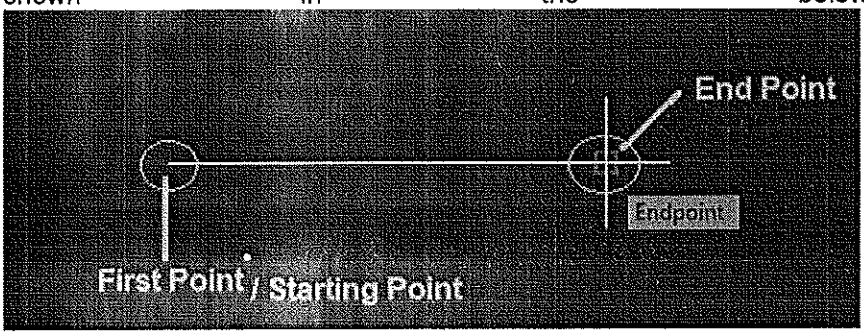
The steps to create a line are listed below:

1. Open the AutoCAD software.
2. Select the Line icon from the ribbon panel or type **L** or **Line** and press **Enter** on the command line.

   The line icon will look like the given image:



3. Specify the starting point and endpoint using the cursor on the workspace or drawing area, as shown in the below image:



   We can also continue the line segments by specifying the endpoints.

4. Press **Enter** or **Esc** to exit.

Circle Command:

The circles are widely used in design and drawings.

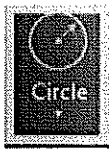
The circle command is used to draw a circle by specifying the center point and radius.

Let's understand by two examples.

Example 1:

The steps to create a circle are given below:

1. Click on the **Circle** icon on the Ribbon Panel, as shown in the below image:



OR

Type **Circle** or C on the command line and press **Enter**.

2. Specify the center point of a circle on the workspace or viewport.
3. Specify the **radius** of the circle.

Or

To specify **diameter**, type **D** - press **Enter** - specify the diameter of the circle.

4. Press **Enter**.

Types of Circles: There are three types of circles, which are listed below:

1. Radis and Center Circle
2. Diameter and Center Circle
3. 2 point circle
4. 3 point circle
5. Tangent, Tangent, Center circle
6. Tangent, Tangent, Tangent Circle

Polygon Command:

- A polygon is a figure formed by the finite number of line segments connected to form a closed circuit.
- The categories of the polygon are triangle, quadrilateral, pentagons, hexagon, heptagon (or septagon), octagon, etc. The triangle is a figure with three sides, and an octagon is a figure with eight sides.
- The polygon command is used to create polygons in AutoCAD. We need to specify the number of sides to create a polygon.
- The maximum number of lines available to create a polygon is 1024.
- The shortcut command to create a polygon is 'pol'.

Types (Methods to use Polygon)

There are two types of the polygon, which are given below:

1. **Inscribe in Circle:** The polygon formed will be drawn inside the circle. The command is best used when we want to create any polygon with its vertices or corners touching the circle.
The shortcut command for inscribing is I.

Circumscribe about Circle: The polygon formed will be drawn outside the circle.

The shortcut command for circumscribing is C.

3. Move Command:

The **move** command in AutoCAD is used to move objects at a specified distance and direction.

To move the objects with precision, we can use object **snaps, grid snaps, coordinates,** etc.

There are four steps to move any object at a specific distance in a specified direction.

1. **Select objects**
   We need to select the objects.
2. **Specify the base point**
   Specify the starting point to move, which acts as a base point of an object.
3. **Specify the point to place a moving object**
   Specify a point to put the object being moved. We can either specify it using a cursor or can enter the displacement value in the X, Y, and Z-direction. For example, **3, 4**. The object will be moved **3 Units in the X-direction** and **4 Units in the Y-direction** from its current position.
4. **Displacement**
   It signifies the relative distance and direction of the object from its last position. It determines how far the object is placed from its original position.

Mirror Command:

The **mirror** command in AutoCAD is used to create a copy (mirror copy) of the selected object. We can also delete the source object after mirroring the object.

The objects that represent the same as the half of their object can be mirrored across a center line to create the other half of the object.

Trim Command:

- The Trim command in AutoCAD is used to remove the objects, which meet the edges of other objects. It is used to remove extra lines or extra parts of an object.
- We can also perform trim using different selection methods.
- We are required to select the portion of the object to trim.

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

School of Electrical Skills

Session: 2021-22 (Summer Semester)

B. Voc. ELE Program, I Semester Electrical

2nd In-Sem. Examination

Course Code: ELE1103 **Time: 1 Hour**

Course Name: Basic Electrical Engineering **Max. Marks: 20**

Instruction: Answer all questions from each and every section. Section A, each question carries one mark, section B, each question carries two marks and in section C, each question carries three marks. Scientific calculator is allowed.

Section – A

05X01 = 05 Marks

1. What does an analog voltmeter measure?
   (a)Ampere (b) Resistance (c) Watt (d) Voltage
2. Tube-light starter is connected in.
   (a)series (b parallel (c) either series or parallel (d) None of these
3. SI unit of frequency is?
   (a) Henry (b) Volt (c) coulomb (d) Hertz
4. Which one is a good Insulator?
   (a)Gold (b) Dry Wood (c) Diode (d) Wet Air
5. How much currents can paralyze or "freeze" muscles?
   (a)5ma (b)7ma (c) 10ma (d) None of these

Section – B

03X02 = 06 Marks

1. Write the uses of digital Multimeter.
2. What is the MCB?
3. Explain the Ohm's law and write voltage current & Resistance formulas.

Section – C

03X03 = 09 Marks

1. Write the types of cables and their respective uses in different electrical installations.
2. Write the definition and Example of conductors, insulators and semi - conductors.
3. Draw any 15 symbols that are used in the electrical system or drawings.

Answers Key

Course Code: ELE1103 , Course Name: Basic Electrical Engineering
School of Electrical Skills, Session: 2021-22 (Summer Semester)
B. Voc. Program, I Semester, 2nd In-Sem. Examination

Section – A

05X01 = 05 Marks

1. (D)
2. (B)
3. (D)
4. (B)
5. (C)

Section – B

03X02 = 06 Marks

1. A Multimeter is mainly used to **measure the electrical characteristics of voltage, current, and resistance**. It can also be used to test continuity between two points in an electrical circuit.

2. A **Miniature Circuit Breaker** is an electromechanical device designed to protect an electric circuit from over-current - A term to describe an electrical fault caused by either overload or short circuit.

3. Ohm's law states that the voltage or potential difference between two points is directly proportional to the current or electricity passing through the resistance, and directly proportional to the resistance of the circuit. The formula for Ohm's law is **V=IR**.

   Voltage = V=IR
   Resistance = R= R = V/I
   current = I = V/R

Section – C

03X03 = 09 Marks

1. Single core wire ,2 core cable ,3core cable ,4 core cable ,5 core cable ,Coaxial cable ,Cat 6(internet cable) ,Speaker cable ,Camera cable ,Telephone cable etc.

2. **Conductor** = A conductor is a material that allows the flow of charge when applied with a voltage.
   Ex. Copper, Aluminum, Gold, Silver

   Semiconductor = A semiconductor is a material whose conductivity lies between conductor & insulator.
   Ex. Silicon, Germanium, Arsenic

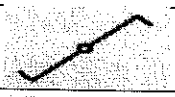
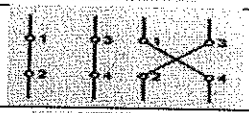
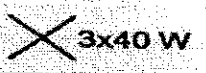
Answers Key

Course Code: ELE1103 , Course Name: Basic Electrical Engineering
School of Electrical Skills, Session: 2021-22 (Summer Semester)
B. Voc. Program, I Semester, 2nd In-Sem. Examination

Insulator = An insulator is a material that does not allow the flow of current.

Ex. paper, rubber, plastic

3.

Three pole one way switch		
Two way switch		
Intermediate switch		
Push button or bell push		
Socket outlet 6A	N.A.	
Socket outlet 16A	N.A.	
Combined switch and socket outlet 6A	N.A.	
Combined switch and socket outlet 16A	N.A.	
Plug and socket (male and female)	N.A.	
Lamp or outlet for lamp	N.A.	
Group of three 40W lamps	N.A.	
Lamp mounted on the wall	N.A.	
Lamp mounted on the ceiling	N.A.	
Emergency lamp	N.A.	
Bulk head lamp	N.A.	
Projector	N.A.	

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

School of Electrical Skills

Session: 2021-22 (Summer Semester)

B. Voc. ELE Program, 1st Semester,

2nd In-Sem. Examination

Time: 1 Hour
Max. Marks: 20

Course Code: ELE1104
Course Name: Maintenance Technician Electrical

Instruction: All questions are compulsory. Each question carries one mark in section A. Each question carries two marks in section B. Each question carries three marks in section C. Scientific calculator is allowed.

Section – A

05x01 = 05 Marks

1. PPE stands for:
   (a) Personal Protective Equipment
   (b) Professional Protective Equipment
   (c) Personal Professional Equipment
   (d) Professional Personal Equipment

2. 5s is a:
   (a) Principle (b) Rule
   (c) Law (d) both b and c

3. Eye PPE protects from:
   (a) Chemical Exposure (b) Laser Exposure
   (c) Welding Light Exposure (d) All of the above

4. _____ is used for face protection as PPE.

5. _____ are used for hand protection as PPE.

Section – B

03x02 = 06 Marks

1. Write names of 5S.
2. What is PPE. Why is it important?
3. Write different types of PPE used for eyes.

Section – C

03x03 = 09 Marks

1. Explain any 3S principles.
2. What can be reasons for defects in electric iron?
3. Draw any 9 symbols with their names used in electrical drawings.

BHARTIYA SKILL DEVELOPMENT UNIVERSITY
School of Electrical Skills
Session: 2021-22 (Summer Semester)
B. Voc. Program, 1st Semester,
2nd In-Sem. Examination

Course Code: ELE1104 **Time: 1 Hour**
Course Name: Maintenance Technician Electrical **Max. Marks: 20**

Section – A

05x01 = 05 Marks

Ans. 1: (a)
Ans. 2: (a)
Ans. 3: (d)
Ans. 4: (Face shield)
Ans. 5: (Gloves)

Section – B

03x02 = 06 Marks

Ans. 1: -
1. Sorting
2. Straightening
3. Systematic Cleaning
4. Standardizing
5. Sustaining

Ans. 2: - PPE is abbreviation used for Personal Protective Equipment. It is important for the safety of people working in industries where they can get harmed physically.

Ans. 3: - Different kind of PPEs used for protection of eyes are:
1. Goggles
2. Protective Glass
3. Face shields
4. Laser Protecting Goggles
5. Reflective Coating Specs

Section – C

03x03 = 09 Marks

Ans. 1: -

1. Sorting:

"Sorting" means to sort through & separate everything in each work area. Keep only what is necessary. Materials, tools, equipment and supplies that are not frequently used should be moved to a separate, common storage area.

- Eliminate all unnecessary tools, parts, and instructions.
- Keep only essential items and eliminate what is not required.
- Prioritizing things per requirements and keeping them in easily-accessible places.

- Everything else is stored or discarded.

2. Straightening or setting in order:

Once you have completed the sort step, the workplace should be free from clutter and unnecessary items. Now it is time to straighten everything up and organize it. The goal is to put everything in its place and organize each workstation for maximum efficiency and productivity.

- There should be a place for everything and everything should be in its place.
- The place for each item should be clearly labelled.
- Items should be arranged in a manner that promotes efficient work flow, with equipment used most often being the most easily accessible.

3. Shining or Systematic Cleaning:

Systematic cleaning is done for clean the unwanted things from the work place. Shining is done at the end of each shift, clean the work area and be sure everything is restored to its place.

- Clean the workspace and all equipment, and keep it clean, tidy and organized.
- At the end of each shift, clean the work area and be sure everything is restored to its place.
- Maintaining cleanliness should be part of the daily work – not an occasional activity initiated when things get too messy.

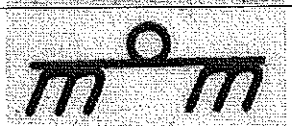
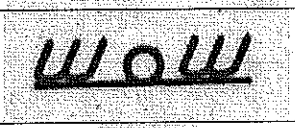
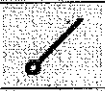
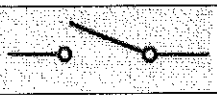
Ans. 2: -

Troubleshooting Chart of Dry Iron

Serial No	Trouble	Possible Cause	Corrective action to be taken
1	No Heat	• No Power at outlet. • Defective cord or plug • Loose terminal connections • Broken lead in iron • Loose thermostat control knob • Defective heater element • Open terminal fuse	• Check outlet for power • Repair or replace • Check and tighten. • Repair or replace of lead • Clean and tighten • Replace the element if separate. If cast in, replace sole-plate assembly • Replace
2	Insufficient Heat	• Low line voltage.	• Check voltage at outlet.

		• Incorrect thermostat setting • Defecting thermostat • Loose connection	• Adjust and recalibrate thermostat. • Replace thermostat. • Clean and tighten connections
3	Excessive Heat	• Incorrect thermostat setting • Defective thermostat	• Adjust and recalibrate thermostat or replace • Replace thermostat
4	Iron gives shock	• Loose connection. • Broken wire • Disconnected earth connection. • Weak insulation or heating element. • Earth continuity with common earth not available	• Clean and tighten • Repair or replace • Check earth connection and connect properly. • Check insulation resistance of heating element; If necessary, replace element • Check the main earth continuity and connect properly

Ans.3: -

Sr. no.	Name	Symbols used in circuit diagrams	Symbols used in layout
1	General wiring	**N.A.**	
2	Wiring on the surface	**N.A.**	
3	Wiring under the surface	**N.A.**	
4	Conduit on the surface	**N.A.**	
5	Conduit under the surface	**N.A.**	
6	Wiring going upward	**N.A.**	
7	Wiring going downward	**N.A.**	
8	Wiring passing vertically through a room	**N.A.**	
9	Single pole one-way switch		

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

School of Electrical Skills

Session: 2021-22 (Summer Semester)

B. Voc. ELE Program, 1st Semester,

2nd In-Sem. Examination

Course Code: ELE1105 **Time: 1 Hour**

Course Name: Electrical Safety **Max. Marks: 20**

Instruction: Answer all questions from section A. Each question carries one mark. Answer all questions from section B, each question carries two marks. Answer all questions from section C, each question carries three marks. Scientific calculator is allowed.

Section – A

05X01 = 05 Marks

1. Class A materials do not include which of the following?
   (a) Wood materials (b) Propane material (c) Plastic material (d) Paper Material
2. What does the following health and safety sign indicate
   (a) The location of the fire alarm (b) The location of the fire extinguishers
   (c) Which way to exit (d) do not press the button
3. How many compression and breathe should you do for each cycle of CPR?
   (a) 30 compressions, 2 breathe (b) 30 compression, 5 breathe
   (c) 15 compressions, 5 breathe (d) 15 compression, 15 breathe
4. Under the government policies, employees are responsible for providing a.....
   (a) Safe workplace (b) land
   (c) Estimation (d) Insurance
5. What is your first action when examining the condition of patients?
   (a) Check the breathing (b) Check the insurance
   (c) Check the external injury (d) All of the above

Section – B

03X02 = 06 Marks

1. Write down the classification of fires.
2. What is worker orientation and training program?
3. Write down the tips of safely working with electrical equipment.

Section – C

03X03 = 09 Marks

1. Write down the occupational health and safety tips
2. Draw the fire extinguisher chart,
3. Write down the importance of personal protective equipment.

Answer Key Set – A

Course Code: ELE1105,

Course Name: Electrical Safety

School of Electrical Skills, Session: 2020-21 (Summer Semester)

B. Voc. Program, 1st Semester, 2nd In-Sem. Examination

Section – A 05X01 = 05 Marks

1. A
2. A
3. C
4. A
5. A

Section – B

03X02 = 06 Marks

1. Write down the classification of fires.
   - **Class A**: freely burning, combustible solid materials such as wood or paper
   - **Class B**: flammable liquid or gas
   - **Class C**: energized electrical fire (energized electrical source serves as the ignitor of a class or B fire – if electrical source is removed, it is no longer a class C fire)
   - **Class D**: metallic fire (titanium, zirconium, magnesium, sodium)
   - **Class K/F**: cooking fires – animal, vegetable oils, or fats
2. What is worker orientation and training program

   Workers being injured on the job is a huge pressure point for any employer. We know training is no magic bullet, but it can help reduce the number of work-related injuries with a range of solutions. For example, not understanding how to use equipment in the workplace is an accident waiting to happen! Plus with lack of clarity, workers feel frustrated and powerless, thus unhappy and unmotivated at work. For these reasons, many businesses generally have a standard procedure for training their workers. It includes:

   - Conducting a Training Needs Assessment
   - Induction training for new workers
   - Training of workers following the introduction of a new equipment of work process
   - Routine and continuous training workshops to build capacity and stay on-trend

3. Write down the tips of safely working with electrical equipment's
   - Only qualified persons with verified license(s) are allowed to conduct or supervise electrical work
   - Use of Personal Protective Equipment (PPE).
   - Before any work is carried out, equipment is tested to determine if it is de-energised
   - Employ steps that ensure the restoration of electricity supply. Following isolation will not pose risks to health and safety at the workplace
   - Appropriate termination of all exposed conductors
   - Identification and labelling of all electrical equipment

Answer Key Set – A

Course Code: ELE1105,

Course Name: Electrical Safety

School of Electrical Skills, Session: 2020-21 (Summer Semester)

B. Voc. Program, 1st Semester, 2nd In-Sem. Examination

- Inspection, testing and tagging of all portable electrical appliances by a competent person
- Removal of all portable electrical equipment that fails testing and without a valid inspection tag
- Keeping of records

Section – C

03X03 = 09 Marks

1. Write down the occupational health and safety tips
   - Be Aware. ...
   - Maintain Correct Posture. ...
   - Take Breaks Regularly. ...
   - Use Equipment Properly. ...
   - Locate Emergency Exits. ...
   - Report Safety Concerns. ...
   - Practice Effective Housekeeping. ...
   - Make Use of Mechanical Aids.
2. Draw the fire extinguisher chart

CLASS	A	B	B	C	D	K
PICTURE SYMBOL						
TYPE	Common Combustibles Solids (wood, paper, cloth, etc.)	Flammable liquids Gasoline and solvents	Flammable gases Propane	Live electrical equipment Computers, fax machines	Combustible Metals Magnesium, Lithium, Titanium	Cooking Media Cooking oils and fats
Water	✓ Yes	✗ No	✗ No	✗ No	✗ No	✗ No
Foam	✓ Yes	✓ Yes	✗ No	✗ No	✗ No	✓ Yes (AR Foam Only)
Dry Powder	✓ Yes	✓ Yes	✓ Yes	✓ Yes	✗ No	✗ No
BC Powder	✗ No	✗ No	✗ No	✗ No	✓ Yes	✗ No
Carbon Dioxide CO2	✗ No	✓ Yes	✗ No	✓ Yes	✗ No	✗ No
Wet Chemical	✓ Yes	✗ No	✗ No	✗ No	✗ No	✓ Yes

3. Write down the importance of personal protective equipment's

Safety is a major issue for day labourers and skilled labourers. Each year, accidents happen frequently in the construction industry and often times it is due to the absence of Personal Protective Equipment (PPE) or failure to wear the provided PPE. PPE is equipment that will protect workers against health or safety risks on the job. The purpose is to reduce employee exposure to hazards when engineering and administrative controls are not feasible or effective to reduce these risks to acceptable levels. These hazard risks can be anything from wet floors to falling debris and everything in between. PPE includes items such as protective helmets, eye protection, high-visibility clothing, safety footwear, safety harnesses and, sometimes, respiratory protective equipment.