Registration No.: .....

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of RAC Skills

1st Semester, 1st In-Sem. Examination

B. Voc. Program, Summer Semester (2019-20)

Course Code: HVA-1101 **Time: 1 Hour**

Course Name: Basic of Refrigeration and Air-Conditioning **Max. Marks: 20**

Instruction: Attempt all questions.

Section – A

05X01 = 05 Marks

1. In one inch, how many centimeters?
   a) 25.4cm
   b) 2.54cm
   c) 250cm
   d) 0.25cm
2. Convert 100 degree Celsius into Fahrenheit:
   a) 212
   b) 2.12
   c) 21.2
   d) 0.21
3. Which property remains constant during constant temperature process?
   a) Temperature
   b) Pressure
   c) Volume
   d) Enthalpy
4. What is the unit of pressure?
   a) N/m^2
   b) Pa
   c) Bar
   d) All of above
5. What is the unit of specific gravity?
   a) No units
   b) Equal units
   c) Balance units
   d) Neutral units

Section – B

03X02 = 06 Marks

1. What is a thermodynamics system? Write down different types of thermodynamic system.
2. Write down the definition of force, work, and power.
3. Differentiate between the quasi static process and reversible process.

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Section – C

03X03 = 09 Marks

1. What is pressure? Write down different pressure units used in RAC. Explain with neat sketch the followings: absolute pressure, gauge pressure, and vacuum pressure.
2. Calculate the pressure exerted on the floor by 150 N weight person with a total foot imprint area of 50 m^2?
3. (a) Write down the definition of 1st law of thermodynamics.
   (b) Explain Zeroth law of thermodynamics with sketch.

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of RAC Skills

1st Semester, 1st In-Sem. Examination

B. Voc. Program, Summer Semester (2019-20)

Course Code: HVA-1101 **Time: 1 Hour**

Course Name: Basic of Refrigeration and Air-Conditioning **Max. Marks: 20**

Instruction: (Attempt all questions.)

Section A

1) b
2) a
3) a
4) d
5) a

Short answer: Section B

1) Thermodynamics system is defined as quantity of matter or region in space upon our attention is to be considered for analysis of problem.
   Types of system are: open system, close system and isolated system
2) Force is said to be done by body when a body is moving in the direction of force.
   Force it is defined multiply by perpendicular distance is called work.
   Power it is defined as rate of doing work
3) Quasi static process: In thermodynamics, a quasi-static process is a thermodynamic process that happens slowly enough for the system to remain in internal equilibrium. Reversible process: It is defined as a process that, once having taken place it can be reversed. In doing so, it leaves no change in the system or boundary.

Long answer question Section C

1) Pressure: it is a normal force/unit area
   Different pressure units are: N/m2, Pascal, Bar, atmospheric pressure, torr, PSI, mm of Hg.
   Absolute pressure = atmospheric pressure+ gauge pressure (pressure above atmospheric)
   Absolute pressure = atmospheric pressure- gauge pressure (pressure below atmospheric)

2). P = F/A 150/50 = 3 N/m2

3). 1st law of thermodynamics: it states that energy can neither be created nor be destroyed but it can transform from one place to another.
Zeroth law of thermodynamics: If two bodies are in thermal equilibrium with a third body, there are also in thermal equilibrium with each other."

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Registration No.: .....

School of RAC Skills

Session: 2019-20 (Summer Semester)

B. Voc. Program, 1st Semester,

1st In-Sem. Examination

Course Code: HVA1102 **Time: 1 Hour**

Course Name: Installation and Assembly of Refrigerator **Max. Marks: 20**

Section – A

05X01 = 05 Marks

1. What is full form of VCRC?

a) Vapour compressor Refrigeration System
b) Vapour compression refrigerator Cycle
c) Vapor Compression Refrigeration Cycle
d) Vapor Compressor refrigerator system

2. Which is most common refrigerant use in refrigerator?

a) R-134a
b) R-22
c) R-32
d) R-410A

3. What does expansion valve do?

a) Lowers temperature of system
b) Removes heat from system
b) Converts refrigerant into Vapour
d) lowers pressure of system

4. What is the cooling capacity range of domestic refrigerator?

a) 100 – 400 litre
b) 35- 500 watt
C) 1 kw to 2 kw
d) 3- 5 °C

5. Which is main function of evaporator?

a) Converts refrigerant into vapors
b) Rejects heat of refrigerant
c) Rejects Heat of Room
d) Exchange heat between refrigerant and room

Section – B

03X02 = 06 Marks

1. State the functions of compressor and condenser.
2. What is the natural cooling process of human body?
3. Why ice and salt mixture is used in cooling?

Section – C

03X03 = 09 Marks

1. What is the importance of Vacuuming while refrigerator maintenance and describe process?
2. Write a note on history of domestic refrigerator.

Prepared by
Devendra Pathak
Devendra

Answer Sheet

Installation and Assembly of refrigerator

Section A

Answer 1 (c

Answer 2 (a

Answer 3 (d

Answer 4 (b

Answer 5 (d

Section B

Answer 1

Compressor

It is heart of VCR System; it pumps refrigerant into system. Compressor superheat refrigerant at discharge by increasing its temperature and pressure. Reciprocating, Rotary, Screw are types of refrigerant.

Condenser

It is a heat exchange. it rejects heat of the refrigerant which has been absorbed in evaporator.

Refrigerant become liquid under high pressure by desuperheating and subcooling process.

Condenser has major two types as water cooled and Air Cooled.

Answer 2

evaporative cooling is the natural process of reducing the temperature of human body. Human beings dissipate their metabolic heat by evaporative cooling if the ambient temperature is more than skin temperature.

When temperature become higher sweat come on skin and evaporates in atmosphere by absorbing heat of body and lower skin temperature.

Answer 3

Certain substances such as common salt, when added to water dissolve in water and absorb its heat of solution from water (endothermic process). This reduces the temperature of the solution (water + salt).

Sodium Chloride salt (NaCl) can attain temperatures up to -20 ℃ and Calcium Chloride ($CaCl_2$) up to - 50 ℃ in properly insulated containers. However, as it is

this process has limited application, as the dissolved salt has to be recovered from its solution by heating.

Section C

Answer 1

Vacuuming process

Main purpose of this process to remove moisture and other gases from system, for it we use Vacuum pump and gauge manifold with hose pipes.

This process is important, in absorb of this process there will be lot of moisture and air inside system this moister can choke system or react with refrigerant and pipes. It will lead to shorter life if system

Process: -

Turn your A/C unit into the "Off" position

Install the refrigerant manifold gauge hoses onto the service valve lines. Thread each valve onto its respective hose by turning the valve in a clockwise motion.

Check the sight glass on the vacuum pump to ensure it has enough oil. The oil level should be at the fill line located on the sight glass; some pumps will have an "Oil Level" line.

Connect vacuum pump with gauge manifold and gauge manifold with Service port. Switch the pump into the "On" position. Open port of gauge manifold.

Wait for 20 minutes this time can vary according to application.

Close port of gauge manifold and switch off and remove hose pipes.

Answer 2

- The domestic refrigerator using natural ice (domestic ice box) was invented in 1803 and was used for almost 150 years without much alteration.
- It replaces the ice boxes, ice box is made of insulated body and provide cooling with ice, when ice melts it has to be replenish it was one of the major disadvantage of ice box.
- General Electric Company introduced the first domestic refrigerator in 1911.
- Followed by Frigidaire in 1915. Kelvinator launched the domestic mechanical refrigerator in 1918 in USA. Which grew the manufacture of domestic refrigerators very rapidly.
- Initial refrigerant was Sulphur die oxide and methyl chloride, those refrigerant were replaced by R-12 in 1930.
- in beginning compressor were belt driven but in 1926 general electric made first hermetic compressor.

- In beginning condenser were water cooled, after it air cooled condenser were invented.

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BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of RAC Skills

I Semester, 1st In-Sem. Examination

B. Voc. Program, Summer Semester (2019-20)

Course Code: HVA1103 **Time: 1 Hour**

Course Name: Assembly & Installation of AC **Max. Marks: 20**

Instruction:

1. Attempt all Questions.
2. Each question of Section – A carries 01 mark.
3. Each question of Section – B carries 02 mark.
4. Each question of Section – C carries 03 mark.

Section – A

05X01 = 05 Marks

1. Which one is the gauging instrument?
   a. Vernier caliper
   b. Micrometer
   c. Try square
   d. None of the above

2. Which one is the measuring instrument?

   a. Filler gauge
   b. Wire gauge
   c. Try square
   d. Measuring tape

3. Room ACs are based on which cycle?

   a. Carnot Cycle
   b. Reversed Carnot cycle
   c. Atkinson Cycle
   d. All of the above

4. Which one of the following is not a part of room ACs?

   a. Compressor
   b. Condenser
   c. Expansion device
   d. None of the above

5. Before compressor, Accumulator is used for:

   A. Arresting the liquid refrigerant

   B. Arresting vapor refrigerant

   C. Reducing degree of superheat

   D. All of the above

Section – B

03X02 = 06 Marks

1. Define the term measurement. How measuring is different from gauging.
2. You have a micrometer of least count 0.01 mm. Minimum measurable value on main scale is 0.5 mm. Find out the total number of divisions on secondary scale.
3. Write down the name of basic components of air conditioner and arrange them in air conditioner cycle.

Section – C

03X03 = 09 Marks

1. Describe the safety during AC work in detail.
2. Give the name of all the parts of a micrometer with the help of a neat sketch.
3. Explain all the processes take place in an air conditioning cycle through a neat sketch cycle.

Registration No.: .....

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of **RAC Skills**

ANSWER SHEET

I Semester, 1st In-Sem. Examination

B. Voc. Program, Summer Semester (2019-20)

Course Code: HVA1103 **Time: 1 Hour**

Course Name: Assembly & Installation of AC **Max. Marks: 20**

Instruction:

1. Attempt all Questions.
2. Each question of Section – A carries 01 mark.
3. Each question of Section – B carries 02 mark.
4. Each question of Section – C carries 03 mark.

Section – A

05X01 = 05 Marks

1. Which one is the gauging instrument?

   C. Try square

2. Which one is the measuring instrument?

   D. Measuring tape

3. Room ACs are based on which cycle?

   B. Reversed Carnot cycle

4. Which one of the following is not a part of room ACs?

   D. None of the above

5. Before Compressor, Accumulator is used for:

   A. Arresting the liquid refrigerant

Section – B

03X02 = 06 Marks

1. Define the term measurement. How measuring is different from gauging.

   Solution: Measurement is comparing the obtained value with standard set of value. Gauging don't give any numerical value like measuring instrument.

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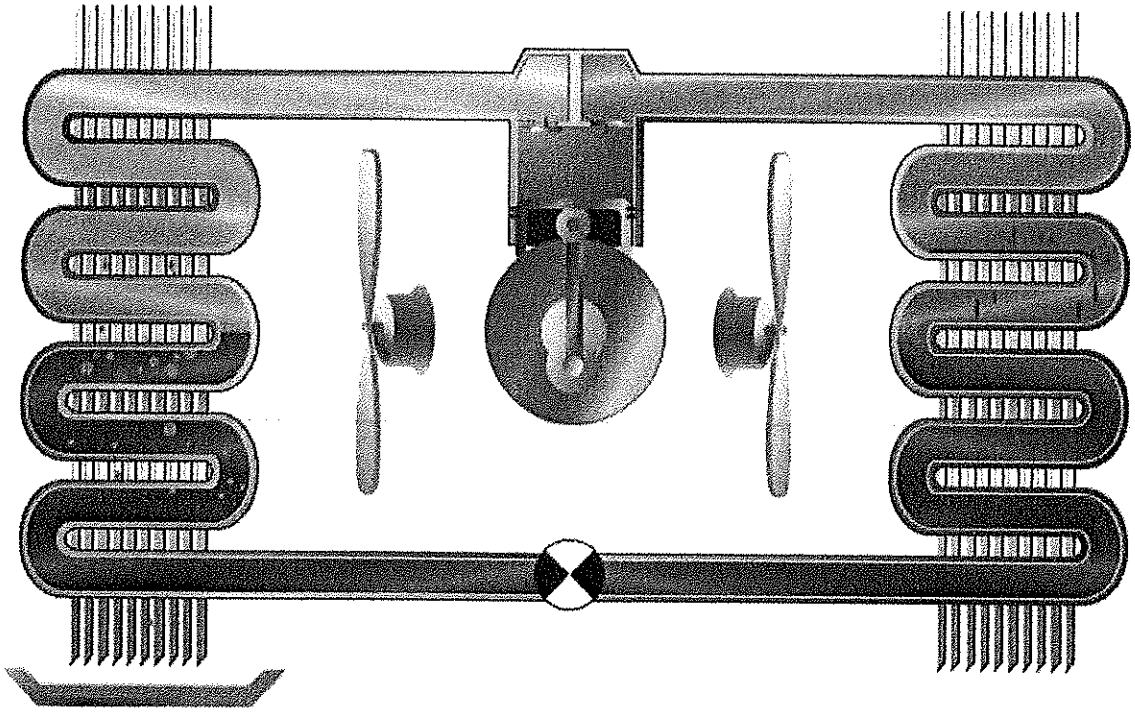
2. You have a micrometer of least count 0.01 mm. Minimum measurable value on main scale is 0.5 mm. Find out the total number of divisions on secondary scale.

   Solution: 0.01= 0.5/x

   X= 50 Division

3. Write down the name of basic components of air conditioner and arrange them in air conditioner cycle.



Section – C

03X03 = 09 Marks

1. Describe the safety during AC work in detail.

   Answer:

   1. Personal Safety

   Hat

   Safety shoes

   Gloves

   Glasses/Goggles

   Ear muff

2. Electrical Safety

Electrical Shock

Lock out/Tag out

3. Mechanical Safety

Rotating and moving parts

Hot/Cold surface

Sharp objects

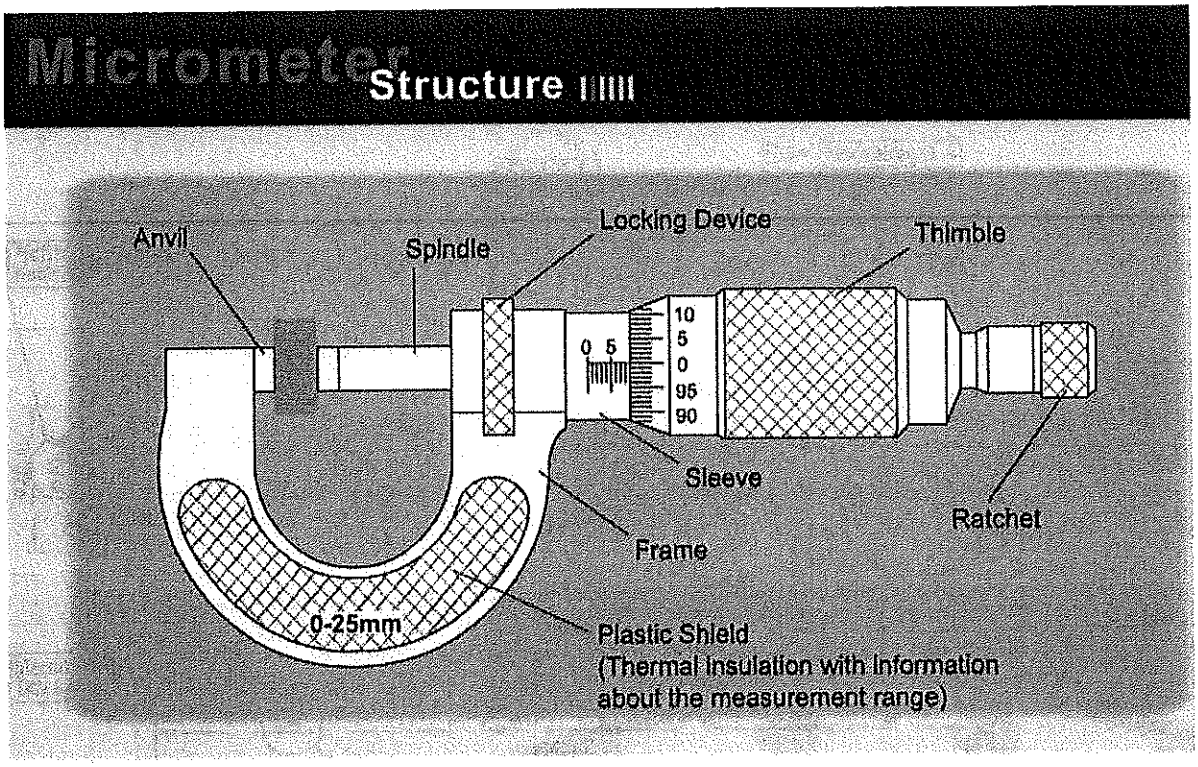
4. Refrigerant/Pressurized Gas Safety

Exposure to refrigerant

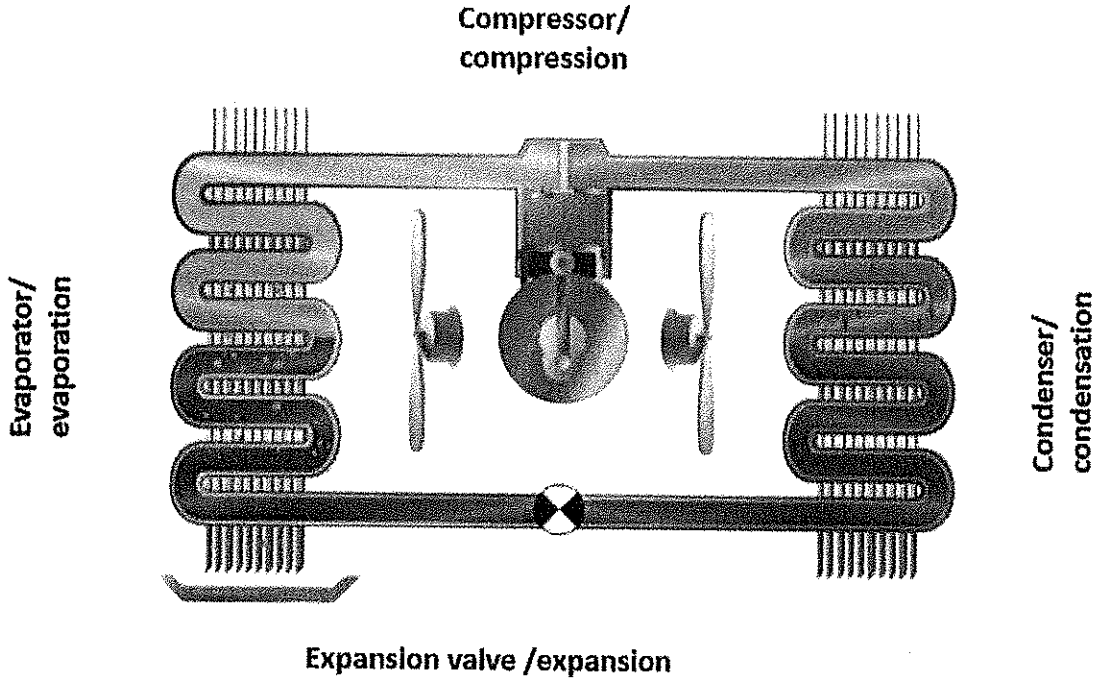
Refrigerant container

Refrigerant leakage

2. Give the name of all the parts of a micrometer with the help of a neat sketch.



3. Explain all the processes take place in an air conditioning cycle through a neat sketch cycle.



BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

School of HVAC&R Skills

Session: 2019-20 (Summer / Winter Semester)

B. Voc. 1st Semester,

1st In-Sem. Examination

Course Code: HVA-1104 **Time: 1 Hour**

Course Name: Sheet Metal & Welding **Max. Marks: 20**

Instruction: Attempt all questions.

Section – A

05X01 = 05 Marks

1. Which of the following unit is used to measure length?
   a) meter b) gram c) celsius d) All of the above

2. How many inches are there in 6.6 ft?
   a) 78 b) 79.2 c) 79 d) 80

3. Ductility of a material relates to –
   a) Its ability to be drawn into sheets
   b) Its ability to be drawn into ducts
   c) Its ability to be drawn into wires
   d) None of the above.

4. Aluminum is a
   a) Ferrous metal
   b) Non- ferrous metal
   c) Non-metal
   d) Plastic

5. Mild steel contains:
   a) 2-3 % of carbon
   b) 0.1 to 0.3 % of carbon.
   c) 96-98 % of carbon
   d) 0.6-0.9 % of carbon

Section – B

03X02 = 06 Marks

1. What is malleability? Explain with an example.
2. What are the different types of tools used in sheet metal?
3. What are the safety measures required during sheet metal work.

Section – C

03X03 = 09 Marks

1. What are Metals? Explain with different examples.
2. Write about alloy steel and the metals which are used to change its properties.
3. Write about any two non-ferrous metals.

Prepared by Shyam Anand Chaturvedi

Chaturvedi

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

School of HVAC&R Skills

Session: 2019-20 (Summer / Winter Semester)

B. Voc. 1st Semester,

1st In-Sem. Examination

Course Code: HVA-1104 **Time: 1 Hour**

Course Name: Sheet Metal & Welding **Max. Marks: 20**

Answer key

Section – A

05X01 = 05 Marks

1. a
2. b
3. c
4. b
5. b

Section – B

03X02 = 06 Marks

1.

Malleability is a physical property of metals that defines the ability to be hammered, pressed or rolled into thin sheets without breaking.

2.

Steel Rule It is useful in measuring and laying out small work. It can be measure with accuracy of 0.5 mm.

Vernier Calipers This is used for measuring dimensions up to 0.02 mm.

Micrometer Caliper This is used to measure the thickness of metal sheets accurately up to 0.01 mm.

Straight Edge i This is a flat graduated bar of steel with one longitudinal edge beveled. This bar comes in variety of lengths ranging from 1 to 3 meters. It is useful for scribing long straight lines.

Scriber This is sometimes called the metal workers pencil. It is a long wire of steel I with its one end sharply pointed and hardened to scratch lines on sheet metal I in laying out patterns

3.

The edges left after a cutting operation usually have a fine, almost invisible burr which acts like a sharp razor saw, and the consequences of casually brushing a finger along such an edge are gruesome.

Wear good eye protection made to proper industrial standards at all times. Eye protection should be able to resist puncture and impact. Repeatedly striking metal produces high level of energy, and endangers hearing. The best protection is using good-quality ear protectors.

Section – C

03X03 = 09 Marks

1.

Metals are desirable materials for product manufacturing. They have many outstanding properties. For ex. They are good conductors of heat and electricity. Metals are divided into two groups :

- Ferrous- Which have large percentage of iron.
- Non-ferrous- which have little to no iron.

Cast Iron :- It is used for the heavy parts of many machines and to make castings. It contains 2-4 percent of carbon. Cast iron is brittle and is difficult to weld.

Carbon steel:- They are classified by the amount of carbon they contain.

- Low Carbon Steel Or Mild Steel.
- Medium Carbon Steel
- High carbon Steel

2.

It has special properties which are determined by the mixture and the amount of other elements added.

Nickel is added to increase strength, toughness and resist corrosion.

Chromium adds hardness, toughness and resistance to wear.

Manganese is used in steel to produce a clean metal and add strength to steel.

Silicon is used to increase the resistance of steel for making springs.

Tungsten is used with chromium, vanadium, molybdenum or manganese to produce high speed steel, used in cutting tools.

Molybdenum adds toughness and strength to steel.

3.

Aluminium:

- It's a bluish white metal
- Its very light in weight
- Its melting point is 658 degree Celsius

- It's a good conductor of heat and electricity

Lead:

- It's soft bluish in color.
- It's a malleable and ductile metal.
- Its melting point is 326 degree Celsius

Registration No.: .....

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of Electrical Skills
Session: 2019-20 (Summer Semester)
B. Voc. Program, 1st Semester,
1st In-Sem. Examination

Course Code: HVA1105 **Time: 1 Hour**

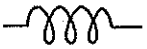
Course Name: RAC Electricals **Max. Marks: 20**

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. The symbol of capacitor is:

   (a)  (b)  (c)  (d) None of these

2. The unit of current is:

   (a) W (b) Wh (c) A (d) V

3. A 1000-ohm resistor is directly connected to 100V battery, Calculate the current through the resistor.

   (a) 0.5 A (b) 0.1 A (c) 10 A (d) 5 A

4. The mass of electron is ____ proton.

   (a) less than (b) greater than (c) equal to (d) none of these

5. In an atom particles having no charge is called:

   (a) Proton (b) Neutron (c) Electron (d) None of these

Section – B

03X02 = 06 Marks

6. Define conductor and insulator in terms of resistance.
7. What is atom? Explain it.
8. Explain Kirchhoff's Current Law.

Section – C

03X03 = 09 arks

9. State and explain Ohms law.
10. Briefly explain different types of house wiring.
11. What are the safety precautions to be taken care when working with electricity?

Answer Key

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of Electrical Skills
Session: 2019-20 (Summer Semester)
B. Voc. Program, 1st Semester,
1st In-Sem. Examination

Course Code: HVA1105
Course Name: RAC Electricals
Max. Marks: 20

Section – A

05X01 = 05 Marks

1. The symbol of capacitor is:

   a.  b.  c.  d. None of these

   Ans. (b)

2. The unit of current is:

   a. W b. Wh c. A d. V

   Ans. (c)

3. A 1000-ohm resistor is directly connected to 100V battery, Calculate the current through the resistor.

   a. 0.5 A b. 0.1 A c. 10 A d. 5 A

   Ans. (b)

4. The mass of electron is …… …..proton.

   a. less than b. greater than c. equal to d. none of these

   Ans. (a)

5. In an atom particles having no charge is called:

   a. Proton b. Neutron c. Electron d. None of these

   Ans. (b)

Section – B

03X02 = 06 Marks

6. Define conductor and insulator in terms of resistance.

   - Resistance is the 'opposition' to the current flow measured in ohms (Ω)
   - Conductors have a low value of resistance
   - Insulators have a very high resistance
   - Load in DC/AC circuits

7. What is atom? Explain it.

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An atom is composed of two regions: the nucleus, which is in the center of the atom and contains protons and neutrons, and the outer region of the atom, which holds its electrons in orbit around the nucleus.

8. Explain Kirchhoff's Current Law.

It states that the algebraic Sum of current meeting at a junction is equal to zero.

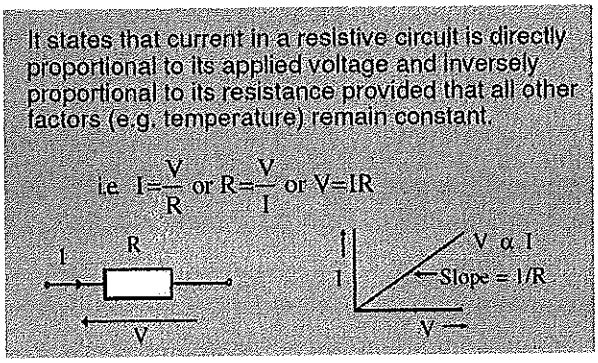
Or

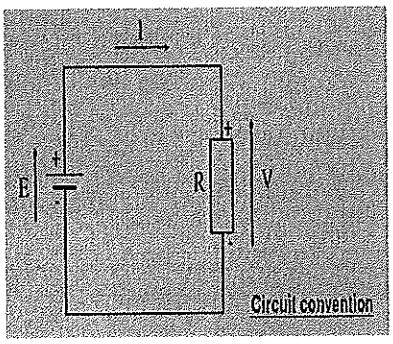
The current entering into a junction is equal to the current leaving from the junction.

Section – C

03X03 = 09 arks

9. State and explain Ohms law.





10. Briefly explain different types of house wiring.

Cleat wiring:

Cleats is generally made up of porcelain, Plastic or wood. Cleat wiring system is a temporary wiring system therefore it is not suitable for domestic Purpose. The use of cleat wiring system is over nowadays.

Casing and capping wiring

The cables are covered in the casing. The casing is made up of PVC with parallel grooves so as to install cables. the capping used to cover the wires and cables installed and fitted in the casing

Batten Wiring (CTS or TRS)

The full form of TRS is Tough rubber-sheath and CTS is cab tyre sheath. Single core or double core or three core TRS cables with a circular shape cables are used in this kind of wiring. Mostly, single core cables are preferred. TRS cables are chemical proof, water proof, steam proof. The TRS and CTS cables are install on wood batten. The cables are held on the wooden batten by brass link clips (buckle clip) already fixed on the batten with brass pins and spaced at an interval of 10cm for horizontal runs and 15cm for vertical runs.

Conduit Wiring

There are two types of conduit wiring according to pipe installation. In Conduit wiring system, the conduits should be connected to earth at some suitable points in case of steel conduit. Conduit wiring is a professional way of wiring a building. Mostly PVC conduits are used in house wiring

11. What are the safety precautions to be taken care when working with electricity?

- Avoid water at all times when working with electricity.
- Never touch or try repairing any electrical equipment or circuits with wet hands. It increases the conductivity of the electric current.
- Never use equipment with damaged insulation or broken plugs.
- If you are working on any electrical socket at your home then always turn off the mains. It is also a good idea to put up a sign on the service panel so that nobody turns the main switch ON by accident.
- Always use insulated tools while working.
- Always use appropriate insulated rubber gloves and goggles while working on any branch circuit or any other electrical circuit.
- Never try repairing energized equipment. Always check that it is de-energized first by using a tester. When an electric tester touches a live or hot wire, the bulb inside the tester lights up showing that an electrical current is flowing through the respective wire. Check all the wires, the outer metallic covering of the service panel and any other hanging wires with an electrical tester before proceeding with your work.
- Never use an aluminum or steel ladder if you are working with electricity at height in your home. An electrical surge will ground you and the whole electric current will pass through your body. Use a bamboo, wooden or a fiberglass ladder instead.

Registration No.: .....

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of HVAC Skills

1st Semester, 1st-Insem. Examination

B. Voc. Program, Summer (2019-20)

HVA1106 Basic Electronics

Time: 1 Hour

Max. Marks: 20

Answer all the questions

Section – A

05 objective type questions, each question carries 01 mark. 05X01 = 05 Marks

1. Which one of the following is the unit of Capacitance?
   (A) Ohm
   (B) mho
   (C) Farad
   (D) Henry
2. Which one of the following is the stored energy in Capacitor?
   (A) $\frac{1}{2}CV^2$
   (B) $\frac{1}{2}Li^2$
   (C) $\frac{1}{2}Mi^2$
   (D) None of the above
3. Which one of the following is the reciprocal of resistance?
   (A) Farad
   (B) Ohm
   (C) mho
   (D) None of the above
4. Which one of the following is correct for ceramic capacitor 104?
   (A) 0.1 nF
   (B) 10 nF
   (C) 100 nF
   (D) 0.01nF
5. Which of the following is the Active Circuit element?
   (A) Resistor
   (B) Transistor
   (C) Capacitor
   (D) Diode

Section – B

03 short answer type questions, each question carries 02 marks. 06 Marks

1. What is active and passive circuit element? Give examples.
2. Find out the resultant capacitance when C1, C2, C3 are in connected in series.
3. What do you mean by AC and DC current? Discuss the differences between them.

Section – C

03 essay type questions, each question carries 03 marks. 03X03 = 09 Marks

1. There are three Capacitors 10 μF, 20 μF and 30 μF connected in parallel with applied AC voltage 10 V. Find out total Capacitance and Charge stored in Capacitor.
2. Three resistors R1=1.5K, R2=2.5K and R3=6K are connected in series with 10 V battery. Calculate the current through circuit and voltage drop across R1, R2 and R3 respectively.
3. Classify the materials with respect to their conductivities with proper band diagrams.

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of HVAC Skills

1st Semester, 1st-Insem. Examination

B. Voc. Program, Summer (2019-20)

HVA1106 Basic Electronics **Time: 1 Hour**

Max. Marks: 20

Answer all the questions

Section – A

05 objective type questions, each question carries 01 mark. **05X01 = 05 Marks**

1. Which one of the following is the unit of Capacitance?
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   (C) Farad
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2. Which one of the following is the stored energy in Capacitor?
   (A) $\frac{1}{2}$ **CV²**
   (B) $\frac{1}{2}$ Li²
   (C) $\frac{1}{2}$Mi²
   (D) None of the above
3. Which one of the following is the reciprocal of resistance?
   (A) Farad
   (B) Ohm
   (C) mho
   (D) None of the above
4. Which one of the following is correct for ceramic capacitor 104?
   (A) 0.1 nF
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   (C) 100 nF
   (D) 0.01nF
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   (B) Transistor
   (C) Capacitor
   (D) Diode

Section – B

03 short answer type questions, each question carries 02 marks. **06 Marks**

1. What do you mean by active and passive circuit elements? Give examples.
   Ans: Active ckt elements are those which have the capabilities to amplify the signal such as Transistor, MOSFET etc. Passive circuit elements are those which can't amplify the signal such as Resistor, Capacitor and Inductor
2. Find out the resultant capacitance when C1, C2, C3 are in connected in series.
   Ans: Series Combination $\frac{1}{C}=\frac{1}{C1}+\frac{1}{C2}+\frac{1}{C3}$ and parallel combination $C= C_1+C_2+C_3$
3. What do you mean by AC and DC current? Discuss the difference between them?
   Alternating Current whose direction is changing with time. But, DC no change of direction is occurred. AC has some frequencies but DC has no frequency.

Section – C

03 essay type questions, each question carries 03 marks. **03X03 = 09 Marks**

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1. There are three Capacitors 10 μF, 20 μF and 30 μF connected in parallel with applied AC voltage 10 V. Find out total Capacitance and Charge stored in Capacitor.
   Ans: C=60 μF, Q=10x60 μC
2. Three resistors R1=1.5K, R2=2.5K and R3=6K are connected in series with 10 V battery. Calculate the current through circuit and voltage drop across R1, R2 and R3 respectively.
   Ans: R=R1+R2+R3=10K
   I=V/R=10/10=1mA
3. Classify the materials with respect to their conductivities with proper band diagrams.
   Ans: There are three kinds of materials depending upon their conductivities such as Conductor, Semiconductor and Insulator.