BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of Automotive Skills

Session: 2021-22 (Winter Semester)

B. Voc. Program, 5th Semester,

1st In-Sem. Examination

Course Code: AUT1501 **Time: 1 Hour**

Course Name: Automotive Mechatronics system **Max. Marks: 20**

Instruction:

1. Answer all questions from section – A, each question carries one mark.
2. Attempt all questions from section – B, each question carries two marks.
3. Answer all questions from section – C, each question carries three marks.

Section-A **05x01=05Marks**

Q1) The thermistor is a sensor:

a. True.
b. False.
c. Incomplete information.
d. None of the Above.

Q2) How injectors are activated in modern common rail fuel injection system?

a. Spring.
b. Solenoid valve.
c. Rotor.
d. Motor.

Q3) The sensors are classified on the basis of.....?

a. Functions.
b. Performance.
c. Output.
d. All of the above.

Q4) A piezo-electrical crystal generates voltage when subjected to ____ force.

a. Electrical.
b. Mechanical.
c. Gravity.
d. All of the above.

Q5) Actuators are used to?

a. Sense an object.
b. Activate a chemical.
c. Make a mechanical movement.
d. All the above.

Section-B **03X02 = 06 Marks**

Q06) Explain function of rail in CRDI system.
Q07) What is Negative temperature coefficient and Positive temperature coefficient?
Q08) Define sensors and actuators with examples.

Section-C **03X03 = 09 Marks**

Q09) Explain Anti-lock braking system.
Q10) Explain coolant temperature sensor.
Q11) Explain rail pressure sensor.

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Course Code: AUT1501 **Time: 1 Hour**

Course Name: Automotive Mechatronics *system* **Max. Marks: 20**

Instruction:

1. Answer all questions from section – A, each question carries one mark.
2. Attempt all questions from section – B, each question carries two marks.
3. Answer all questions from section – C, each question carries three marks.

Section-A **05x01=05Marks**

Q1) The thermistor is a sensor:

a. True
b. False
c. Incomplete information
d. None of the Above

Ans- (a)

Q2) How injectors are activated in modern common rail fuel injection system?

a. Spring.
b. Solenoid valve.
c. Rotor.
d. Motor.

Ans-(b)

Q3) The sensors are classified on the basis of.....?

a. Functions.
b. Performance.
c. Output.
d. All of the above.

Ans-(d)

Q4) A piezo-electrical crystal generates voltage when subjected to ____ force.

a. Electrical.
b. Mechanical.
c. Gravity.
d. All of the above.

Ans-(b)

Q5) Actuators are used to?

a. Sense an object
b. Activate a chemical
c. Make a mechanical movement
d. All the above

Ans-(d)

Section-B **03X02 = 06 Marks**

Q6) explain function of rail in CRDI system.
Ans- A common rail is one of the most important components in a diesel and gasoline direct injection system. The main difference between a direct and a standard injection is the delivery of fuel and the way how this one mixes with incoming air. In the direct injection system, the fuel is directly injected into the combustion chamber, skipping the waiting period in the air intake manifold. Controlled by the electronic unit, the fuel is squirted directly where the combustion chamber is hottest, which makes it burn more evenly and thoroughly.

Q7) What is Negative temperature coefficient and Positive temperature coefficient?
Ans- in Negative temperature coefficient the resistance will decrease as the temperature increases.
In Positive temperature coefficient the resistance increase as the temperature increases.

Q8) Define sensors and actuators with examples.
Ans-A sensor is a device that detects and responds to some type of input from the physical environment.

-An actuator is a part of a device or machine that helps it to achieve physical movements by converting energy, often electrical, air, or hydraulic, into mechanical force. it is the component in any machine that enables movement.

Section-C **03X03 = 09 Marks**

Q9) Explain Anti-lock braking system.\

Ans- The anti-lock braking system (ABS) is a standard safety system in all cars. Its purpose is to keep the driver safe by preventing the wheels from locking when you use the brakes. You are able to keep control over the steering and your vehicle won't skid as a result of the wheels locking up.

Q10) Explain coolant temperature sensor.

Ans- coolant temperature sensor is used to measure the temperature of the coolant in the cooling system, giving an indication of how much heat the engine is giving off.

Consist of thermistor and Works on NTC principle as the temperature increases resistance decreases The normal value of the sensor voltage is 2V at cold engine and 0.5V at warm engine

Q11) Explain rail pressure sensor.

Ans- **Location**

- The left rail and the right rail are located above the respective cylinder head.

Task

- The left rail and the right rail serve as high-pressure reservoirs and are responsible for fuel distribution to the fuel injectors (Y76).
- In addition, the left rail serves as the mount for the pressure regulation valve and the right rail as the mount for the rail pressure sensor.

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

School of Automotive Skills

Session: 2021-22 (Winter Semester)

B. Voc. Program, 5th Semester,

1st In-Sem. Examination

Course Code: AUT1502 **Time: 1 Hour**

Course Name: Automotive Electrical System **Max. Marks: 20**

Instruction:

1. Answer all questions from section A, each question carries one mark
2. Answer all question from section B, each question carries two mark.
3. Answer all question from section C, each question carries three mark.

Section – A

05X01 = 05 Marks

Q1. Full form of OBD is.....

A. On-Board Device.
B. On-Board Data.
C. On-Board Diagnostics.
D. On-Board Display.

Q2. Full form of MOST Bus is...

A. Media oriented system transport.
B. Model oriented system tools.
C. Media oriented systematic transformer.
D. Multiple oriented system traffic.

Q3. What is the full form of CAN BUS system?

A. Controller air network.
B. Controller area network.
C. Computer area network.
D. Controlled area network.

Q4. Which component of the electrical system keeps the battery charged?

A. The engine.
B. The brakes.
C. The alternator.
D. The starter.

Q5. A hydrometer is used to determine...

A. Relative humidity.
B. Buoyancy force.
C. Specific gravity of liquids.
D. Viscosity of liquids.

Section – B

03X02 = 06 Marks

Q6. What do you understand by basic electrical measurements in an automotive vehicle?

Q7. What are the key differences between sensors and actuators in an automotive vehicle?

Q8. Define briefly about OBD-II Diagnostic Trouble Codes (DTCs).

Section – C

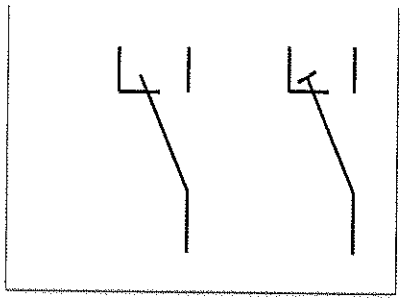
03X03 = 09 Marks

Q9. Explain System Approach for an electrical fault in an automotive vehicle along with the name of tools used to repair it.

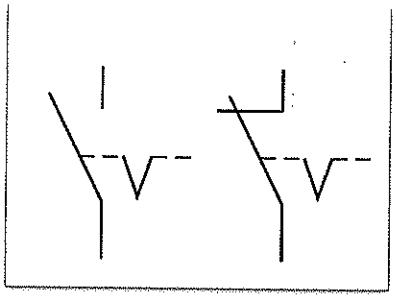
Q10. Explain OBD-II Scanning tool along with advantages and limitation in an automotive industry.

Q11. Name the following circuit symbols:

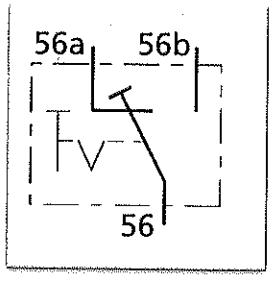
A.



B.



C.



BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Answer Key

School of Automotive Skills

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Course Code: AUT1502 **Time: 1 Hour**

Course Name: Automotive Electrical System **Max. Marks: 20**

Section – A

05X01 = 05 Marks

Q1. Full form of OBD is.....

Ans. C. On-Board Diagnostics.

Q2. Full form of MOST Bus is.....

Ans. A. Media oriented system transport.

Q3. What is the full form of CAN Bus system?

Ans. B. Controller Area Network.

Q4. Which component of the electrical system keeps the battery charged?

Ans. C. the alternator.

Q5. A hydrometer is used to determine...

Ans. C. Specific Gravity of Liquids.

Section – B

03X02 = 06 Marks

Q6. What do you understand by basic electrical measurements in an automotive vehicle?

Answer:

Cars and light trucks have extensive electrical systems with lots of wiring and hundreds of circuits. An electrical circuit is basically a route or path through which electrons flow. An electrical circuit must form a complete loop so the current will continue to flow. The electrons need a return path back to their source (the battery or alternator) otherwise they have no place to go.

There are essentially two kinds of automotive electrical circuits:

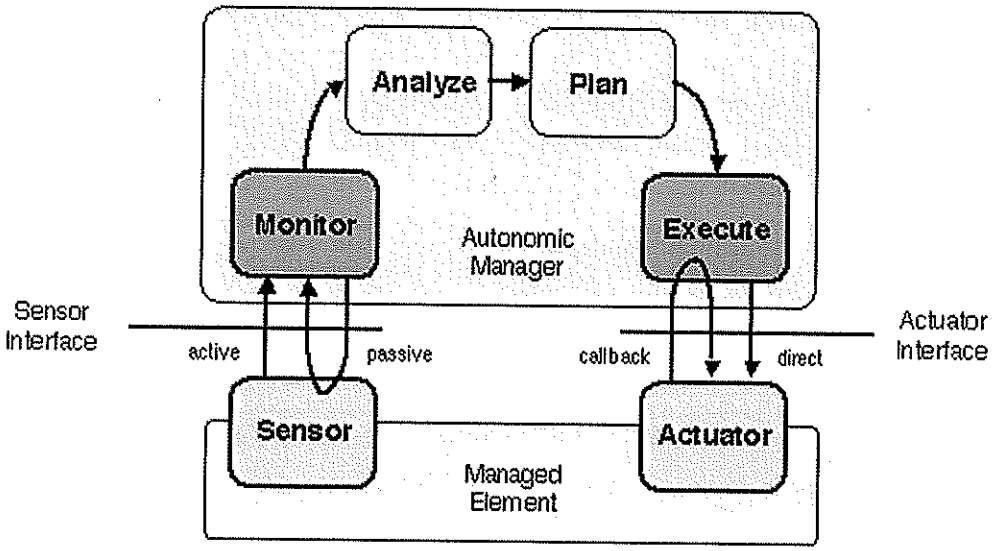
A series circuit is one in which all the circuit elements are connected end-to-end in chain-like fashion. The current has only one path to follow so the amount of current passing through it will be the same throughout. The total resistance in a series circuit is equal to the sum of the individual resistances within each circuit element. If one element in a series circuit goes bad, continuity is broken and the entire circuit goes dead because the current cannot complete its journey through the circuit.

A parallel circuit is one in which circuit elements are connected next to or parallel to one another. This creates multiple branches or pathways through which current can flow. The resistance in any given branch will determine the voltage drop and current flow through that branch and that branch alone. One of the advantages of a parallel circuit is that the various segments or pathways of the circuit can operate independently of one another. If one element goes open (breaks continuity), it won't disrupt the function of the other.

Some circuits combine elements of both a series and parallel circuit. These would be called a series-parallel electrical circuit. In this type of circuit, part of the circuit might have loads in series while in another part the loads would be parallel.

Troubleshooting automotive electrical circuits often requires measuring volts, amps or ohms. These are three basic units of measurement that are used to describe what goes on inside an electrical circuit.

Q7. What are the key differences between sensors and actuators in an automotive vehicle?
Answer:



Sensors and actuators have a number of similarities and dissimilarities in the functioning or processing. Here we have listed the differences between the actuator and a sensor.

The main difference between an actuator and a sensor is that the sensor converts the physical gesture into electrical signals and do different works. Whereas, the actuator is responsible for the conversion of electrical signal to mechanical work.

- Sensors measure discrete as well as continuous process variables. On the other hand, actuators are used to impel the parameters of both discrete and continuous processes. Sensors are widely used to original electrical signals in different electrical application. On

the other hand, actuators are very useful in the production of energy in the form of heat and motion.

- Sensors are used as an input device because of the reason it is placed at input dork of the machine. However, actuator is used as output device as it is mostly placed at output port of the machinery.
- Sensors are the one which acts as a brain because it provides information to do work.
- Sensor provides you electrical energy by direct conversion of thermal energy with the sensor name thermocouple. Two metallic wires which are connected to the single terminal forms a joint. That joint is heated and the joints are provided with the voltages. This effect was named after the scientist seed beck coefficient or effect. In this effect the voltages ate directly proportional to temperature of joints. While there's a type of actuator called bimetallic strip which converts thermal energy into mechanical output. When the material is heated the distance between different atoms or molecules increases. Because of large number of atoms in a material, the material expands considerably. The opposite reaction occurs when the temperature decreases, most of the metals contract.

BASIS FOR COMPARISON	SENSORS	ACTUATORS
Basic	Used to measure the continuous and discrete process variables.	Impel continuous and discrete processes parameters.
Placed at	Input port	Output port
Outcome	Electrical signal	Heat or motion
Example	Magnetometer, Cameras, Accelerometer, microphones.	LED, Laser, Loudspeaker, Solenoid, motor controllers.

Q8. Define briefly about OBD-II Diagnostic Trouble Codes (DTCs).

Answer:

Diagnostic Trouble Codes (DTCs) Diagnostic Trouble Codes (DTCs) are used by automobile manufacturers to diagnose problems related to the vehicle.

OBD-II diagnostic trouble codes (DTCs) contain 1 letter and 4 numbers, and are divided into the following categories:

B – Body (includes air conditioning and airbag) (1164 codes)

C – Chassis (includes ABS) (486 codes)

P – Powertrain (engine and transmission) (1688 codes)

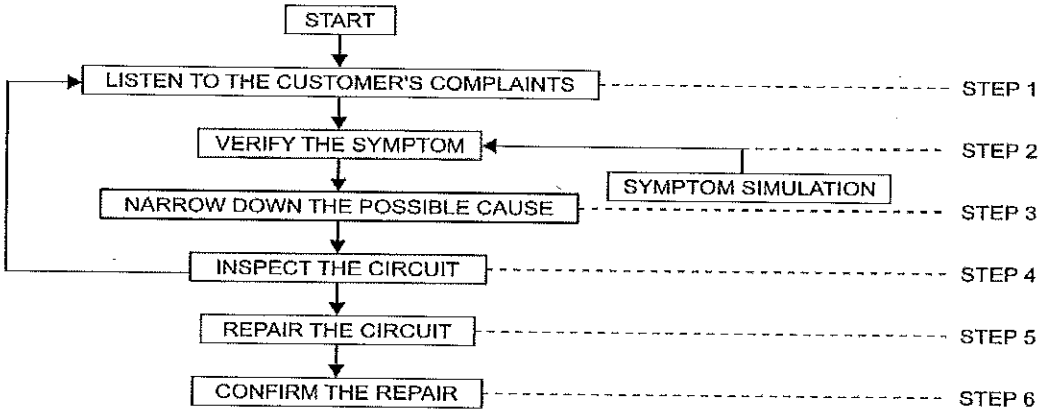
U – Network (wiring bus) (299 codes)

Section – C

03X03 = 09 Marks

Q9. Explain System Approach for an electrical fault in an automotive vehicle along with the name of tools used to repair it.

Answer:



Step 01:

What — Vehicle model, Engine, Year, Transmission and related Systems

When — Date, Time of the Day, Weather Conditions, Frequency

Where — Road Conditions, Altitude and Traffic Situation

How — System Symptoms, Operating Conditions, Service History and Aftermarket Accessories installed on the vehicle

Step 2: Operate the system and perform a road test if necessary. Verify all the parameters of the incident and ask the customer to come with you while you perform the road test. You can even ask the client to drive the vehicle so you can sit on the passenger side and monitor what is happening and make sure the problem is not related to incorrect operation of the vehicle. If the customer's complaint can't be repeated, jump to "Incident Simulation Tests" section below.

Step 3: Get the materials and equipment required to perform the troubleshooting including a power supply and the system operation descriptions contained in your vehicle's repair manual. If you have access to a TSB software, make sure to look if there's already a technical service bulletin for the same symptoms and problem.

Step 4: Visually inspect the system and look out for damaged wires and possible faulty components. Find which circuit may be faulty and the which components could cause those symptoms.

Step 5: If a damaged wire is found, repair the wiring. If not, replace the faulty component.

Step 6: Confirm the repair and make sure no other problems are lurking in the shadows, especially if the problem was a damaged wire. When a wire is damaged because it's rubbing against a sharp metal bracket or part, it's not uncommon to find other damaged wires in the same harness. Perform another road test and make sure everything is fine before delivering the car back to the client.

Q10. Explain OBD-II Scanning tool along with advantages and limitation in an automotive industry.

Answer:

An OBD stands for On-Board Diagnostics, which is a scanner to scan the errors and fault codes of various sensors stored in the ECU while any failure or temporary error of an electrical and electronic components/sub-systems.

OBD-II is the commonly used scanner in India, and as per the requirement it comes in two variants which are: OBD-IIA & OBD-IIB.

OBD-II is a standard tool to diagnose emission related data's and errors that transmits through the ECU, hence it also has the function to connect through DLC (Data Link Connector) to diagnose all Diagnostic Trouble-Codes of the systems in the vehicle.

The OBD-II specification provides for a standardized hardware interface—the female 16-pin (2x8) J1962 connector. Unlike the OBD-I connector, which was sometimes found under the hood of the vehicle, the OBD-II connector is required to be within 2 feet (0.61 m) of the steering wheel (unless an exemption is applied for by the manufacturer, in which case it is still somewhere within reach of the driver).

Advantages:

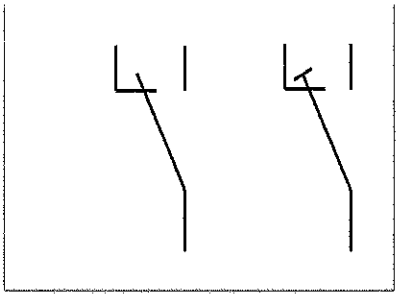
- It is an easy to use scanning tool to read fault codes.
- Connectivity is simple and easy and can be connected through Bluetooth and Wi-Fi with the mobile devices.
- Identification and clearing of fault codes is simple on this type of scanners.
- Emission and data logging is easily accessible on the OBD scanners.
- It is a cheaper and light in weight solution for scanning DTC's.
- Time saving process to identify the trouble codes, etc.

Limitations:

- Lack of authentication and authorization can lead to security issues on the vehicle.
- Intermittent signal problems are often not detected on a slow serial data stream on the OBD screen.
- It consumes power from vehicle's battery and if left plugged-in can drain the battery.
- Connector pins are soft and can be damaged easily if any unnecessary force applied while connecting to the DLC.
- OBD can only identify the fault codes from ECU and clear them, but the identification of fault on vehicle is to be identified by the technician itself and thus OBD doesn't comes with fully equipped diagnosis solutions, etc.

Q11. Name the following circuit symbols:

A.



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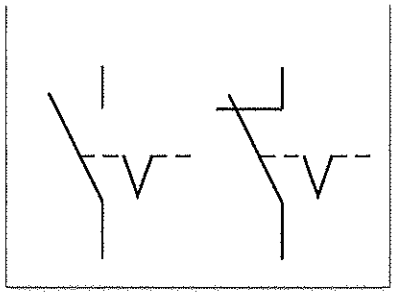
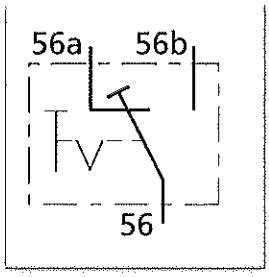


C.



Answer:

A. Changeover switch
   a) with interruption
   b) without interruption

B. Switches with non-automatic decline
   a) closer (setting switch)
   b) NC contact / opener (setting switch)
   NC means "normally closed"

C. a. Dip switch as toggle switch.
   b. Operated by tilting without interruption switching

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Registration No.: .....

School of Automotive Skills

Session: 2021-22 (Winter Semester)

B. Voc. Program, 5th Semester,

1st In-Sem. Examination

Course Code: AUT1503 **Time: 1 Hour**

Course Name: Workshop Management **Max. Marks: 20**

Instruction:

1. Answer all questions from section – A, each question carries one mark.
2. Attempt all questions from section – B, each question carries two marks.
3. Answer all questions from section – C, each question carries three marks.

Section – A

05X01 = 05 Marks

Q1. What is the English equivalent of the Japanese word 'Seiton'?

a) Sorting out
b) Set in Order
c) Standardizing
d) Self-discipline

Q2. In case of a fatal incident, when should be a report filled to the nearest OSHA office?

a) 5 hours
b) 24 hours
c) 8 hours
d) 12 hours

Q3. Which of the following falls in the category of occupational health hazards?

a) Chemical Hazards.
b) Ergonomic Hazards.
c) Physical Hazards.
d) All of the above.

Q4. Working environment means your work tools and equipment as well as air, noise and light.

a) True
b) False

Q5. In which country 5S was invented?

a) India
b) USA
c) Japan
d) China

Section – B

03X02 = 06 Marks

Q6. What is safe work permit?

Q7. What do you understand by Ergonomic Hazard and Physical Hazard?

Q8. Explain Pareto Principle?

Section – C

03X03 = 09 Marks

Q9. Explain 5S.

Q10. What is Poka-Yoke, explain its approach?

Q11. With reference to Automobile service sector, comment your views on importance of acquiring new customer vs retaining old customer for business growth.

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Instruction:

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Section – A

05X01 = 05 Marks

Q1. What is the English equivalent of the Japanese word 'Seiton'?

b) Set in order

Q2. In case of a fatal incident, when should be a report filled to the nearest OSHA office?

c) 8 hours

Q3. Which of the following falls in the category of occupational health hazards?

d) All of the above.

Q4. Working environment means your work tools and equipment as well as air, noise and light.

b) False

Q5. In which country 5S was invented?

c) Japan

Section – B

03X02 = 06 Marks

Q6. What is safe work permit?

Answer: A safe work permit is document that identifies the work to be done, the hazards involved, and the precautions to be taken. It ensures that all hazards and precautions have been considered before work begins. Safe work permits should always be used when work is performed by an outside agency or employer.

Q7. What do you understand by Ergonomic Hazard and Physical Hazard?

Answer: Ergonomic hazards: Such as those resulting from improper lifting, improper seating posture or repetitive stress.

Physical hazards: In which the worker is exposed to temperature extremes, atmospheric pressure, dangerous conditions, or excessive noise.

Q8. Explain Pareto Principle?

Answer: The Pareto principle states that for many outcomes, roughly 80% of consequences come from 20% of causes (the "vital few"). Other names for this principle are the 80/20 rule, the law of the vital few, or the principle of factor sparsity

- 20% of population owns 80% of nation's wealth
- 20% of employees cause 80% of problems
- 20% of items accounts for 80% of firm's expenditure

Section – C

03X03 = 09 Marks

Q9. Explain 5S.

Answer: 5S is considered as the Foundation for improving the activities in the workforce by creating a work environment that is safe, hygienic, satisfying, and well organized to help in reducing waste and increasing productivity.

1. **Sort:** Sorting all the unnecessary items from the workplace, placing the items either in the place that it needed or storing them in place of storage for future or removing it from the facility.

- Decide what you need
- Remove unnecessary clutter
- All tools, gauges, materials, classified and then stored
- Remove items which are broken, unusable or only occasionally used

2. **Set in Order**: After sorting all the essential items, a place needs to be assigned to each of them. This needs to be done in a way as to make each item as readily available as possible when required.

Organise layout of tools and equipment

- Designated locations
- Use tapes and labels
- Ensure everything is available as it is needed and at the "point of use"

3. **Shine**: The workplace should be kept as clean as possible along with proper maintenance of the substance be changing the lubricants, products if required.

- Create a spotless workplace
- Identify and eliminate causes of dirt and grime – remove the need to clean
- Sweep, dust, polish and paint

4. **Standardize**: All processes that are followed in the workplace should be standardized so that everyone follows the same procedure all the time. Following a similar process flow will help to cut down on the risk of defects and reduce the amount of time each task takes.

- Generate a maintenance system for the first three
- Develop procedures, schedules, practices
- Continue to assess the use and disposal of items
- Regularly audit using checklists and measures of housekeeping
- Real challenge is to keep it clean

5. **Sustain**: Sustaining the changes made in the previous four steps requires proper planning and attention.

- Driving force behind all 5S
- Means inoculate courtesy & good habits
- Make it a way of life
- Part of health and safety
- Involve the whole workforce
- Develop and keep good habits

Q10. What is Poka-Yoke? Explain its approach.

Answer: Poka-Yoke (Mistake Proofing):

Mistake proofing, or its Japanese equivalent *poka-yoke* (pronounced PO-ka, yo-KAY), is the use of any automatic device or method that either makes it impossible for an error to occur or makes the error immediately obvious once it has occurred. It is a common process analysis tool.

Principles of Poka-Yoke:

Listed in order of preference in fundamentally addressing mistakes:

1. Elimination ("don't do it anymore") is to eliminate the possibility of error by redesigning the product or process so that the task or part is no longer necessary.
2. Prevention ("make sure it can never be done wrong") is to design and engineer the product or process so that it is impossible to make a mistake at all.
3. Replacement ("use something better") is to substitute a more reliable process to improve consistency.
4. Facilitation ("make tasks easier to perform") is to employ techniques and to combine steps to make work easier to perform.
5. Detection ("notice what is going wrong and stop it") is to identify an error before further processing occurs so that the user can quickly correct the problem.
6. Mitigation ("don't let the situation get too bad") is to seek to minimize the effects of errors.

There are two approaches for Poka Yoke devices: -

Control Approach: This approach senses a problem and stops a line or process so that corrective action can take place immediately, thus avoiding serial defect generation.

Warning Approach: This approach signals the occurrence of a deviation or trend of deviations through an escalating series of buzzers, lights or other warning devices. However, unlike the control method, the warning method does not shut down the process on every occurrence.

Q11. With reference to Automobile service sector, comment your views on importance of acquiring new customer vs retaining old customer for business growth.

Answer: Customer acquisition is the act of gaining new customers, customer retention is focused on developing better relationships with your existing customers with the goal of increasing loyalty and driving repeat purchases.

Depending on which study you believe, and what industry you're in, acquiring a new customer is anywhere from five to 25 times more expensive than retaining an existing one. 70% of companies say it's cheaper to retain a customer than acquire one. It makes sense: you don't have to spend time and resources going out and finding a new client — you just have to keep the one you have happy.

A client or customer who stays with your company over time gives you the chance to provide more ongoing value, develop more personalized content, nurture a brand advocate, gain referrals, and earn positive word-of-mouth marketing.

The success rate of selling to a customer you already have is 60-70%, while the success rate of selling to a new customer is 5-20%.

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Registration No.: .....

School of Automotive Skills

Session: 2021-22 (Winter Semester)

B. Voc. Program, 5th Semester,

1st In-Sem. Examination

Course Code: AUT1504 **Time: 1 Hours**

Course Name: Paint Shop Management **Max. Marks: 20**

Instruction:

1. Answer all questions from section A, each question carries one mark.
2. Answer all questions from section B, each question carries two mark.
3. Answer all questions from section C, each question carries three mark.

Section – A

05X01 = 5 Marks

Q.1 How many angles are required to inspect a color?

a. One
b. Two
c. Three
d. None of the mentioned

Q. 2 Painter A says: Used thinner & paint material should be stored in a separate tank.

Painter B Says: Do not discard used thinner & paint material in the garbage as these are harmful for the environment.

Who is correct??

a. Painter A
b. Painter B
c. Both (a) & (b)
d. None of the mentioned

Q. 3 What is meaning of VOC ?

a. Volatile organic compound
b. Volatile organic complaint
c. Volatile organic class
d. None of the mentioned

Q. 4 Which statement is incorrect related to masking?

a. Newspaper should be used for masking the Vehicle to be painted.
b. OPS should use for quick masking.
c. A Using OPS will save the masking time as compared to brown paper sheet.
d. Masking prevents vehicle from over spray

Q. 5 Defect in paint arises due to?

a. Adverse atmospheric conditions
b. Wrong selection of hardener and thinner
c. Mistakes during paint application
d. All of the above

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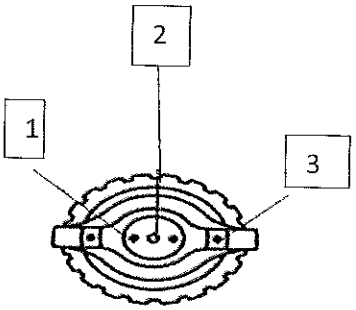
Section – B

02X03 = 6 Marks

Q. 6 Name the different types of holes.



Q. 7 Write the factors which effect the transfer efficiency of a spray gun?

Q. 8 What will be the probable causes in Paint booth if the pressure inside the paint booth is too high? Write its remedies?

Section – C

03X03 = 9 Marks

Q. 9 Draw and explain Hue circle diagram.

Q. 10 Write the Steps to make a design on a panel.

Q. 11 Explain the working principle of air spray guns?

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

School of Automotive Skills

Session: 2021-22 (Winter Semester)

B. Voc. Program, 5th Semester,

1st In-Sem. Examination

Course Code: AUT1504 **Time: 1 Hours**

Course Name: Paint Shop Management **Max. Marks: 20**

Instruction:

1. Answer all questions from section A, each question carries one mark.
2. Answer all questions from section B, each question carries four mark.
3. Answer all questions from section C, each question carries six mark.

Section – A

05X01 = 5 Marks

Q.1 How many angles are required to inspect a color?

a. One
c. **Three**
b. Two
d. None of the mentioned

Q. 2 Painter A says: Used thinner & paint material should be stored in a separate tank.

Painter B Says: Do not discard used thinner & paint material in the garbage as these are harmful for the environment.

Who is correct??

a. Painter A
c. Both (a) & (b)
b. Painter B
d. None of the mentioned

Q. 3 What is meaning of VOC ?

a. **Volatile organic compound**
c. Volatile organic class
b. Volatile organic complaint
d. None of the mentioned

Q. 4 Which statement is incorrect related to masking?

a. **Newspaper should be used for masking the Vehicle to be painted.**
b. OPS should use for quick masking.
c. A Using OPS will save the masking time as compared to brown paper sheet.
d. Masking prevents vehicle from over spray

Q. 5 Defect in paint arises due to?

a. Adverse atmospheric conditions
b. Wrong selection of hardener and thinner
c. Mistakes during paint application
d. All of the above

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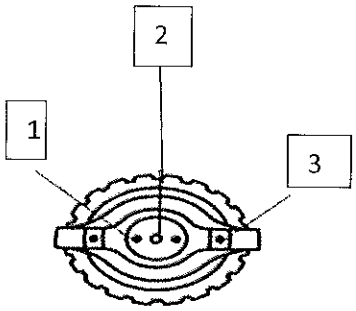
Section – B

02X03 = 6 Marks

Q. 6 Name the different types of holes.



Ans:-1. Air atomizing holes

2. Centre air hole

3. Fan control air hole

Q. 7 Write the factors which effect the transfer efficiency of a spray gun?

Ans

- Part size
- Part geometry
- Gun-target distance
- Coating viscosity
- Ease with which coating can be atomized
- Spray gun design and method of atomization
- Fluid pressure
- Atomizing air pressure
- Fan size
- Overlapping of successive spray gun strokes
- Orifice diameter of spray gun cap
- Air velocity in the spray booth
- Air balance in the spray booth

Q. 8 What will be the probable causes in Paint booth if the pressure inside the paint booth is too high? Write its remedies?

Ans There can be various reasons: -

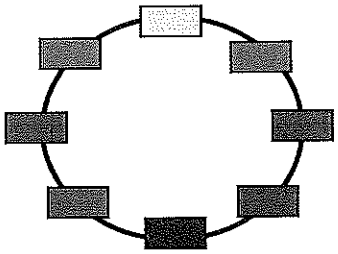
1. Floor filters are choked so they will not allow the air to pass through.
2. Passage of exhaust air is blocked.
3. Exhaust blower is not working.
4. Variation in the speed of both the blowers

Section – C

03X03 = 9 Marks

Q. 9 Draw and explain Hue circle diagram.

Ans



White, black and gray are"neutral" colors. They have no hue.Neutral colors are not more related to one hue than to anyother. To show this on the huecircle diagram, we place neutral
colors at the center

Q. 10 Write the Steps to make a design on a panel.

Ans.

1. Clean the panel.
2. Scuff the panel
3. Primer application
4. Sanding of primer
5. Sketch the design on the panel with the help of pencil.
6. Mask the design with the help of fine line masking tape.
7. Before basecoat check the masking properly.
8. Apply basecoat.
9. Remove the masking carefully after proper drying.
10. Mask the painted design properly with the help of masking tapes and papers.
11 Apply different basecoat on the panel.
12. After proper drying of basecoat remove the masking.
13. Check the edges and sand carefully with P-500 carefully.
14. Apply the clear coat on the panel.

Q. 11 Explain the working principle of air spray guns?

Ans:-The principle of spray-painting is the same as that of an atomizer. When compressed air is discharged from the air holes in the air cap, a negative pressure is created at the fluid tip, which in turn, applies suction to the paint in the cup.

This suctioned paint is then sprayed as atomized paint, due to compressed air at the holes in the air cap