BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

School of Automotive Skills

Session: 2020-21 (Winter)

B. Voc. Program, Vth Semester,

End-Sem. Examination

B

Course Code: AUT 1501 **Time: 2 Hours**

Course Name: AUTOMOTIVE MECHATRONIC SYSTEM **Max. Marks: 50**

Section – A

10X01 = 10 Marks

1. High efficiency battery operated superchargers help in overcoming the problem of turbo lag

(a) True (b) False

2. In MPFI system engine cold running phase the ignition timing is corrected with reference to

(a) Coolant temperature (b) RPM

(c) Load (d) All of the above

3. Valve timing has direct bearing on exhaust emissions by way of

(a) Control of valve timing at different rpm. (b) Valve overlap

(c) None of the above (d) Both (a) & (b).

5. IR Temperature sensor is a _____ type of temperature sensor

(a) Active (b) Contact

(c) Silent (d) Non- contact .

6. The TCS gets activated when throttle input and engine torque are mismatched to road surface conditions:

(a) TRUE (b) FALSE

7. The TCS controls wheel speed by

(a) Stop spark in one or more cylinders. (b) Reduce fuel supply to a cylinder.

(c) Close the throttle (d) All of the above

8. Gasoline Direct Injection engines can work upto A: F ratios of

(a) 65:1

(b) 22:1

(c) 8:1

(d) None of the above

9. Pitot tube is a type of flow meter.

(a) True (b) False

10. What is the amount of slip permitted for wheels for good traction

(a) 0.1 % to 0.3 %. (b) No slip.

(c) 3 % to 5 %. (d) None of the above.

Section – B

04X04 = 16 Marks

Q 11. What is TCS & how does it make a passenger car safer ?

Q 12. What are the various methods of reducing engine power in TCS?

Q 13. What is the logic used by any ECU in controlling actuators ?

Q 14. How does the Automatic Emergency Brake work ? , explain the phases

Section – C

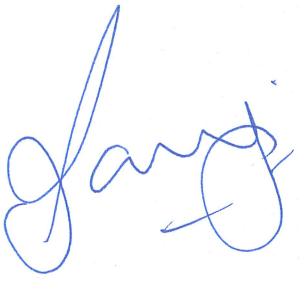
04X06 = 24 Marks

Q 15. What is cylinder de-activation ? and how is it important for emission control?

Q 16. What are the differences in Semi-automatic transmission and Fully Automatic transmission system?

Q 17. What are the various sequences that a MPFI injector system can have and what are the disadvantages of MPFI System?

Q 18. How is Cadance Braking different from Threshold Braking ?



BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Set B

Registration No.: .....

School of Automotive Skills

Session: 2020-21 (Winter Semester)

B. Voc. Program, 5th Semester,

End Sem. Examination

Course Code: AUT1502 **Time: 2 Hours**

Course Name: Automotive Electrical and A.C. **Max. Marks: 50**

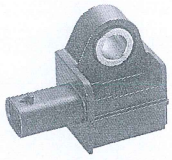
Instruction:

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

Section – A

10X01 = 10 Marks

Q 1. What kind of sensor is shown in the picture below?



a) Knock sensor.
b) Acceleration sensor.
c) Pressure sensor.
d) Ultrasonic sensor.

Q 2. Which of the following system/device is not mandatory to measure a value?

a) Sensor.
b) Wiring.
c) ECU.
d) CAN-Bus.

Q 3. What can be a possible cause for a sudden increase in fuel consumption?

a) False signal from a speed sensor.
b) False signal from the knock sensor.
c) False signal from the coolant temperature sensor.
d) False signal from an oil pressure sensor.

Q 4. CAN communication is typically used to communicate with..

a) ..the sunroof.
b) ..the airbag system (SRS).
c) ..the central locking system.
d) ..the power windows.

Q 5. Which of the following topologies is used for MOST systems?

a) Bus.
b) Star.
c) Tree.
d) Ring.

Q 6. Which component of the electrical system keeps the battery charged?

a) Starter Motor.
b) Infotainment System.
c) Alternator.
d) All of the above.

Q 7. What is normally the voltage in the electrical system of a passenger car?

a) 6V.
b) 12V.
c) 24V.
d) 2V.

Q 8. Which type of lighting system offers the highest amount of Lumens?

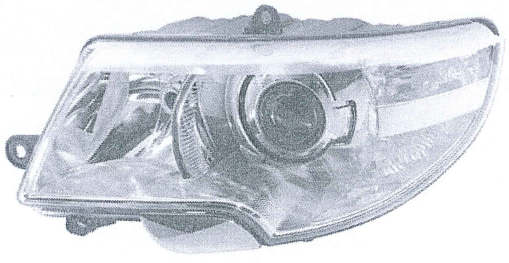
a) Halogen bulbs, 55 Watt.
b) High intensity discharge, 35 Watt.
c) LED, 30 Watt.
d) Laser, 20 Watt.

Q 9. What is the main function of relay?

a) Sends and receive radio signals.
b) Switches electrical currents.
c) Generate high voltage.
d) Generates electricity.

Q 10. Most modern cars use these kinds of headlamps. What type of light bulb is installed for low beam in this particular headlamp?

a) Impossible to tell from that perspective.
b) H7 / H4.
c) Xenon.
d) LED.



Section – B

04X04 = 16 Marks

Q 11. Explain the followings:

1. OBD-II Scanning Tool.
2. Automotive Ethernet.
3. MOST (Media Oriented System Transport).

Q 12. Explain Advance Charging System Technology used for an Electric Vehicle with the help of Level 01, Level 02 & Level 03 charging phases.

Q 13. How do you open the trunk (boot) lid? Mechanically or electrically? Name at least two devices which are involved and how do you open the trunk (boot) if these devices fail?

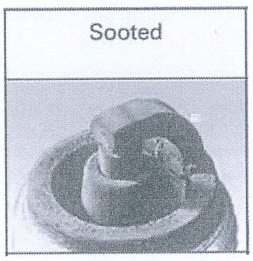
Q 14. An electric motor has a small internal resistance. How does this affect current consumption and power?

Section – C

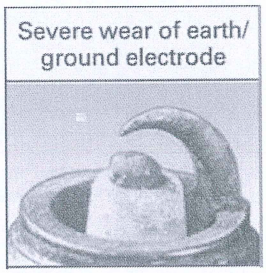
04X06 = 24 Marks

Q 15. Suppose a technician comes to you and shows you these two spark plugs A.) and B.). He asks you: Sir, can you tell me three reasons for each spark plug why they look like that? Also give him three suggestion each how he can fix this problem.

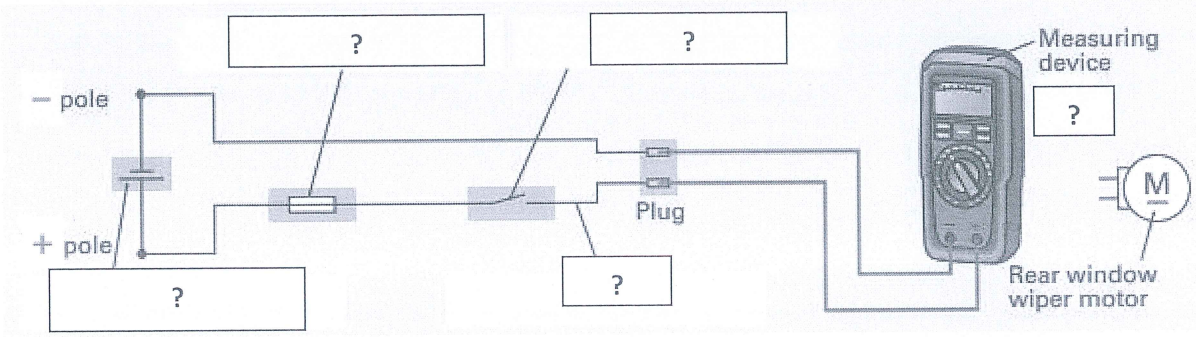
A.)



B.)

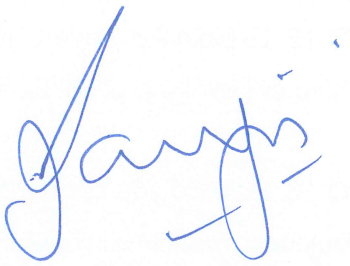


Q 16. The voltage of the rear window wiper plug is to be measured.
Name the circuit elements and correctly draw in the measuring wires.
(In circuit diagrams, available switches are typically drawn in their normal position)



Q 17. "If compared to old cars, modern vehicles depend heavily on Automotive networking systems". Name six reasons or advantages of such a system in support of this statement.

Q 18. You were given the task to adjust the headlight on the VW Polo with the help of the headlight aligner. What is the purpose of the light / dark boundary? Write about six points which need to be checked before you adjust the headlight.



BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of Automotive Skills

Session: 2020-21 (Winter Semester)

B. Voc. Program, 5th Semester,

End Sem. Examination

Set B
AK

Answer key

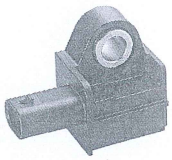
Course Code: AUT1502 Time: 2 Hours

Course Name: Automotive Electrical and A.C. Max. Marks: 50

Section – A

01X10 = 10 Marks

Q 1. What kind of sensor is shown in the picture below?



Answer: b. Acceleration sensor.

Q 2. Which of the following system/device is not mandatory to measure a value?

Answer: d. CAN-Bus.

Q 3. What can be a possible cause for a sudden increase in fuel consumption?

Answer: c. false signal from the coolant temperature sensor.

Q 4. CAN communication is typically used to communicate with..

Answer: b. ..the airbag system (SRS).

Q 5. Which of the following topologies is used for MOST systems?

Answer: b. Star.

Q 6. Which component of the electrical system keeps the battery charged?

Answer: c. Alternator.

Q 7. What is normally the voltage in the electrical system of a passenger car?

Answer: b. 12 V.

Q 8. Which type of lighting system offers the highest amount of Lumens?

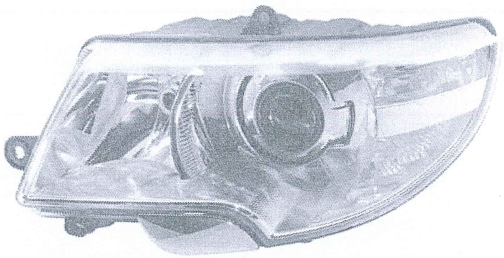
Answer: d. Laser, 20 Watt.

Q 9. What is the main function of relay?

Answer: b. Switches electrical currents.

Q 10. Most modern cars use these kinds of headlamps. What type of light bulb is installed for low beam in this particular headlamp?

Answer: a. Impossible to tell from that perspective.



Section – B

04X04 = 16 Marks

Q 11. Explain the followings:

1. OBD-II Scanning Tool: On-board diagnostics (OBD) is an automotive term referring to a vehicle's self-diagnostic and reporting capability. OBD systems give the vehicle owner or repair technician access to the status of the various vehicle sub-systems. The amount of diagnostic information available via OBD has varied widely since its introduction in the early 1980s versions of on-board vehicle computers. Early versions of OBD would simply illuminate a malfunction indicator light or "idiot light" if a problem was detected but would not provide any information as to the nature of the problem. Modern OBD implementations use a standardized digital communications port to provide real-time data in addition to a standardized series of diagnostic trouble codes, or DTCs, which allow a person to rapidly identify and remedy malfunctions within the vehicle.
2. Automotive Ethernet: The Ethernet used in automotive vehicles such as cars is known as automotive Ethernet. It is a physical network which is used to connect various components within a car using wired network. This Ethernet type has following features:
   - Should support High Data Rate without EMI/EMC problems
   - Should meet latency, synchronization and bandwidth requirements.
   - Power should be delivered over Ethernet cables
   - Should support distributed network architecture for communication
   - Should work with TCP/IP based protocols.
3. MOST (Media Oriented System Transport): MOST (Media Oriented Systems Transport) is a high-speed multimedia network technology optimized by the automotive industry. It can be used for applications inside or outside the car. The serial MOST bus uses a daisy-chain topology or ring topology and synchronous data communication to transport audio, video, voice and data signals via plastic optical fiber

(POF) (MOST25, MOST150) or electrical conductor (MOST50, MOST150) physical layers. MOST technology is used in almost every car brand worldwide, including Audi, BMW, General Motors, Honda, Hyundai, Jaguar, Lancia, Land Rover, Mercedes-Benz, Porsche, Toyota, Volkswagen, SAAB, SKODA, SEAT and Volvo. SMSC and MOST are registered trademarks of Standard Microsystems Corporation ("SMSC"), now owned by Microchip Technology.

Q 12. Explain Advance Charging System Technology used for an Electric Vehicle with the help of Level 01, Level 02 & Level 03 charging phases.

Answer:

Level 01 Charging:

Level 1 charging uses the same 120-volt current found in standard household outlets and can be performed using the power cord and equipment that most EVs come with. Making this type of charging available on your business property is as simple as installing dedicated 120 volt outlets in your company parking lot.

Advantages

- No installation cost if you already have an outlet near where your electric car is parked
- Low impact on electric utility peak demand charges (often applied to commercial accounts)

Disadvantages

- Slow charging, typically 3-5 miles of range per hour

Level 02 Charging:

Level 2 charging uses 240 volt power to enable faster regeneration of an EV's battery system. Providing this type of charging requires installation of an EVSE unit and electrical wiring capable of handling higher voltage power. Plug-in America's Plug Star tools offer a listing of Level 2 EVSE currently on the market. Many utilities are offering free level 2 charging equipment and/or incentives with an electric car purchase. Visit our incentives page to learn more.

Advantages

- Faster charge time - typically 10 – 20 miles of range per hour of charge.
- More energy efficient than Level 1 - about 3% gain in efficiency.
- Variety of EV charging manufacturers provides differentiated products for distinct markets and requirements, including networked systems that can schedule charging, track use, and collect fees

Disadvantages

- More expensive than Level 1
- Potentially higher impact on peak kilowatt demand charges for businesses

Level 03 Charging:

DC fast charging provides compatible vehicles with an 80% charge in 30-60 minutes by converting high voltage AC power to DC power for direct storage in EV batteries. Automakers currently use the same Society of Automotive Engineers (SAE) J-1772 plug for level 1 and 2 charging, with the exception of Tesla which has an adapter. For DC fast charging there are three plug types used by different automakers: the CHAdeMO, SAE Combined Charging System (Combo/CCS), and Tesla Supercharger. Nissan and Mitsubishi vehicles use CHAdeMO while current and upcoming vehicles from US and European manufacturers have SAE CCS ports. Tesla's Supercharger equipment is only compatible with Tesla vehicles, although they offer an adapter which allows Tesla owners to use CHAdeMO equipment.

Our electric car fact sheet includes a table with information on DC fast charging plug types by model. Most DC fast charging equipment manufacturers now offer equipment with both the CHAdeMO and SAE CCS port connectors to increase compatibility.

Advantages

- Charge time is reduced drastically--it's nearly as fast as refueling a gasoline vehicle.
- Variety of charging equipment manufacturers provides differentiated products for distinct markets and requirements.

Disadvantages

- Significantly more expensive than Level 1 or Level 2 equipment and high voltage 3 phase power connections to utilities further increases installation costs
- Potentially increased peak demand charges for commercial locations
- Different plug types are confusing to potential EV buyers and charging station operators
- Depending on the vehicle and charging equipment, fast charging can be slowed during cold weather.

Q 13. How do you open the trunk (boot) lid? Mechanically or electrically? Name at least two devices which are involved and how do you open the trunk (boot) if these devices fail?

Answer:

Electrically, 41 trunk lid opener actuator, 10 trunk lid request switch, 11 trunk lid unlatch switch, 21 trunk lid switch

If these devices fail: In most modern cars there is a whole in the trunk cover (inside the car) which you can operate manually. In case of a broken trunk lid actuator you have to open it manually from inside.

Q 14. An electric motor has a small internal resistance. How does this affect current consumption and power?

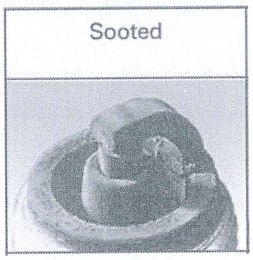
Answer: Power transfer between a voltage source and an external load is at its most efficient when the resistance of the load matches the internal resistance of the voltage source. If the load resistance is too low, then most of the power output of the voltage source is dissipated as heat inside the source itself.

Section – C

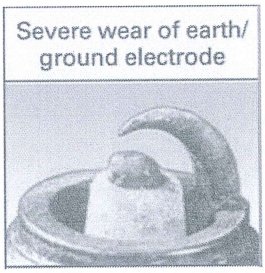
04X06 = 24 Marks

Q 15. Suppose a technician comes to you and shows you these two spark plugs A.) And B.). He asks you: Sir, can you tell me three reasons for each spark plug why they look like that? Also give him three suggestion each how he can fix this problem.

A.)



B.)



Answer:

A. reasons

- Mixture too rich
- Wrong spark plug cold type instead of hot type
- Vehicle only driven for short distances

B. reasons

-wrong spark plug hot instead of cold type

-knocking combustion

-mechanical damage in the engine

A. solution

-check and install the right spark plug

-check the injection system for the right mixture (etc. sensor)

-ask the customer about his/her driving style. Tell them to drive the car for longer distances

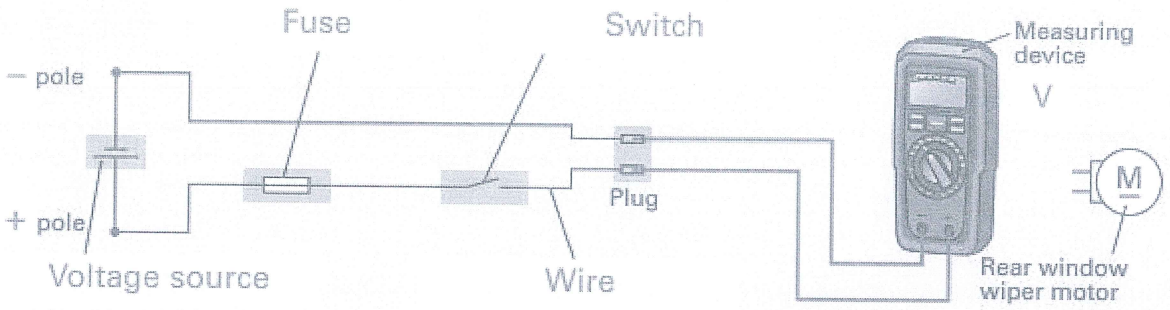
B. solution

-check and install the right spark plug

-check for knocking combustion, check spark timing

-inspect the engine for mechanical damages (pistons, valves, combustion chamber, and timing)

Q 16. The voltage of the rear window wiper plug is to be measured.
Name the circuit elements and correctly draw in the measuring wires.
(In circuit diagrams, available switches are typically drawn in their normal position)



Q 17. "If compared to old cars, modern vehicles depend heavily on Automotive networking systems". Name six reasons or advantages of such a system in support of this statement.
Answer:
Number of ECU's have increased heavily in recent years and they all depend on each other
-Reliable system
-Easy to add more ECU's
-Robust towards electrical disturbance
-Easier to diagnose (OBD)
-Lower costs, less wires required
-Efficient ID's can be prioritized

Q 18. You were given the task to adjust the headlight on the VW Polo with the help of the headlight aligner. What is the purpose of the light / dark boundary? Write about six points which need to be checked before you adjust the headlight.
Answer:
Light dark boundary: makes sure that the light is "directed" to the right place. Means that in low beam the light should illuminate the road in the most efficient way without blinding the oncoming traffic.

- Is the car standing on a flat surface?
- Is the tire pressure correct?
- Is the car "empty"?
- Are the headlamps in a good condition?
- Is the "Light-level in the right position (0 or -)
- Is the aligner standing parallel to the car?
- Is the aligner adjusted to the correct height?
- Is the aligner leveled?

SJB

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of Automotive Skills

5th Semester, End-Sem. Examination

B. Voc. Program, Winter Semester (2020-21)

Course Code: AUT1503 | **Time: 2 Hour**

Course Name: Workshop Management | **Max. Marks: 50**

Instruction:

1. All the questions are compulsory to attend.
2. Students are not allowed to bring any smart device or cell phone in the exam hall.
3. Marks will be deducted if any overwriting in words will be found.

Section – A

10X01 = 10 Marks

Q.1 Reliability engineering includes which parameters:

a) Reliability
b) Availability
c) Maintainability
d) All of the above

Q 2. The probability of performing a successful repair action within a given time is called:

a) Maintainability
b) Design for Manufacturing
c) Reliability
d) FMEA

Q 3. 300 cars have accumulated 45000 hours;10 failures are observed what is the MTBF? What is the failure rate?

a) 4500 hours, 0.00022/hour
b) 4500 hours, 0.0022/hour
c) 450 hours, 0.00022/hour
d) None of the above

Q 4. Five oil pumps were tested with failure hours of 45, 33, 62, 94 and 105. What is the MTTF and failure rate?

a) 67.8 hours, 0.0147 per hour
b) 67.8 hours, 00.147 per hour
c) 6.78 hours, 0.0147 per hour
d) 67.8 hours, 001.47 per hour

Q 5. Given selling price is Rs. 10 per unit, variable cost is Rs. 6 per unit and fixed cost is Rs 5000. What is the break-even point?

a) 500 units
b) 1250 units
c) 1000 units
d) None of the above

Q.6 Which of the following methods of stock control aims at concentrating efforts on selected items of materials:

a) Perpetual inventory system
b) Level setting
c) Material turnover ratio
d) ABC analysis

Q 7. Ishikawa diagram is an example of:

a) Relevant costing diagram
b) Cause and effect diagram
c) Control chart
d) Pareto diagram

Q 8. What is the purpose of the 5S in the workshop/workplace?

a) Cleanliness
b) Efficiency
c) Organization
d) All of the above

Q 9. Which of the followings is not the objective of kaizen process:

a) To make process efficient
b) To make process controllable
c) To make process effective
d) To make process uncontrollable

Q 10. Quality circle is a:

a) Japanese concept
b) Historic concept
c) British concept
d) Chinese concept

Section – B

04X04 = 16 Marks

Q-11. Explain fish bone diagram neat sketch.
Q-12. Explain 5S with neat sketch.
Q-13. Explain how you will plan any workshop layout and work flow with in the workshop?
Q-14. Explain ISO 9001 quality management and ISO 140001 environment management system.

Section – C

04X06 = 24 Marks

Q-15. Explain qualitative and quantitative forecasting methods.
Q-16. Explain kaizen in details with neat sketch.

Q-17. 100 cars have accumulated 65000 hours; 10 failures are observed. What is the MTBF? What is the failure rate?

Q-18. Explain contract labour regulation and abolition act, employees PF, minimum wages and overtime.

B

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

School of Automotive Skills

Session: 2020-21 (Winter Semester) Answer Key

B. Voc. Program, 5th Semester,

1st In-Sem. Examination

Course Code: AUT-1503 **Time: 1 Hour**

Course Name: Workshop Management **Max. Marks: 50**

Instruction: (if any)

Section – A

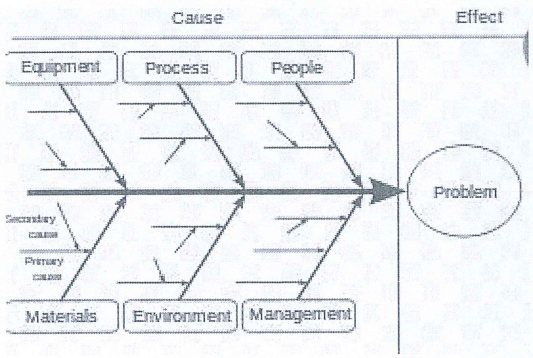
05X01 = 05 Marks

1. d
2. b
3. B
4. C
5. D
6. A
7. B
8. C
9. D
10. d

Section – B

03X02 = 06 Marks

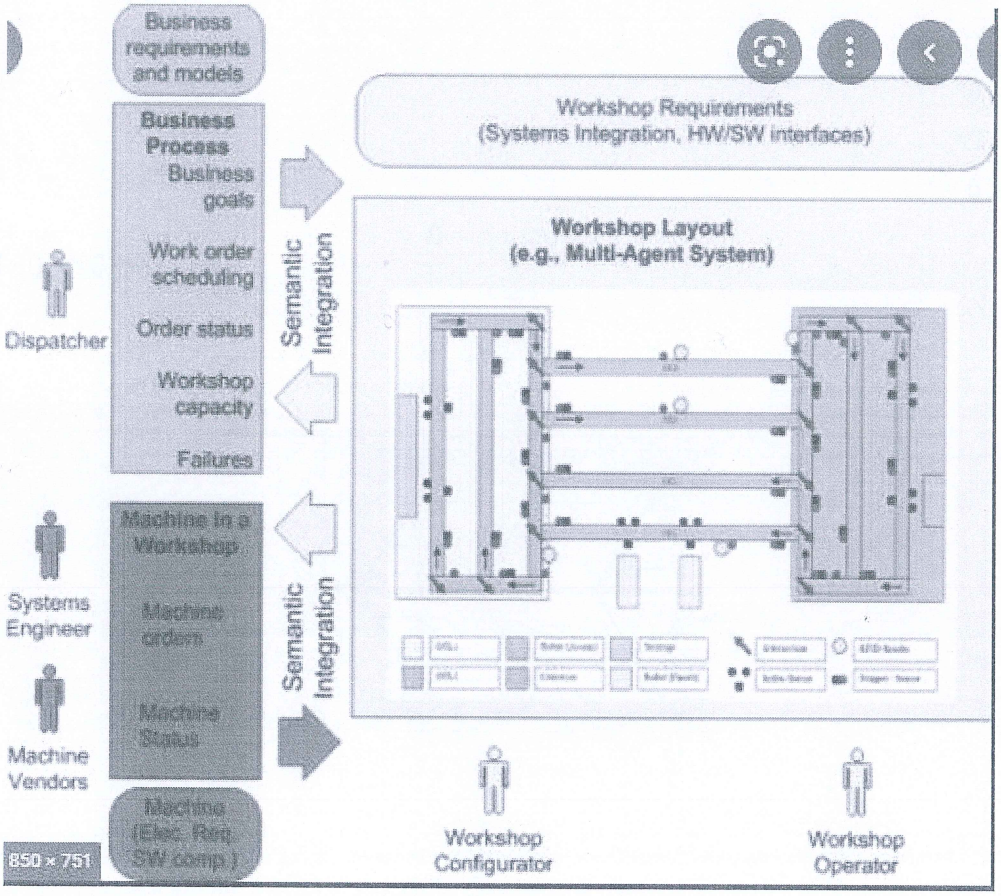
Q11



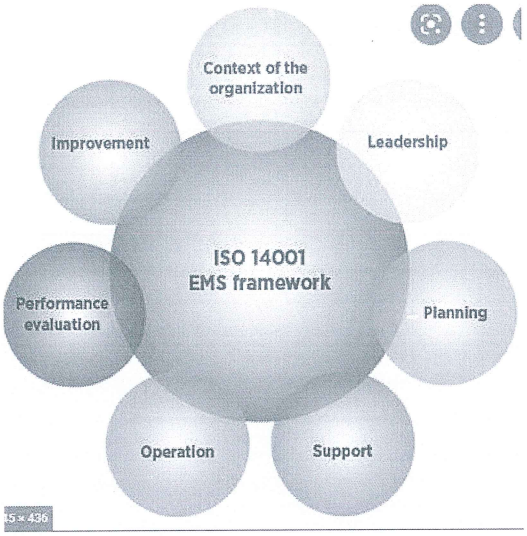
Q12


Sort
Set in Order
5S
Shine
Standardize
Sustain

Q13


Business requirements and models
Business Process
Business goals
Work order scheduling
Order status
Workshop capacity
Failures
Dispatcher
Semantic Integration
Workshop Requirements
(Systems Integration, HW/SW interfaces)
Workshop Layout
(e.g., Multi-Agent System)
Machine in a Workshop
Machine orders
Machine Status
Systems Engineer
Machine Vendors
Semantic Integration
Machine (Elec. Req. SW comp.)
850 × 751
Workshop Configurator
Workshop Operator

Q14



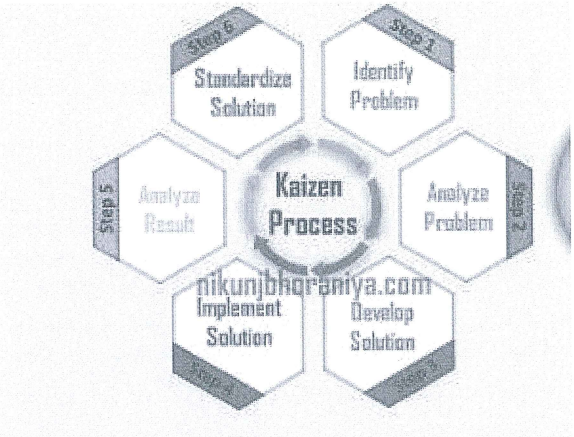
Section – C

03X03 = 09 Marks

Q15

	Qualitative Methods	Quantitative Methods
1. Characteristics	Based on human judgment, opinions; subjective and nonmathematical.	Based on mathematics; quantitative in nature.
2. Strengths	Can incorporate latest changes in the environment and "inside information."	Consistent and objective; able to consider much information and data at one time.
3. Weaknesses	Can bias the forecast and reduce forecast accuracy.	Often quantifiable data are not available. Only as good as the data on which they are based.

Q16



Q17 65000/10 =6500 hr, 10/65000=0.00015

Q18

Contract Labour (Regulation & Abolition) Act, 1970

- Object?
  - To regulate the employment of contract labour in certain establishments and to provide for its abolition in certain circumstances and for matters connected therewith.

- Liability of Principal Employer
  - To ensure provision for canteen, restrooms, sufficient supply of drinking water, latrines and urinals, washing facilities.
  - Principal employer entitled to recover from the contractor for providing such amenities or to make deductions from amount payable

- Every contractor shall maintain Muster Roll, Register of wages, Register of Deductions, Register of Overtime, Register of Fines, Register of Advances, Wage slip & display the abstract of rules & Act in English & regional language.

Set B

Registration No.: .....

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of Automotive Skills

5th Semester, End-Sem. Examination

B. Voc. Program, Winter Semester (2020-21)

Course Code: AUT1504 **Time: 2 Hour**

Course Name: Paint Shop Management **Max. Marks: 50 marks**

Instruction:

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

Section – A

10X01 = 10 Marks

Q-1. HVLP stands for ?

a. High volume low pressure
b. Heat volume low pressure
c. Hot volcanic liquid pressure
d. None of these

Q-2. Which type of paint is formulated using 1k binder?

a. Solid Paint
b. Metallic paint
c. Pearl Paint
d. Both (b) and (c)

Q-3. What is the purpose of dry guide coat application?

a. To remove dust
b. To facilitate sanding
c. Both (a) and (b)
d. None of the above

Q-4. What are the possible causes for the pin holes in the paint film?

e. Improper cleaning of panel
f. Due to improper Flash-off time
g. Due to the moisture in compressed air
h. All of the above

Q-5. Which type of disc is required for polishing?

a. P-500
b. P-1500
c. P-2000
d. Both (b) and (c)

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Q-6. What is the effect on spray gun performance due to increase in number of air atomizing holes?

a. Paint atomization will be good
b. Both (a) and (c)
c. Air discharge amount will be more
d. None of these

Q-7. Why plastic parts are painted?

a. To enhance the gloss
b. To save from environmental effects
c. Both (a) and (b)
d. None of these

Q-8. Pot life refers to.....

a. Drying time of product
b. Amount of time a 2-K product can be used after mixing of hardener
c. Life time of product
d. None of the above

Q-9. Orange peel defect generally occurs during which application?

a. Primer
b. Clear coat
c. Base Coat
d. All of the above

Q-10. Which is a best recommended tool for feather edging?

a. Single action sander
b. Dual action sander
c. Grinder
d. Both (b) and (c)

Section – B

04X04 = 16 Marks

Q-11. What are the differences between High strength (H.S.) tinter and Low strength(L.S.) tinter?

Q-12. What are the probable causes of increased pressure inside the paint booth? Write its remedies.

Q-13. Write the factors which effect the transfer efficiency of a spray gun

Q-14. Write the Parameters involved in painting cost estimation.

Section – C

04X06 = 24 Marks

Q-15. Explain the various masking methods.

Q-16. Discuss any two environmental defect and paint application defects each with its causes and remedies.

Q-17. Make a checklist for spray booth maintenance.

Q-18. Write the SOP to make a design on a panel.

Set B

Registration No.: .....

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of Automotive Skills

5th Semester, End-Sem. Examination

B. Voc. Program, Winter Semester (2020-21)

Course Code: AUT1504 **Time: 2 Hour**

Course Name: Paint Shop Management **Max. Marks: 50 marks**

Answer key

Instruction:

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

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Section – B

04X04 = 16 Marks

Q-11. What is the difference between H.S tinter and L.S. tinter?

Ans:- The H.S. Stands for high strength and the pigmentation of the H.S. is very high and we generally used these tinters in the solid paints.

The L.S. Stands for Low strength tinters and the pifmentation of L.S. is very low and generally used for metallic and pearl paints.

Q-12. What are the probable causes of increased pressure inside the paint booth? 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.

Q-13. 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-14. Write the Parameters involved in cost estimation?

Ans. There are various parameters involved in estimation of cost.

1. Correct identification of paint damage.
2. Product knowledge which will be used in the repair.
3. Prices of the product consumed in the repair.
4. Quantity of the product required for the repair.
5. Facility charges should also be considered in the estimation.
6. Time required for the repair to calculate the labor charges and facility charges.

Section – C

04X06 = 24 Mark

Q-15. Explain the various masking methods.

Ans:- **.1. Masking for Surface Application**:-

- During surfacer application, we uses generally lower air pressure if compared with top coat.
- The reverse masking method is generally used to prevent the creation of spray step.

Reverse Masking:-

- It is a method in which the masking paper is applied with its inside out , so that only a thin coat of mist adheres along the border.
- It is used to reduce the creation of spray step while working with small areas like spot repainting.

2. Masking for Block Repainting:-

- For Block repainting, Panels such as fender or door must be masked individually.
- In case the panel has openings (like gap between panels etc.) they must be masked to prevent the paint mist from entering those areas.

3. Masking for spot repainting:-

a. For Repainting a quarter panel:-

- When repainting a panel without borders we need to ensure that there should not be any spray step.
- We use reverse masking in such cases to avoid spray step.

b. For Repainting the end of a fender:-

- To repaint the tip of a fender, the area must be repainted by spot repainting.
- Since the smaller area is repainted than block repainting, mask only the end part of fender suffices.

Q-16. Discuss any two environmental defect and paint application defects each with its prevention and remedies.

Ans

1.Runs

Causes:-

- Incorrect spraying viscosity, spraying technique.
- Defective spray gun set up .
- Incorrect spraying pressure .
- Temperature of paint, substrate or spray booth too low.

Incorrect choice of hardeners and thinners

Prevention:-

- Ensure that the spray gun is in good working order.
- Warm object and material up to room temperature of 20 °C/68 °F.

- Use correct combination of hardeners and thinners .
-

Remedies:-

- Sand and polish.
- Sand and repaint

2. water spotting

Causes:-

- Topcoat not sufficiently cured.
- Excessive film thickness, drying time too short.
- Use of unsuitable thinner.
- Incorrect hardener mixing ratio.
- Wrong hardener used

Prevention:-

- Follow application recommendations on technical data sheets

Remedies:-

- After through-drying, remove marks by polishing
- Thoroughly dry topcoat, sand and repaint

3.Color fade

Causes:-

- Incorrect spraying viscosity, spraying technique, flash-off times, spray booth temperature.
- Defective spray gun set up, incorrect spraying pressure.
- Use of unsuitable thinner.

Prevention:-

- Adjust material correctly.
- Keep spray gun parallel to object.
- Choose suitable spray gun set up.
- Use manufacturer's thinners.

Remedies:-

- When using conventional base coat: use droplet method before spraying clear.
- After clear has through-dried, sand surface and repaint.

4. Bird droppings

Causes:-

- Due to shit of birds.
- Insufficient isolation of the stopper before topcoat application

Prevention:-

- Use recommended grade sanding paper.
- Isolate repaired areas with 2K filler.
- Dry filler thoroughly.

Remedies:-

- Thoroughly dry and sand.

Isolate or remove substrate, repaint

Q-17. Write the process for spot repair using metallic paint.

Ans:- Carefully clean with Prepsol

1. Make sure that the surfacer area is as small as possible.
2. sanding pad using P2000 wet grit paper
3. Blow parts with compressed air, clean with degreaser and wipe with a tack cloth
4. Mix Basecoat as per TDS
5. Apply basecoat:
6. until surfacer (damaged) area is fully covered by overlapping each coat slightly so a "dust zone" remains.
7. Prepare midcoat:-

   67% Binder XB165 and 33% thinner XB387

9 Prepare Blend in:-

Mix 50% Basecoat with 50% Midcoat and reduce pressure during fade out so a smooth transition is achieved

8. Mix clear coat as per TDS
9. Apply 2.5 coats extending basecoat area
10. Blend in:

Mix 50% Clearcoat with 50% Blending thinner and reduce pressure during fade out so a smooth transition is achieved.

11. Apply Blending thinner on over spray area.
12. If repair area is in middle or bigger than A4 size, apply Clear Coat on full panel
13. After drying polish the blend-in areas.

Q-18. 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.