BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

School of Automotive Skills

Session: 2021-22 (Summer Semester)

B. Voc. Program, 3rd Semester,

1st In-Sem. Examination

Course Code: AUT1301 **Time: 1 Hour**

Course Name: Automotive Power Train **Max. Marks: 20**

Instruction: Attempt all questions.

Section A: Select the one correct option from the given options in the following questions.

Section – A

05X01 = 05 Marks

Q-1. What is the full form of ESP?

a. Electronic stability program
c. Electrical safety program
b. Electrical stability program
d. None of the above

Q-2. Which of the following does not relate with spark ignition engine.....?

a. Ignition coil
c. Spark plug
b. Distributor
d. Fuel Injector

Q-3. In a four stroke engine, the working cycle completed in .....

a. One revolution of crankshaft
c. Two revolutions of crankshaft
b. Three revolutions of crankshaft
d. Four revolutions of crankshaft

Q-4. A two-stroke cycle engine gives.....the number of power strokes as compared to the four-stroke cycle engine, at the same engine speed.

a. Half
c. Same
b. Double
d. Four time

Q-5. The maximum temperature in the IC engine cylinder is order of.....

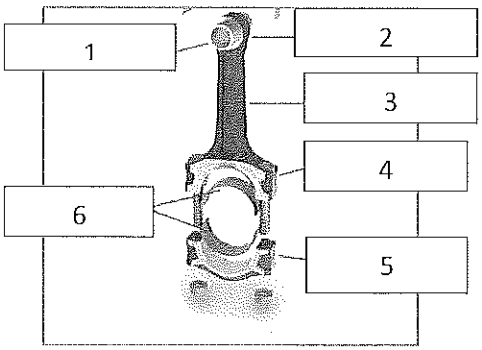
a. 500-1000°C
c. 1500-2000°C
b. 1000-1500°C
d. 2000-2500°C

Section – B

03X02 = 06 Marks

Q-6. Write short notes on engine head gasket.

Q-7. Label the connecting rod diagram?



Q-8. What is 5S write the name? Also write the advantages of 5S.

Section – C

03X03 = 09 Marks

Q-9. Explain different types of cylinder blocks.

Q-10. What is cylinder head? Explain different types of cylinder heads.

Q-11. What is camshaft.? Explain types of camshaft in engine.

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

School of Automotive Skills

Session: 2021-22 (Summer Semester)

B. Voc. Program, 3rd Semester,

1st In-Sem. Examination

Answer key

Course Code: AUT1301 **Time: 1 Hour**

Course Name: Automotive Power Train **Max. Marks: 20**

Instruction: Attempt all questions.

Section A: Select the one correct option from the given options in the following questions.

Section – A

05X01 = 05 Marks

Q-1 What is the full form of ESP?

a. Electronic stability program
c. Electrical safety program
b. Electrical stability program
d. None of the above

Ans: (a) Electronic stability program

Q-2. Which of the following does not relate with spark ignition engine.....?

a. Ignition coil
c. Spark plug
b. Distributor
d. Fuel Injector

Ans: (d) Fuel Injector

Q-3. In a four stroke engine, the working cycle completed in .....

a. One revolution of crankshaft
c. Two revolutions of crankshaft
b. Three revolutions of crankshaft
d. Four revolutions of crankshaft

Ans: (c) Two revolution of crankshaft

Q-4. A two-stroke cycle engine gives.....the number of power strokes as compared to the four-stroke cycle engine, at the same engine speed.

a. Half
c. Same
b. Double
d. Four time

Ans: (b) Double

Q-5. The maximum temperature in the IC engine cylinder is order of.....

a. 500-1000°C
c. 1500-2000°C
b. 1000-1500°C
d. 2000-2500°C

Ans: (D) 2000-2500°C

Section – B

03X02 = 06 Marks

Q-6. Write short notes on engine head gasket.

Ans: The contact surface of the cylinder block and cylinder head must be sealed gastight by the cylinder head gasket.

It is subjected to the following loads:

- Chemical loads: Aggressive fuel components and hot combustion gases in the cylinders.
- Thermal loads: High combustion temperatures and inducted cold fresh gas.
- Mechanical loads: Rapid changing overpressure during the compression, combustion and vacuum during induction(Suction).

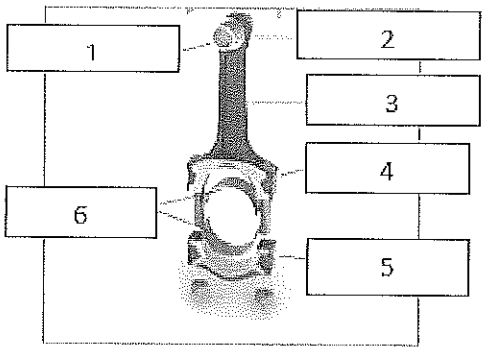
The cylinder head gasket must satisfy the following requirements:

- Elastic adaption of the sealing surfaces in all operating states/conditions.
- Low tendency to settle to facilitate cylinder head tensioning without retightening.
- **Material used for Gasket:**

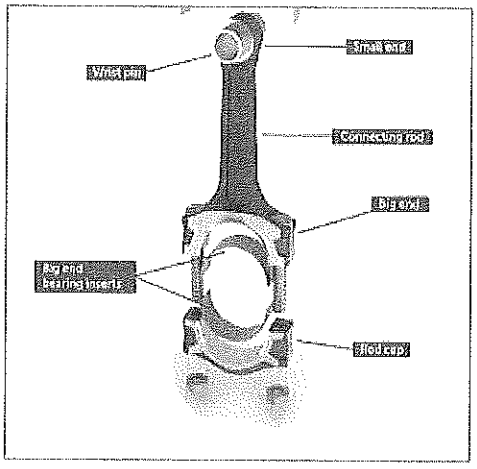
1. Metal/ Soft material cylinder head gasket: A metallic carrier plate roughly 0.3 mm thick is provided with clamping teeth. These teeth hold the soft material layer applied on both sides. The soft material is provided with a pore-filling plastic coating to improve its resistance to the surrounding media. The combustion chamber passages are beaded in. e.g.: With an aluminum plated steel plate. The sealing effect at the liquid passages can be further improved by an elastomer coating.

2. Metal cylinder head gasket: This is usually manufactured as multilayer cylinder head gasket from steel plates. For the purpose of providing a secure gas seal, beads or plate linings are required to increase the local pressing. The sealing effect at the liquid passages is also increased by elastomer coatings

Q-7. Label the connecting rod diagram?



Ans:



Q-8. What is 5S write the name? Also write the advantages of 5S.

Ans: 5 S is a workplace organization that uses a list of five Japanese words.

1. Seiri/sort
2. Seiton/set in order
3. Seiso/shine
4. Seiketsu/standardize
5. Shitsuke/sustain

Advantages of 5S:

- Less Waste (Improved Efficiency)
- Reduced Space Used for Storage.
- Improved Maintenance.
- Improved Safety.
- Better, More Committed Employees.
- Improved Quality.

Section – C

03X03 = 09 Marks

Q-9. Explain different types of cylinder blocks.

Ans:

Design of a cylinder block: The double-walled cylinder block is trans versed by cooling channels. Coolant is supplied by the water pump, it cools the cylinder walls and flows through ducts into the cylinder head.

There are the different structural types:

1. Open deck cylinder block
2. Semi-close deck
3. Closed deck cylinder block

1. Open deck cylinder block

- An open deck is one of the most common designs found in lower horsepower aluminum blocks. It is the easiest to manufacture and provides the overall best cooling efficiency, due to the coolants ability to make full contact with the surface area of the upper portion of the cylinder.
- Some will argue that this block has the benefit of weighing less than its two siblings because less material is used, but this weight difference is marginal for most blocks.

2. Semi-Closed Deck

- A semi-closed deck is the most common design found in modern factory turbocharged aluminum blocks and is stronger than an open deck by adding structural support to the top of the cylinders at four points.
- Using modern casting techniques, this design can handle respectable boost levels into the mid 30 PSI range and a much higher peak cylinder pressure than an open deck (depending on the application).

3. Closed Deck:

- A closed deck design is generally left to iron blocks and aluminum racing engines. It is the perfect design for fully built, high compression, high revving race engines that

require the highest level of structural support available. Common on high level drag race motors, this design is also able to withstand prolonged periods of high heat and cylinder pressure commonly seen in endurance racing and road racing.

Q-10. What is cylinder head? Explain different types of cylinder heads.

Ans: The cylinder head seals off the combustion chamber at the top. It is secured by the cylinder head bolts with the inserted cylinder head gasket on cylinder block.

- **Design of Cylinder Head:** The cylinder head contains the fresh gas and exhaust gas ducts with their valves seats and usually also the compression space (clearance volume).
- It accommodates the spark plugs as well as the fuel injectors in the case of direct injection engines together with the engine timing components. E.g. The valves.
- The camshaft is often mounted on the cylinder head. The cylinder head is subjected to high loads resulting from combustion pressure and hot combustion gases and must therefore demonstrate high inherent stability, good heat conduction and low thermal expansion.
- There are two types of cylinder head: -

1. **Liquid-cooled cylinder head:** This is predominantly cast from Al alloys for each cylinder individually or for the entire block in one piece. The coolant flows from the cylinder block into the cylinder head via flow ducts.

2. **Air-Cooled Cylinder Head:** This is manufactured entirely from AL alloys and is provided with cooling fins. Because the transfer of heat to air is less efficient than to coolant (cooling liquid), the cooling surface must be enlarged by cooling fins.

Note: - Compression Space: The compression space is the smallest combustion chamber. It is sealed towards the bottom by the position of the piston at TDC, where part of the compression space may be situated in the piston crown.

Geometrical shape:

- The geometrical shape of the compression space has a significant bearing on:-
- Surface to volume ratio
- Position of the spark plug and fuel injector
- Mixture Swirl
- Combustion Sequence
- Knock resistance
- Achievable Compression ratio
- Valve arrangement.
- Note: The compression space influences engine efficiency and thus performance, torque and fuel consumption as well as emissions characteristics.

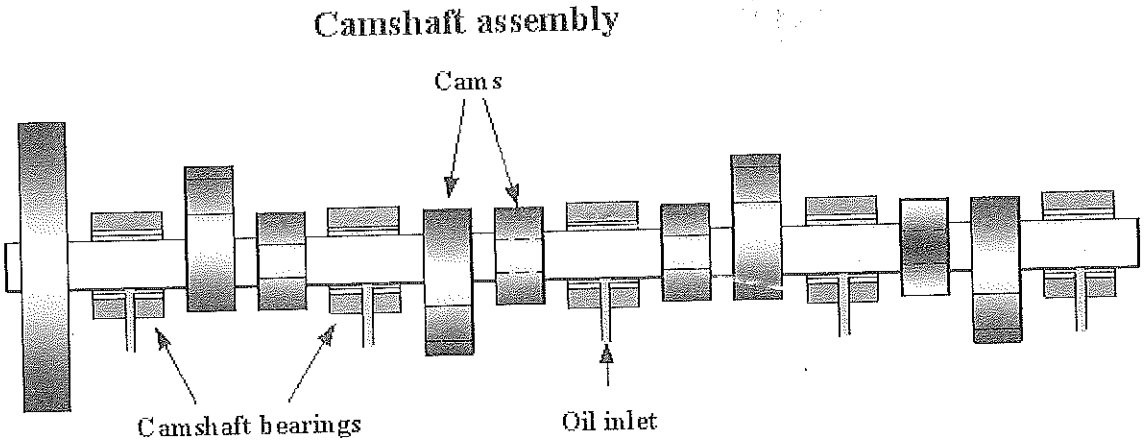
Q-11. What is camshaft.? Explain types of camshaft in engine.

Ans: Cam shaft is used to operate the intake and exhaust valves at right timings.

The key parts of any camshaft are the lobes. As the camshaft spins, the lobes open and close the intake and exhaust valves in time with the motion of the piston.

Types of camshaft

- Pushrod
- Over Head
- Single overhead cam (SOHC)
- Double overhead cam (DOHC)
- Advancement- Electronic Variable valve timing mechanism installed in Camshaft



Material which is used to manufacture

- Carbon steel
- Alloyed steels
- Nitride steel

Timing

A steel billet racing camshaft with noticeably broad lobes (very long duration)

The relationship between the rotation of the camshaft and the rotation of the crankshaft is of critical importance. Since the valves control the flow of the air/fuel mixture intake and exhaust gases, they must be opened and closed at the appropriate time during the stroke of the piston. For this reason, the camshaft is connected to the crankshaft either directly, via a gear mechanism, or indirectly via a belt or chain called a timing *belt* or *timing chain* Direct drive using gears is unusual because of the cost. The frequently reversing torque caused by the slope of the cams tends to cause gear rattle which for an all-metal gear train requires further expense of a cam damper. Rolls-Royce V8 used gear drive as, unlike chain, it could be made silent and to last the life of the engine. Where gears are used in cheaper cars, they tend to be made from resilient fibre rather than metal, except in racing engines that have a high maintenance routine. Fibre gears have a short life span and must be replaced regularly, much like a timing belt. In some designs the camshaft also drives the distributor and the oil and fuel pumps. Some vehicles may have the power steering pump driven by the camshaft. With some early fuel injection systems, cams on the camshaft would operate the fuel injectors. Honda redesigned the VF750 motorcycle from chain drive to the gear drive VFR750 due to insurmountable problems with the VF750 Hi-Vo inverted chain drive.

The timing of the camshaft can be advanced to produce better low RPM torque or retarded for better high RPM power. Changing cam timing moves the overall power produced by the engine down or up the RPM scale. The amount of change is very little (usually < 5 deg) and affects valve to piston clearances.

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BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of Automotive Skills

Session: 2021-22 (Summer Semester)

B. Voc. Program, 3rd Semester,

1st In-Sem. Examination

Course Code: AUT 1302 **Time: 1 Hour**

Course Name: Automotive Breaking, Suspension and Steering System **Max. Marks: 20**

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

05X01 = 05 Marks

1. Which of the following steering system works on a turning mechanism?

   a) Ackermann
   b) a & b
   c) Davis
   d) None of the above

2. Which of these were or are used in automobiles to provide suspension
   a) Leaf springs
   b) Coil springs
   c) Torsion bars
   d) All of the mentioned

3. What is the full form of ABS system?

   a) Anti-lock braking system
   b) Anti-lock blocking system
   c) Auto-lock braking system
   d) None of above

4. Which one of these is not the part of Steering System?

   a) Pump
   b) Electric Motor
   c) Clutch Cable
   d) Rack and pinion

5. What is the full form of EPHS system?

   a. Electrical Power Hydraulic Steering System
   b. Electrical Pneumatic Hydraulic Steering System
   c. Electronics Powered Hydraulic Steering System
   d. None of these

Section – B

03X02 = 06 Marks

6. Classify the steering system on the basis of: -
   a. Source of Power.
   b. Steering geometry.
   c. Steering mechanism.
7. What is the primary purpose of a steering system?
8. Write the name of the components in Hydraulic steering system mechanism.

Section – C

03X03 = 09 Marks

9. Write any six differences between Ackermann and Davis steering system.
10. Explain the Operating principle of HPS.
11. Briefly explain the components of EPS?

Registration No.: .....

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Answer key

School of Automotive Skills

Session: 2021-22 (Summer Semester)

B. Voc. Program, 3rd Semester,

1st In-Sem. Examination

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d. None of these

Section – B

03X02 = 06 Marks

6. Classify the steering system on the basis of: -
   a. Source of Power.
   b. Steering geometry.
   c. Steering mechanism.

- Ans. **According to Mechanism:**
- Ackermann steering system
- Davis steering system
- **Mechanical steering system:** According to gear box use
- Recirculating ball type
- Rack and pinion
- Worm and worm wheel
- **Power steering system:**
- Hydraulic power steering system(HPS): Electric power hydraulic steering system
- Electric power steering system(EPS)

7. What is the primary purpose of a steering system?

Ans. To change the direction of vehicle according to the driver wish

8. Write the name of the components in Hydraulic steering system mechanism.
   Ans
   A) Piston
   B) Rack and pinion
   C) Pump
   D) Valves
   E) Sensors

Section – C

03X03 = 09 Marks

9. Write any six differences between Ackermann and Davis steering system.

Ans.

ACKERMANN TYPE STEERING GEAR	DAVIS TYPE STEER
1.In Ackermann steering gear mechanism is on the back of the wheel axle.	1.The Davis steering
2.It consist only turning pair.	2.It consist of turning
3.Less wear and tear is involved.	3. More wear and tea
4.Less effort is required while turning.	4.more effort is requi
5. Space required is less.	5. it require more spa
6.Skidding is more compare to davis.	6.Skidding is relativel
7. Wearing OF tires and skidding effects for analysis is less considerable.	7.Effects of wearing a
8.It is an approximate steering gear mechanism.	8. It is an exact steeri
9. Maintenance is simple and low in cost.	9. It is high in mainte

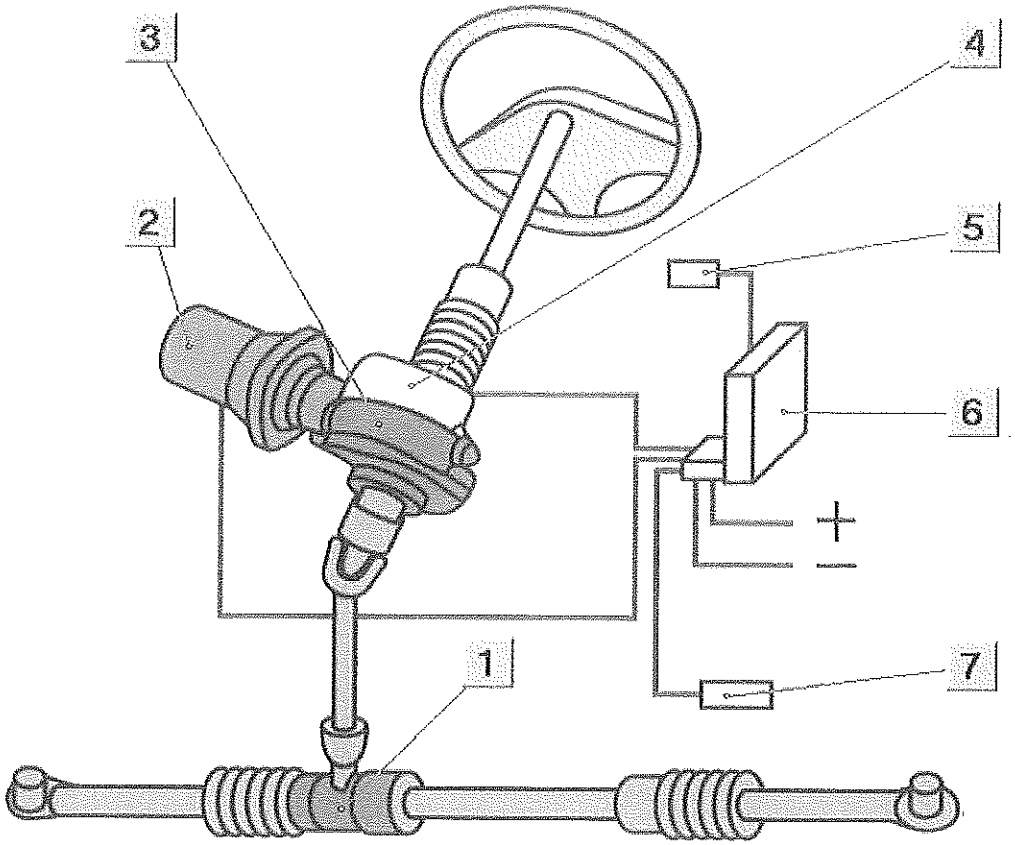
10. Explain the Operating principle of HPS.

Ans. The energy for steering support is supplied by the drive motor. A high-pressure pump pumps hydraulic oil from a reservoir to a control valve. Depending on whether it was driven in on the right or left, it transfers the working pressure to the sides of a working piston. This supports the movement of the rack or the steering nut.

- After the pressure is released, the hydraulic oil returns to the reservoir. If the working piston is fully extended in one direction at full steering angle, the pressure is reduced via a pressure relief valve to prevent damage. You can tell by a hissing sound.

11. Briefly explain the components of EPS?

Ans.



1. Mechanical steering gear
2. Electric motor
3. Worm gear unit
4. Torque sensor
5. Distance signalling device
6. Control unit
7. Speed signal transmitter

Registration No.: .....

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of Automotive Skills

Session: 2021-22 (Summer Semester)

B. Voc. Program, 3rd Semester,

1st In-Sem. Examination

Course Code: AUT1303 **Time: 1 Hour**

Course Name: Automotive Body Works **Max. Marks: 20**

Instruction:

1. Answer all questions from **"Section-A"**, each question carries 01 mark.
2. Answer all questions from **"Section-B"**, each question carries 02 marks.
3. Answer all questions from **"Section-C"**, each question carries 03 marks.

Section – A

Directions: Select any one correct answer from the given options: 05X01 = 05 Marks

1) Serrate head hammers are used for.....
   a) shrinking metal
   b) Panel flattening
   c) Restoring Bodylines
   d) All of the above
2) A slide hammer is used for .....in sheet metal.
   a) Restoring Bodyline
   b) Making Holes
   c) Pulling out dents
   d) None of these
3) .....is used to prevent moister from getting into seams of a car.
   a) Degreaser
   b) Putty
   c) Body filler
   d) Seam sealer
4) ..... is a lightweight, extremely strong, and robust material.
   a) Sheet metal
   b) Diamond
   c) Chassis
   d) Fiberglass
5) .....are typically used for hammer-forming flat sheet metal into custom shapes.
   a) Sliding hammers
   b) Mallets
   c) Shears
   d) Nibblers

Section – B

03X02 = 06 Marks

6) Write the names of different tools used in an auto bodywork.
7) What is the use of spoons in an auto body repair?
8) What are the advantages of using sanding blocks during dry sanding?

Section – C

03X03 = 09 Marks

9) Discuss the different categories of body filler.
10) Describe the types of body hammers used in a body shop.
11) Write short notes on:
    a) Seam sealer
    b) Sand paper

Registration No.: .....

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of Automotive Skills

3rd Semester, 1st In-Sem. Examination

B. Voc. Program, Summer Semester (2021-22)

Course Code: AUT1303 **Time: 1 Hour**

Course Name: Automotive Body Works **Max. Marks: 20**

Instruction: Attempt all questions.

Answer key

Section – A

Directions: Select any one correct answer from the given options: 05X01 = 05 Marks

1) Serrate head hammers are used for.....

a) shrinking metal
c) Restoring Bodylines
b) Panel flattening
d) All of the above

Ans: - a)

2) A slide hammer is used for .....in sheet metal.

a) Restoring Bodyline
c) Pulling out dents
b) Making Holes
d) None of these

Ans: - c)

3) .....is used to prevent moister from getting into seams of a car.

a) Degreaser
c) Body filler
b) Putty
d) Seam sealer

Ans: - d)

4) ..... is a lightweight, extremely strong, and robust material.

a) Sheet metal
c) Chassis
b) Diamond
d) Fiberglass

Ans: - d)

5) .....are typically used for hammer-forming flat sheet metal into custom shapes.

a) Sliding hammers
c) Shears
b) Mallets
d) Nibblers

Ans: - b)

Section – B

03X02 = 06 Marks

6) Write the names of different tools used in auto bodywork.

Ans: - Basic tools like hammers, mallets, dollies, sanding blocks, spoons, portable grinders and sanders, stud welders and slide hammers, panel flangers, pneumatic tools, chisel, nibblers, clamps, etc.

7) What is the use of spoons in an auto body repair?

Ans: -

- Designed for used inside hard-to-reach areas.

- Spoons function like a body dolly with a handle.
- Often smaller and thinner than a dolly, they can be used inside of doors, fenders, hoods, or other double wall panels.
- They can also be used for prying panels outward from behind.

8) What are the advantages of using sanding blocks during dry sanding?

Ans: -

- Sanding blocks are commercially available in a wide variety of shapes, styles, size, and materials.
- Sanding can help you to get the best results, but without a sanding block you'll be wasting your time.
- Sanding blocks help you to exert even pressure on the sandpaper, while minimizing waves in the panel being sanded.

Section – C

03X03 = 09 Marks

9) Discuss the different categories of body filler.

Ans: -

- Body fillers are generally a polyester resin based filler with a creme hardener that can be used to even out dents and cover blemishes on vehicles.
- Body fillers all fall into three general categories: standard, mid-range, and premium, and are generally available in a two-part material consisting of a polyester resin and a creme hardener.
- The filler grade you select will depend on the scope of the project and the size of the damaged spots needing to be repaired.
- Standard grade is a great option for minimal hail damage and small rust spots, while premium grade should be used for actual tears or a large surface area.

10) Describe the types of body hammers used in a body shop.

Ans: -

Body hammer come in a variety of shapes, sizes, and uses.

- Those with a serrate head are used for shrinking metal.
- Round heads are used for general panel flattening.
- While square heads are used for restoring bodylines.

11) Write short notes on:

a) Seam sealer

b) Sand paper

Ans:-

Seam Sealer

- Seam sealer is used to prevent moister from getting into seams of a car.
- Where two panels join, there is a chance water and moister can get in and start corroding the panels. Therefore, seam sealer is applied to prevent corrosion from happening.

Sand Paper

- Sandpaper and Glass-paper are names used for a type of coated abrasive that consists of sheet of paper or cloth with abrasive material glued to one face.
- Despite the use of names sand or glass, they have been replaced by other abrasives such as aluminium oxide or silicon carbide.
- Sandpaper is produced in a range of grit sizes and is used to remove material from surfaces, either to make them smoother (for example, in painting and wood finishing), to remove a layer of material (such as old paint), or sometimes to make the surface rougher (for example, as a preparation for gluing).
- A small number such as 20 or 40 indicates a coarse grit, while a large number such as 1500 indicates a fine grit.

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School of Automotive Skills

Session: 2021-22 (Summer Semester)

B. Voc. Program, 3rd Semester,

1st In-Sem. Examination

Course Code: AUT1304 Time: 1 Hour

Course Name: Automotive Refinish Painting Max. Marks: 20

Instruction: Attempt all Questions.

Section – A

05X01 = 05 Marks

Q-1. Which internal body organ is AFFECTED most from paint material containing organic solvents & 2K hardener?

a. Liver
b. Heart
c. Lungs
d. Stomach

Q-2. What is the recommended intensity of light required in a paint booth?

a. 1000 lux
b. 2000 lux
c. 1500 lux
d. None of the above

Q-3. What is the best way of removing the dust particles after putty dry sanding?

a. Air blowing
b. Cleaning with thinner
c. Cleaning with degreaser
d. Both (a) and (c)

Q-4. What are the primary colors?

a. Red, yellow and blue
b. Green, orange and red
c. Blue, violet and green
d. None of the above

Q-5. Which of the following paint layer is not a part of refinish painting?

a. Electrophoretic dip coat primer
b. Epoxy primer
c. Polyester putty
d. Body filler

Section – B

03X02 = 06 Marks

Q-6. Write a short note on unique hues and combination hues?

Q-7. What is HVLP gun? Write down its application.

Q-8. What is Paint? Name different components of paint

Section – C

03X03 = 09 Marks

Q-9. Explain Hue, Value and chroma.

Q-10. Draw and explain Hue circle diagram.

Q-11. Explain about Inspection angles of paint.

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

Answer key

School of Automotive Skills

Session: 2021-22 (Summer Semester)

B. Voc. Program, 3rd Semester,

1st In-Sem. Examination

Course Code: AUT1304 | Time: 1 Hour

Course Name: Automotive Refinish Painting | Max. Marks: 20

Instruction: Attempt all Questions.

Section – A

05X01 = 05 Marks

Q-1. Which internal body organ is AFFECTED most from paint material containing organic solvents & 2K hardener?

a. Liver
b. Heart
c. **Lungs**
d. Stomach

Q-2. What is the recommended intensity of light required in a paint booth?

a. **1000 lux**
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Q-5. Which of the following paint layer is not a part of refinish painting?

a. **Electrophoretic dip coat primer**
b. Epoxy primer
c. Polyester putty
d. Body filler

Section – B

03X02 = 06 Marks

Q-6. Write a short note on unique hues and combination hues?

Ans 1.Some hue perceptions appear to be combined from other hues. For example, we perceive that orange combines hue aspects of red and yellow

2. Other hue perceptions appear to be unique or not combinations. For example, green is a unique hue. It is not perceived as a combination of blue and yellow.

Q-7. What is HVLP gun? Write down its application.

Ans . 1. HVLP stands for high-volume, low-pressure.

2. These guns use high volume of air to push the paint through the nozzle.

3. Dilute the paint to make it thinner, and spray from a distance of five to eight inches.

4. It decreases the wastage of paint.

Q-8. What is Paint? Name different components of paint

Ans. Paint is a mixture of different chemicals which gives aesthetic appearance, provides strength, prevent from atmospheric conditions.

Paint is made up of five basic elements: -

1. Binder/Resin
2. Pigment
3. Additives
4. Hardener
5. Solvent

Section – C

03X03 = 09 Marks

Q-9. Explain Hue, Value and chroma.

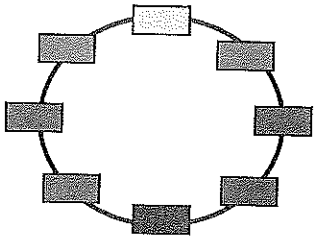
Ans. Hue: - Hue is the most important property of colour as it simply described by simply names of colour. Colour names like red, blue, yellow etc. all are hue names.

Value: - The attribute with which we can classify color on the basis of their lightness and darkness is called value.

Chroma: - The attribute with which we can classify color on the basis of their Brightness and dullness is called chroma.

Q-10. Draw and explain Hue circle diagram.

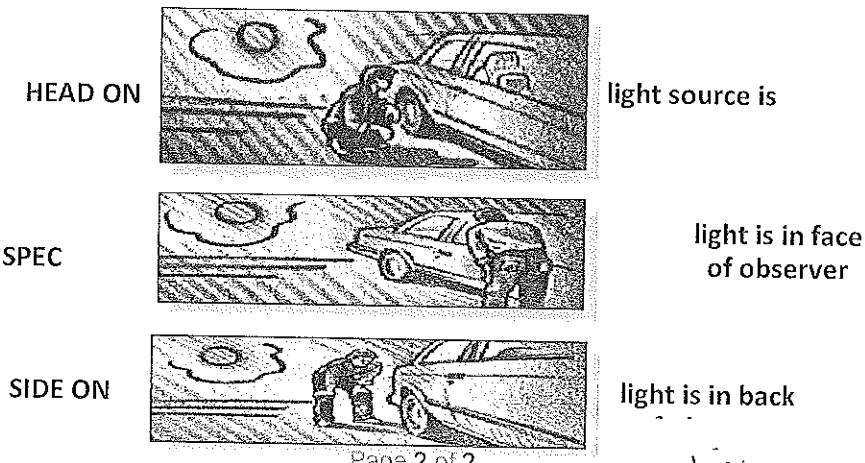
Ans



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-11. Explain about Inspection angles of paint.

Ans 1.



BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

School of Automotive Skills

Session: 2021-22 (Summer Semester)

B. Voc. Program, 3rd Semester,

1st In-Sem. Examination

Course Code: AUT1305 **Time: 1 Hours**

Course Name: Automotive Electrical & A.C. **Max. Marks: 20**

Instruction:

1. Attempt all the questions.
2. Draw neat and clean diagram.

Section – A

5X01 = 5 Marks

1. Ohm's law is applicable to:
   a) Semiconductors
   b) Vacuum tubes
   c) Carbon resistors
   d) None of these
2. Correct form of ohm's law:
   a) $I = VR$
   b) $V \propto I$
   c) $V = IR$
   d) Above B and C
3. Electrical current can only flow in_____electric circuit.
   (A) closed (B) Open
   (C) Both A and B (D) None of these
4. Direction of magnetic field lines inside the magnet:
   (A) North pole to South pole (B) South pole to north pole
   (C) Both A and B (D) None of these
5. 1 microvolt is equal to:
   a) 1×10^{-3} V
   b) 1×10^{-4} V
   c) 1×10^{-5} V
   d) 1×10^{-6} V

Section – B

02X03 = 06 Marks

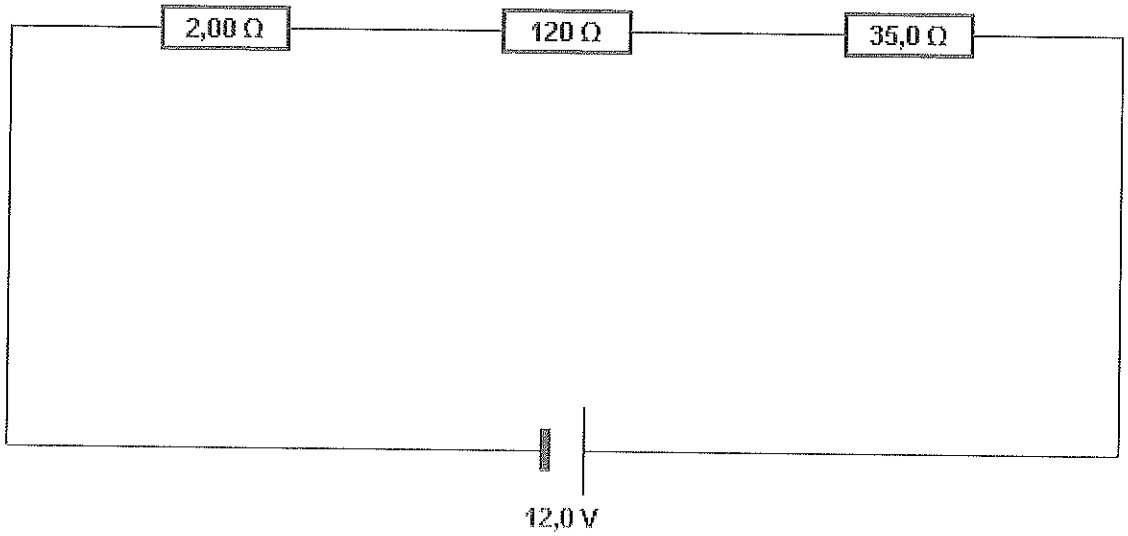
1. Explain Ohms Law.
2. Draw series and parallel connection of circuit?
3. Explain current and voltage.

Section – C

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

03X03 = 09 Marks

1. Explain structure of atom.
2. Draw various electrical symbols.
3. Calculate total resistance, total current and voltage consumption in R1, R2 and R3 of below figure arrangement:



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Registration No.: .....

School of Automotive Skills

Session: 2021-22 (Summer Semester)

B. Voc. Program, 3rd Semester,

1st In-Sem. Examination

Course Code: AUT1305 **Time: 1 Hours**

Course Name: Automotive Electrical & A.C. **Max. Marks: 20**

Instruction:

1. Attempt all the questions.
2. Draw neat and clean diagram.

Answer key

Section – A

5X01 = 10 Marks

1. Ohm's law is applicable to:

   None of these

2. Correct form of ohm's law

   Above B and C

3. Electrical current can only flow in_____electric circuit.

   (A) closed

4. Direction of magnetic field lines inside the magnet:

   (B) South pole to north pole

5. 1 microvolt is:

   1×10^{-6} V

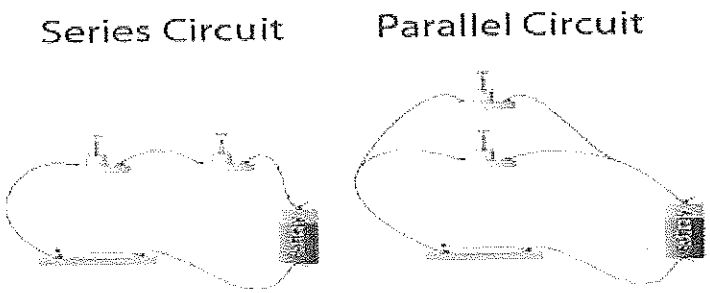
Section – B

02X03 = 6 Marks

1. **Ohm's law** states that the current through a conductor between two points is directly proportional to the voltage across the two points. Introducing the constant of proportionality, the resistance.

2. Circuits

There are two types of circuits: -
1. Series circuit
2. Parallel circuits



3. Voltage

Voltage

The pressure that is put on free electrons that causes them to flow is known as electromotive force (EMF). The volt is the unit of pressure, i.e., the volt is the amount of electromotive force required to push a current of one ampere through a conductor with a resistance of one ohm.

Ampere/current

The ampere defines the flow rate of electric current. For instance, when one coulomb (or 6 x 1018 electrons) flows past a given point on a conductor in one second, it is defined as a current of one ampere.

Section – C

03X03 = 09 Marks

1. Structure of atom

   Atoms consist of three main particles: -

1. Electron

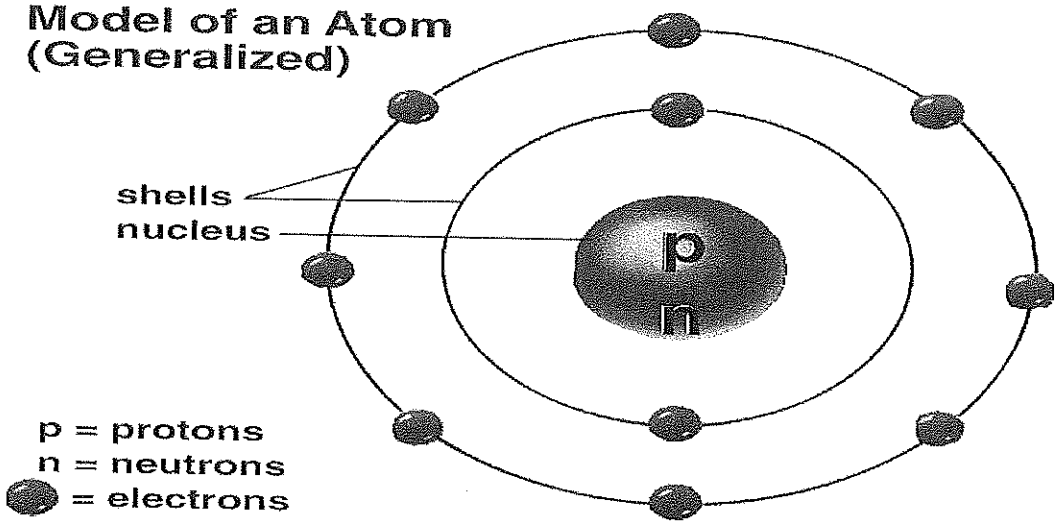
Electron is subatomic particle whose charge is negative, they have no known components and substructure.

2. Proton

Proton is a sub atomic particle with a positive charge and a mass slightly less than that of neutron.

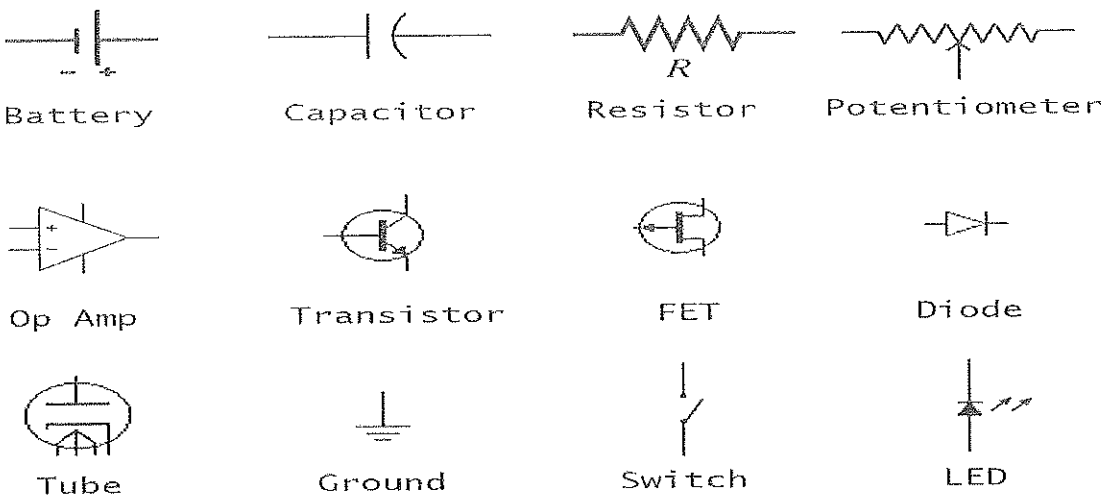
3. Neutron

A subatomic particle of about the same mass as a proton but without an electric charge, present in all atomic nuclei except those of ordinary hydrogen.



2. Symbols

Schematic Symbols



3. Total resistance 200 +120+350= 670

   Total current = 0.06+0.1+0.03=0.19

   Voltage = 0.06*200+0.1*120+0.03*350=12+12+10.50=34.5 Volt