Registration No.: .....

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of Automotive Skills

1st Semester, 2nd In-Sem. Examination

B. Voc. Program, Summer Semester (2018-19)

Course Code: AUT1101 **Time: 1 Hour**

Course Name: Automotive Power Train, Chassis & Suspension

Max. Marks: 20

Instructions:

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) The spur gear has ..... teeth.
   a) Curve
   b) Helical
   c) Straight
   d) All of the above
2) Catalytic converters are emission control devices fitted on the.....
   a) Exhaust system
   b) Cooling system
   c) Intake system
   d) Fuel system
3) A ..... gear is a pair of gears which convert rotational motion into linear motion.
   a) Worm
   b) Helical
   c) Spur
   d) Rack and pinion
4) The ..... is a shaft that transmits power from gear box to the differential.
   a) Propeller shaft
   b) Cam shaft
   c) Crank shaft
   d) All of the above
5) Radiator is also known as .....
   a) Condenser
   b) Air Supplier
   c) Heat exchanger
   d) Intercooler

Section – B

03X02 = 06 Marks

6) What are the major functions of differential?
7) Two gear wheels, which fit together have number of teeth T1=120 and T2= 30. Calculate the speed of the first wheel, if the second wheel rotates at the speed of 240 rpm.
8) Draw a labelled layout diagram of fuel system.

Section – C

03X03 = 09 Marks

9) Discuss the differences between sliding and constant mesh gear box.

10) Describe the working of cooling system in a car.

11) Explain the major components of exhaust system.

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Answer-Key

School of Automotive Skills

1st Semester, 2nd In-Sem. Examination

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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) The spur gear has ..... teeth.

a) Curve
b) Helical
c) Straight
d) All of the above

Ans: - c)

2) Catalytic converters are emission control devices fitted on the.....

a) Exhaust system
b) Cooling system
c) Intake system
d) Fuel system

Ans: - a)

3) A ..... gear is a pair of gears which convert rotational motion into linear motion.

a) Worm
b) Helical
c) Spur
d) Rack and pinion

Ans: - d)

4) The ..... is a shaft that transmits power from gear box to the differential.

a) Propeller shaft
b) Cam shaft
c) Crank shaft
d) All of the above

Ans: - a)

5) Radiator is also known as .....

a) Condenser
b) Air Supplier
c) Heat exchanger
d) Intercooler

Ans: - c)

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Section – B

03X02 = 06 Marks

6) What are the major functions of differential?

Ans: -

A differential is a device, usually employing gears, capable of transmitting torque and rotation through three shafts, almost always used in one of two ways:

- ❖ in one way, it receives one input and
- ❖ provides two outputs

7) Two gear wheels, which fit together have number of teeth T1=120 and T2= 30. Calculate the speed of the first wheel, if the second wheel rotates at the speed of 240 rpm.

Ans: -

Let the speed of 1st gear wheel be N1

We know that,

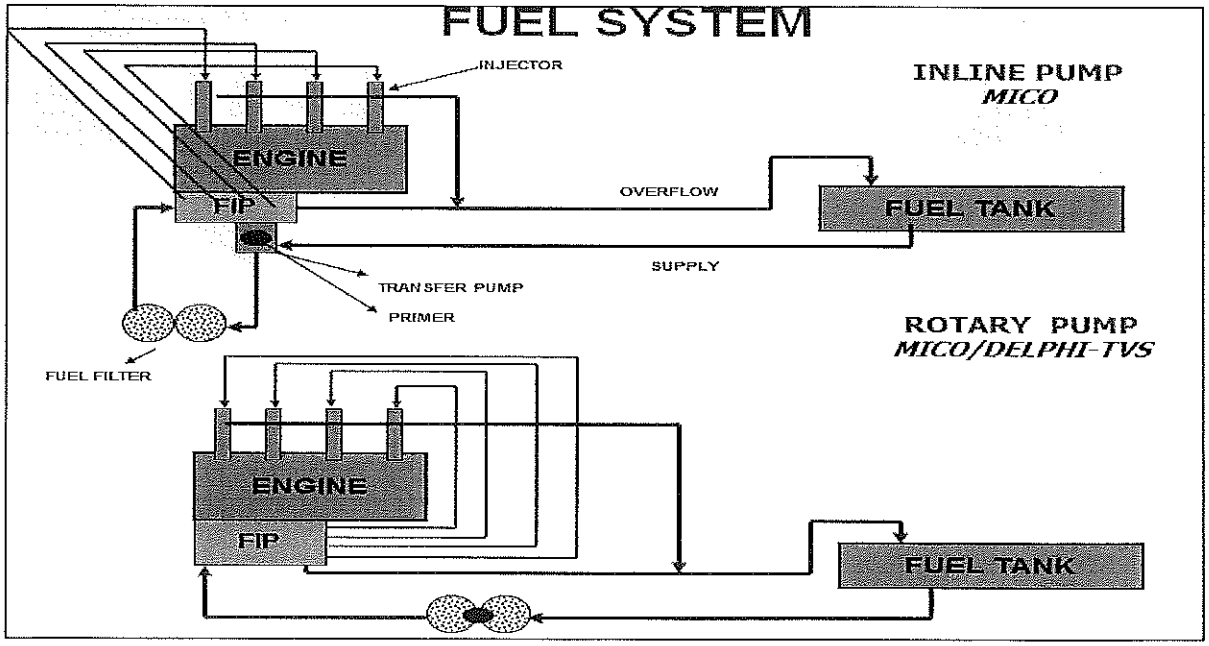
N1xT1=N2xT2

Or, N1x120=240x30

N1= 60 rpm

8) Draw a labelled layout diagram of fuel system.

Ans: -



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Section – C

03X03 = 09 Marks

9) Discuss the differences between sliding and constant mesh gear box.

Ans: - Construction and working of sliding mesh gear box

- Sliding mesh gear boxes are made with spur gear. The gears in the layshaft is rigidly fixed shaft. The gears in main shaft alone can move along the spline.
- The selector fork moves the gear and moves the perfect mesh with the required gear in lay shaft when the gear lever is shifted.
- A idler gear is provided for reverse gearing. Thus the power form the clutch shaft is transmitted to the main shaft through the lay shaft.

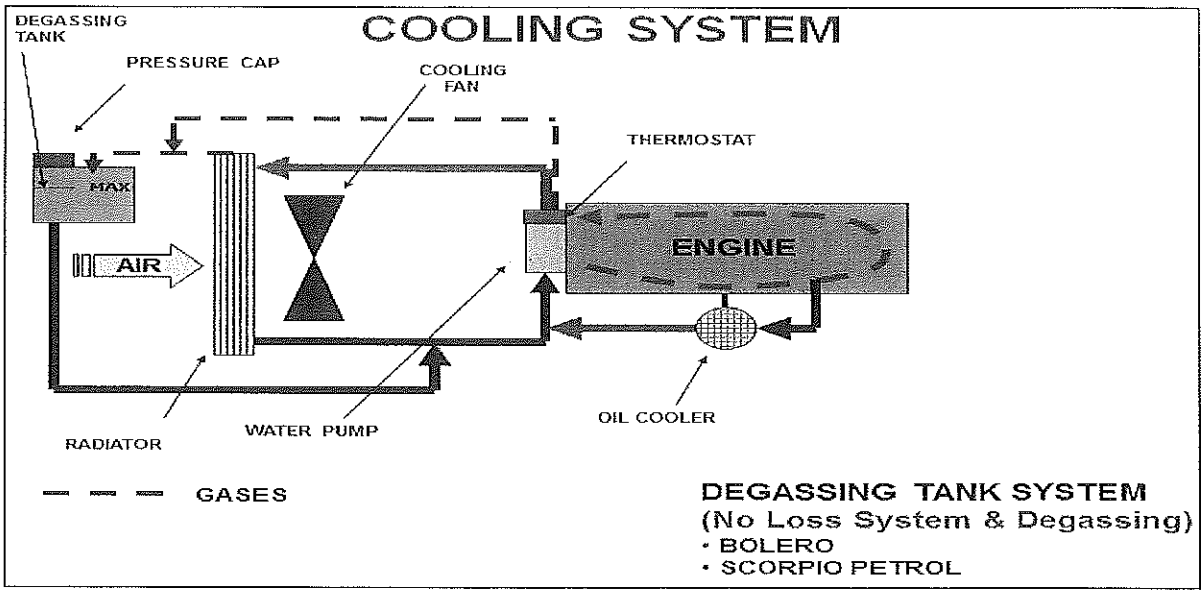
Constant Mesh Gear Box

- The gears on the main shaft which are bushed are free to rotate.
- The dog clutches are provided on main shaft.
- The gears on the lay shaft are, however, fixed.
- When the left Dog clutch is slide to the left by means of the selector mechanism, its teeth are engaged with those on the clutch gear and we get the direct gear.
- The same dog clutch, however, when slide to right makes contact with the second gear and second gear is obtained.
- Similarly, movement of the right dog clutch to the left results in low gear and towards right in reverse gear. Usually the helical gears are used in constant mesh gearbox for smooth and noiseless operation.

10) Describe the working of cooling system in a car.

Ans: -

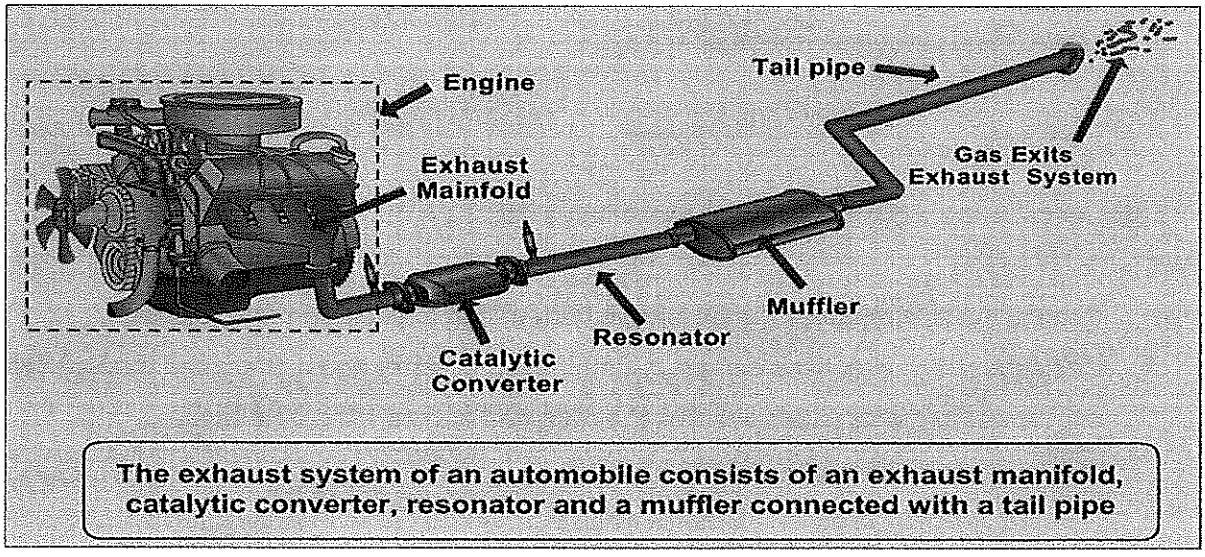
- Cooling system removes the excessive heat of combustion from the engine.
- Cooling system circulates coolant (Combination of water and a chemical) through the engine components which absorbs the heat and transfers the heat to the atmospheric air through a heat exchanger.



11) Explain the major components of exhaust system.

Ans: -

- Exhaust System transports the burned exhaust gases from engine cylinder to atmosphere, towards the rear or to the right side of the vehicle.
- Since the exhaust gases are at higher pressure than atmospheric pressure, the exhaust system has to reduce the pressure of exhaust gases so that there is no noise on discharge to atmosphere.
- Catalytic converter (if fitted) reduces harmful pollutants in the exhaust gases to un-harmful gases.



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Question Paper

School of Automotive Skills

1st Semester, 2nd In-Sem. Examination

B. Voc. Program, Summer Semester (2018-19)

Course Code: AUT1102 **Time: 1 Hour**

Course Name: Automotive Wheel Care & Steering System **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 marks.
3. Answer all questions from section – C, each question carries three marks.

Section – A

05x01 = 05 Marks

Q 1. After puncher of a tubeless tyre how long we can ride it further:

A. 30 miles.

B. 35 miles.

C. 50 miles.

D. 55 miles.

Q 2. What is Gerotor?

A. Negative displacement pump.

B. Positive displacement pump.

C. All of the above.

D. None of the above.

Q 3. Date of manufacturing on a tyre is given as:

A. 13-5-2018.

B. 13/05/2018.

C. 1318.

D. 13/18.

Q 4. Which material is used in manufacturing of wheel rims?

A. Plastic.

B. Fiber.

C. Pressed steel disc.

D. Copper.

Q 5. Aspect ratio of the tyre is how much percentage of the tyre width?

A. 40%

B. 50%

C. 60%

D. 55%

Section – B

03X02 = 06 Marks

Q 6. Define steering system of an automobile and also write down their types.

Q 7. What is the difference between a tubeless tyre and a tube tyre?

Q 8. What is Tyre Pressure Monitoring Sensor (TPMS)?

Section – C

03X03 = 09 Marks

Q 9. Explain the following:

a) Tyre Width.

b) Aspect Ratio.

c) Reinforced.

Q 10. Describe the components of a steering system with their functions.

Q 11. Explain the maintenance of a wheel bearing.

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School of Automotive Skills
1st Semester, 2nd In-Sem. Examination
B. Voc. Program, Summer Semester (2018-19)

Course Code: AUT1102 **Time: 1 hour**
Course Name: Automotive Wheel Care & Steering System **Max. Marks: 20**

ANSWER KEY

Section – A

Q 1. After puncher of a tubeless tyre how long we can ride it further:

Answer – C. 50 miles.

Q 2. What is Gerotor?

Answer – B. Positive Displacement Pump.

Q 3. Date of manufacturing on a tyre is given as
Answer – C. 1318.

Q 4. Which material is used in manufacturing of wheel rims?

Answer – D. Pressed Steel Disc.

Q 5. Aspect ratio of the tyre is how much percentage of the tyre width?
Answer – D. 55%

Section – B

Q 6. Define steering system of an automobile and also write down their types.
Answer – Steering is the collection of components, linkages, etc. which allows any vehicle to follow the desired course. The primary purpose of the steering system is to allow the driver to guide the vehicle.

Types of steering system:

1. Hydraulic steering system.
2. Electric steering system.

Q 7. What is the difference between a tubeless tyre and a tube tyre?

Answer –

TUBE TYRE	TUBELESS TYRE
A tube inside a tire would simply collapse in case of puncture and the air in the tyre goes out in no time.	Tubeless tyre retains air pressure and helps avoid sudden air loss in the case of a puncture.

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TUBE TYRE	TUBELESS TYRE
Fuel Efficiency	
Tube tyres are not so fuel efficient when compared to tubeless tyres.	Tubeless tyres are more fuel efficient.
Weight	
Tube tyres weigh more because of the tube placed inside them.	Tubeless tyres are light weight because of no tube inside the tyre.
In case of puncture	
The tube in the tube tyres will explode suddenly in case of puncture causing loss of control of the vehicle which may result in accidents.	Tubeless tyres make driving safe and easy and there is no loss of control of the vehicle in case of puncture.
Repair Process	
The puncture repairing process of tube tyre involves a complicated process of removing the tyre from the vehicle and removing tube from the tyre, etc.	The puncture repairing process of a tubeless tyre can be done without removing the tyre and is very simple compared to a tubed tyre.
Cost of Tyre	
The tube tyres are of less cost and are available in every size for every vehicle.	The tubeless tyres are costly and are not available for all types of vehicles.
Punctures	
The tube tyres are more prone to punctures because of the tubes placed in them.	The tubeless tyres are durable and last longer because of no tube is placed in them.
Repair Cost	
The tube tyre puncture repair cost is less when compared to that of the tubeless tyre.	The tubeless tyre puncture repair cost is very high and can be repaired instantly.

Q 8. What is Tyre Pressure Monitoring Sensor (TPMS)?
Answer – A tire-pressure monitoring system (TPMS) is an electronic system designed to monitor the air pressure inside the pneumatic tires on various types of vehicles. TPMS report real-time tire-pressure information to the driver of the vehicle, either via a gauge, a pictogram display, or a simple low-pressure warning light. TPMS can be divided into two different types – direct (dTPMS) and indirect (iTPMS). TPMS are provided both at an OEM (factory) level as well as an aftermarket solution. The target of a TPMS is avoiding traffic accidents, poor fuel economy, and increased tire wear due to under-inflated tires through early recognition of a hazardous state of the tires.

Section – C

Q 9. Explain the following:

a) Tyre Width.

b) Aspect Ratio.

c) Reinforced.

Answer-

a) Tyre width: The first three digits. This displays the width of the tyre in millimeters. A tyre marked 225 will measure 225mm across the tread from sidewall to sidewall.
b) Aspect ratio: The fourth and fifth digits of the tyre code that immediately follow the tyre width. So an aspect ratio of 55 for example means that the profile height of the tyre is 55% of its width.
c) Reinforced: Tyres with an increased load index are often marked to show that they have been reinforced to handle extra weight. This varies from one manufacturer to the next but look out for the following symbols which are used to identify if the tyre has been reinforced.

Q 10. Describe the components of a steering system with their functions.

Answer –

1. **Steering Wheel -** Steering wheels are used in most modern vehicles like buses, light and heavy trucks, and tractors. The steering wheel is the part of the steering system that is manipulated by the driver the rest of the steering system responds to such driver inputs.

2. **Steering Column -** The automotive steering column is a device intended primarily for connecting the steering wheel to the steering mechanism or transferring the driver's input torque from the steering wheel.

3. **Universal Joint –**

    a. In most cars with an intermediate steering shaft, there are two U-Joint couplings.

    b. The top U-Joint connects the intermediate shaft to the steering column.

    c. The lower U-Joint connects the intermediate shaft to the steering rack.

4. **Steering Gear Box -** The steering gearbox contains the gears that transmit the driver's steering inputs to the steering linkage that turns the wheels, and it multiplies the driver's steering changes so that the front wheels move more than the steering wheel.

5. **Steering Pump** - The hydraulic power for the steering is provided by a rotary-vane pump. This pump is driven by the car's engine via a belt and pulley. It contains a set of retractable vanes that spin inside an oval chamber.
6. **Oil Reservoir** - The oil reservoir sends the oil to the power steering pump and receives the oil from the power steering gear.

Q 11. Explain the maintenance of a wheel bearing.

Answer –

Step 1. Prepare the vehicle.

Step 2. Remove wheel and brake unit.

Step 3. Removing the bearing hub assembly.

- Remove the dust cap and remove the locking device. This is usually a cotter pin through the nut & spindle.

Step 4. Remove hub seal.

- Using a long dowel pin or drift & using a hammer, gently drive on the front of the inner hub bearing from inside the hub unit.

Step 5. Clean and check the oil bearing.

- Use a paper towel to wipe all of the old bearing grease from the spindle and the hub dust cap.
- Clean the bearing with solvent & air dry on a paper towel or blow it dry with compressed air.

Step 6. Inspect the bearing.

- Inspect the bearing and it's housing, which is called the "Bearing Race," for damage.
- If you see any pitting or damage, replace all the bearing set.

Step 7. Re-pack Grease into bearing.

- Check your shop manual to see which grease is recommended for the vehicle and its application. The most common method is to pack the bearings by hand.

Step 8. Grease inside the hub and dust cap.

- Put a small amount of grease in the cavity of the hub.
- Also pack some grease into the dust cap. Fill it about one-third, not all the way up.

Step 9. Reinstall the bearing seal.

- Re-install the bearing in the same bearing race. Leave a ring of grease below the bearing race to help keep the fresh grease inside the bearing area after it heats up.

Step 10. Inspect the sealing area of the spindle.

- Inspect the sealing area of any signs of wear or damage. If the seal area is worn or grooved.

Step 11. Reinstall bearing hub assembly.

- Slide the hub assembly onto the spindle and ensure it site on the sealing area.
- Put the outer bearing in place.

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School of Automotive Skills

I Semester, 2nd In-Sem. Examination

B. Voc. Program, Summer Semester (2018-19)

Course Code: AUT1103 **Time: 1 Hour**

Course Name: AUTOMOBILE BODY REPAIR **Max. Marks: 20**

Instruction:

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

Section – A

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

Q 1. Which of the following is Destructive Type of testing method?

a) Visual Inspection
b) Tensile Testing
c) X-ray Testing
d) Fold Testing

Q 2.....is the example of an Inert gas.

a) Carbon dioxide
b) Hydrogen
c) Helium
d) Argon

Q 3. MIG Welding is always performed on Alternating Current.

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

Q 4. Heat Generation in welding can be expressed as.....

a) $Q = I^2R\,T$
b) $Q = IR^2\,T$
c) $Q = IRT^2$
d) $Q = I^2RT^2$

Q 5. Sheet metal used for decorative uses is .....

a) Brass
b) Silver
c) Steel
d) Aluminum

Section – B

03X02 = 06 Marks

Q 6. Draw the diagrams of any four weld seam symbols.

Q 7. Write an brief about soldering.

Q 8. Write difference between soldering and brazing.

Section – C

03X03 = 09 Marks

Q 9. Discuss the process of MIG\MAG welding.

Q 10. Explain the process of Resistance Spot Welding.

Q 11. What are the advantages of plasma cutting?

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Answer - Key

School of Automotive Skills

I Semester, 2nd In-Sem. Examination

B. Voc. Program, Summer Semester (2018-19)

Course Code: AUT1103 **Time: 1 Hour**

Course Name: AUTOMOBILE BODY REPAIR **Max. Marks: 20**

Instruction:

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

Section – A

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

Q 1. Which of the following is Destructive Type of testing method?

a) Visual Inspection
b) Tensile Testing
c) X-ray Testing
d) Fold Testing

Answer: b

Q 2.....is the example of an Inert gas.

a) Carbon dioxide
b) Hydrogen
c) Helium
d) Argon

Answer: d

Q 3. MIG Welding is always performed on Alternating Current.

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

Answer: b

Q 4. Heat Generation in welding can be expressed as.....

a) $Q = I^2R\,T$
b) $Q = IR^2\,T$
c) $Q = IRT^2$
d) $Q = I^2RT^2$

Answer: a

Q 5. Sheet metal used for decorative uses is .....

a) Brass
b) Silver
c) Steel
d) Aluminum

Answer: b

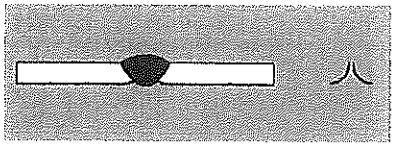
Section – B

03X02 = 06 Marks

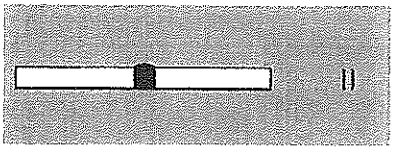
Q 6. Draw the diagrams of any four weld seam symbols.

Answer:

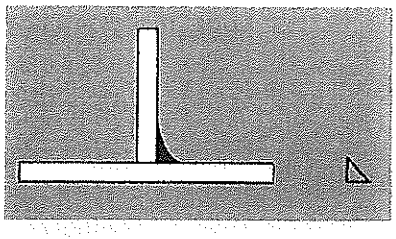
The different welding seam symbol are:



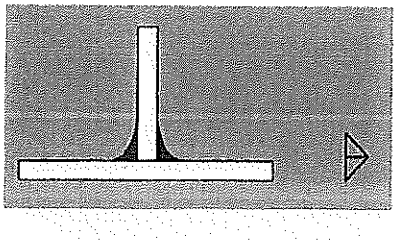
▶ Flanged seam



▶ I-groove weld



▶ Fillet weld



▶ Double fillet weld

Q 7. Write brief about soldering.

Answer:

Solder is an alloy of Tin and Lead.

The solder used for electronics is frequently called 60/40 solder because it is made of 63% tin and 37% lead. 60/40 solder melts at 361° F. Multi-core solder is the usual form for electrical work

Q 8. Write difference between soldering and brazing.

Answer:

	Soldering	Brazing
1	**It is used in electrical industries to joint capacitor,**	**It is used in mechanical industries to joint different metals.**

	resistor, wire etc. to the electronic plate.	
2	**soldering is done temperature below 400°C**	**Brazing is done at temperature above 450°C but below the critical temperature of metal.**
3	**These joint are weaker than brazing joints.**	**It forms stronger joints.**
4	**In soldering an alloy of lead and tin is used known as solder.**	**In brazing an alloy of copper and zinc is used as a filler metal.**
5	**It is a cheaper process.**	**It is a costly process.**
6	**Soldering does not need to preheat the base metal**	**This process need preheating of base metal.**
7	**It is used to join electronic components.**	**It is used in automotive industries and pipe fitting.**
8	**This process is very flexible and easy to automate.**	**It is not easy for automation except automation is done at automotive industries.**

Section – C

03X03 = 09 Marks

Q 9. Discuss the process of MIG\MAG welding.

Answer: Metal Gas Shielded welding predominates in many production areas and more and more welding work is being performed using this process. The main reasons for this are:

- Can be used from a wall thickness of approx. 0.6 mm.
- Continuous welding without changing the electrodes
- High melting deposition rate
- Targeted heat input
- No or very little slagging

MIG Welding

1) Metal Inert Gas Welding takes its name from the use of inert gases such as Argon, Helium and mixture of the two gases.
2) Spray Arc and pulse ac are the most common arc types.
3) This process is used for Non-Ferrous metals.
4) Inert gases are Nobel gases that form no chemical reaction with the weld metal.

Some examples of the Inert Gases:

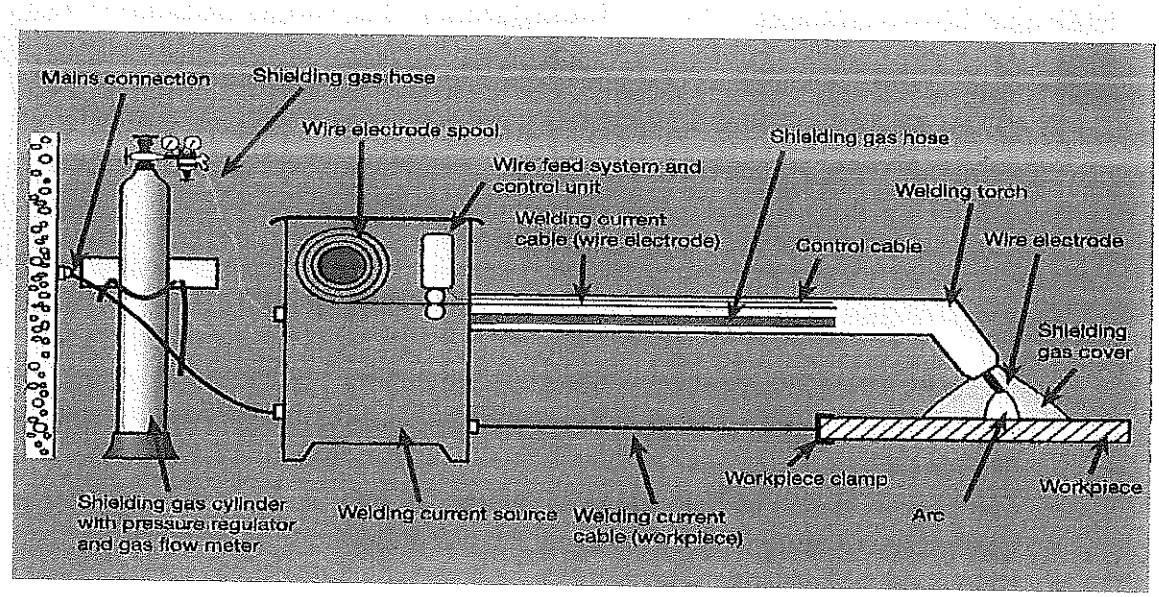
- Helium
- Argon
- Neon
- Xenon
- Krypton
- radon

MAG Welding

1) Metal Active Gas Welding takes its name from the active welding gas used (CO_2 or gas mixture(Argon containing active gas, two or three components)).
2) Long and short arc are used during MAG welding.
3) MAG welding is a steel welding process.
4) Active gases reacts chemically with other substances but do not have an oxidizing effect on the weld metal.

Some examples of the Active Gases:

- carbon dioxide
- Oxygen
- nitrogen
- hydrogen



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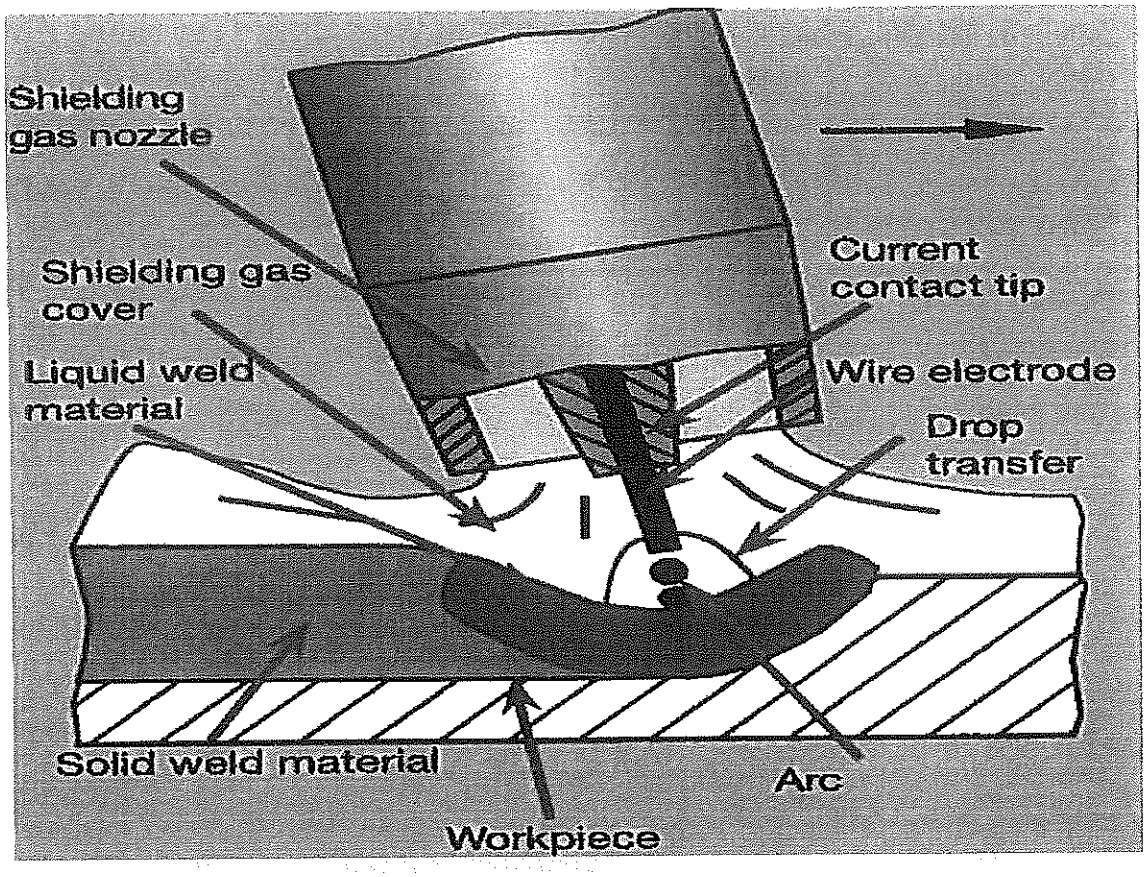
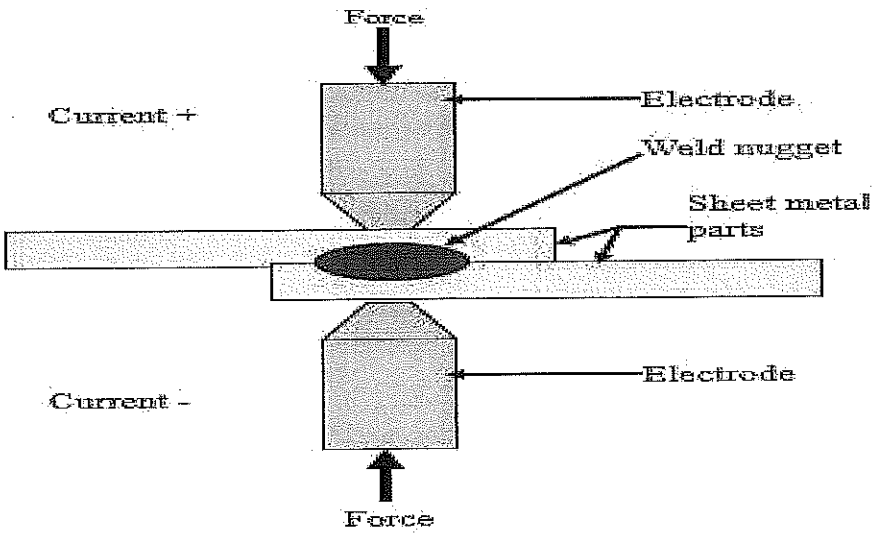


Q 10. Explain the process of Resistance Spot Welding.

Answer: The fundamental principle on which all resistance welding is based on:



- Heat generated due to the resistance offered by the parts to the passage of heavy electric current for a fraction of a second.
- Heat produce at the junction is calculated by the formula

$H = I^2RT$

Where, H= Heat

I= current

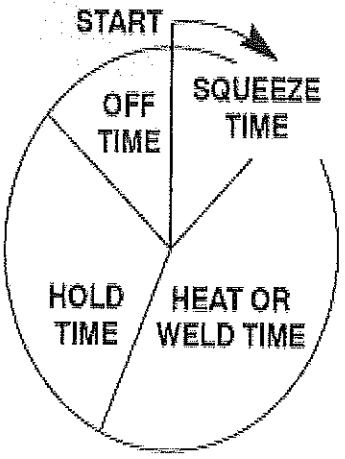
R= Resistance of the conductor

T= Time of current flow

How does it work?

- Resistant spot welding works because the copper electrodes are brilliant at conducting electricity and the electricity wants to travel through the steel to reach the other electrode.
- The steel, on the other hand wants to stop the electricity travelling through it and resists the flow.
- It's the resistance that causes the heat that melts the metal and forms what will be the 'weld nugget'.
- When the steel cools down, the melted metal will harden and form the finished weld nugget.

Welding Spot Time Cycle



Squeeze Time
Time between pressure application and weld.

Heat Or Weld Time
Weld time in cycles.

Hold Time
Time that pressure is maintained after weld is made.

Off Time
Electrodes separated to permit moving of material for next spot.

Q 11. Describe the sheet metal shearing process.

Ans:- **Shearing processes** -- processes which apply shearing forces to cut, fracture, or separate the material.

1. **Punching:** shearing process using a die and punch where the **interior** portion of the sheared sheet is to be **discarded.**
2. **Blanking:** shearing process using a die and punch where the **exterior** portion of the shearing operation is to be **discarded**.
3. **Perforating**: punching a number of holes in a sheet

4. **Parting:** shearing the sheet into two or more pieces
5. **Notching:** removing pieces from the edges
6. **Lancing:** leaving a tab without removing any material

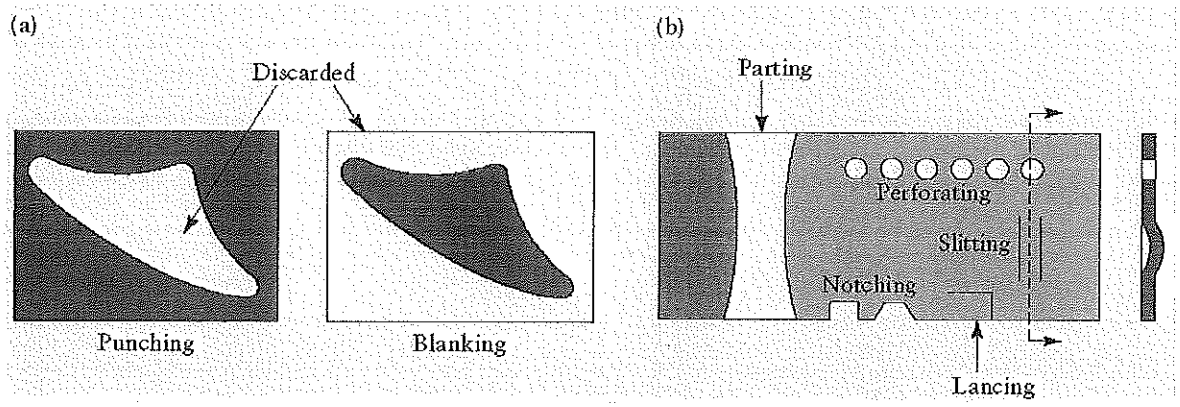


Fig.1Shearing Operations: Punching, Blanking and Perforating

Registration No.: .....

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School of Automotive Skills

1st Semester, 2nd In-Sem. Examination

B. Voc. Program, Summer Semester (2018-19)

Course Code: AUT1104 **Time: 1 Hour**

Course Name: Automotive spray painting **Max. Marks: 20**

Instructions: 1. Attempt all questions from section-A and each question carries 1 mark.

2. Attempt all questions from Section-B and each question carries 2 marks.

3. Attempt all questions from Section-C and each question carries 3 marks.

Section-A 5x1=5 Marks

Q-1. The substance used for quick drying of putty is...

a. Spray Gun
c. Thinner
b. Hardener
d. None of these

Q-2. The Spray Pattern of the spray gun should be..... in shape.

a. Oval
c. Eclipse
b. Circular
d. None of the above

Q-3. The equipment used to purify the breathing air in paint booth is...

a. Mask and respirator
c. Hand gloves
b. Dry Sander
d. All of the above

Q-4. The equipment used to remove the extra putty from the surface during surface preparation Process is...

a. Putty Spreader Sheet
c. Spray gun
b. Dry Sander
d. None of the above

Q-5. The equipment used to spread the putty on the surface during surface preparation is...

a. Sand blocks
c. Putty spreader sheets
b. Dent puller
d. None of these

Section-B 3x2=6 Marks

Q-6. Why do we use dust extraction machine in paint shop?

Q-7. Explain HVLP gun used in paint shop with its application.

Q-8. Write different properties of surface primer.

Section-C

3x3=9 Marks

Q-9. Explain differences between primer and surface primer.

Q-10. What is sanding? Explain different types of sanding.

Q-11. Explain the working of paint booth.

Registration No.: .....

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Answer - key

School of Automotive Skills

1st Semester, 2nd In-Sem. Examination

B. Voc. Program, Summer Semester (2018-19)

Course Code: AUT1104

Time: 1 Hour

Course Name: Automotive spray painting

Max. Marks: 20

Instructions: 1. Attempt all questions from section-A and each question carries 1 mark.

2. Attempt all questions from Section-B and each question carries 2 marks.

3. Attempt all questions from Section-C and each question carries 3 marks.

Section-A

5x1=5 Marks

Q-1. The substance used for quick drying of putty is...

a. Spray Gun
b. Hardener
c. Thinner
d. None of these

Ans Hardener

Q-2. The Spray Pattern of the spray gun should be..... in shape.

a. Oval
b. Circular
c. Eclipse
d. None of the above

Ans Oval

Q-3. The equipment used to purify the breathing air in paint booth is...

a. Mask and respirator
b. Dry Sander
c. Hand gloves
d. All of the above

Ans Mask and Respirator

Q-4. The equipment used to remove the extra putty from the surface during surface preparation Process is...

a. Putty Spreader Sheet
b. Dry Sander
c. Spray gun
d. None of the above

Ans Dry Sander

Q-5. The equipment used to spread the putty on the surface during surface preparation is...

a. Sand blocks
b. Dent puller
c. Putty spreader sheets
d. None of these

Ans Putty Spreader Sheets

Section-B

3x2=6 Marks

Q-6. Why we use dust extraction machine in paint shop?

Ans We use dust extraction during the dry sanding of putty and primer to extract the dust created at the time of sanding. It helps to keep the workshop clean as it keeps the dust in a closed tank.

Q-7. Explain HVLP gun used in paint shop with its application.

Ans

- HVLP stands for high-volume, low-pressure.
- These guns use high volume of air to push the paint through the nozzle.
- Dilute the paint to make it thinner, and spray from a distance of five to eight inches

Q-8. Write different properties of surface primer.

Ans

Adhesion – they provide a strong bond between the sheet metal or old paint and the new paint

- Rust resistance – they resist the formation of rust where they adhere to the sheet metal
- Build– they're able to fill sanding and grinding marks in old paint, sheet metal and fillers
- Sanding ease – they can be sanded smooth and levelled quickly and easily
- Hold out – they prevent the paint from soaking in, which results in a dull finish
- Drying speed – a good high-build primer should be ready to sand in as little as 30 minutes

Section-C

3x3=9 Marks

Q-9. Explain differences between primer and surface primer.

Ans **Primer:-**

1. It is 1-k product.
2. It is used on bare metal.
3. It prevents the metal from rust.

Surface primer:-

1. It is a 2-k product.
2. It is used after primer.
3. It has properties like adhesion, hole filling etc.

Q-10. What is sanding? Explain different types of sanding.

Ans Sanding removes the top layer of your car's paint using abrasive materials.

It also helps to make the surface even after the putty application by removing extra putty from the surface.

Water sanding: -

Water or wet sanding is done by immersing the sandpaper in a bucket of water.

It produces less dust and reduces life of the sandpaper.

Dry sanding: -

Dry sanding is applied directly on the surface.

This type of sanding causes excessive dust resulting abrasive action of the grain on the surface

Q-11. Explain the working of paint booth.

Ans

- Paint booths are walled structures used to safely contain painting and other finishing processes.
- Paint booths are present in a variety of industries including automotive, aviation, manufacturing, millworks, and many more.

In general, there are two types of paint booths:

- Non-ducted (open face)

  Directly ducted (enclosed)

Registration No.: .....

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Question Paper

School of Automotive Skills

1st Semester, 2nd In-Sem. Examination

B. Voc. Program, Summer Semester (2018-19)

Course Code: AUT1105 **Time: 1 Hour**

Course Name: Automotive electrical fundamental &air conditioning **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 marks.
3. Answer all questions from section – C, each question carries three marks.

Section – A

05x01 = 05 Marks

Q 1. What is the unit of current?

A. Volt.
C. ohm.
B. ampere.
D. none of above.

Q 2. Which type of circuits have same voltage and different current?

A. Series circuit.
C. Both A & B
B. Parallel circuit.
D. None of the above.

Q 3. Resistance will increase as..

A. Length of the conductor increases.
C. Decrease in temperature.
B. Cross sectional area of the conductor increases.
D. All of the above.

Q 4. Current flows in the direction of....

A. Drift of electrons.
C. Opposite to the direction of drift of electron.
B. Drift of ions.
D. Both B & C.

Q 5. Is it possible to flow the current through any insulator?

A. Yes, it is possible.
C. Insulator is a bad conductor.
B. Not possible.
D. None of the above.

Section – B

03X02 = 06 Marks

Q 6. Define voltage, current and resistance.

Q 7. Give any six (6) cable color codes.

Q 8. What is ohm's law? Write its statement.

Section – C

03X03 = 09 Marks

Q 9. Give any two difference between series, parallel and series - parallel circuit.

Q 10. Why we use Grounding? What is the Electrical symbol for grounding?

Q 11. What is the basic principle for the flow of electric current?

Registration No.: .....

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Answer sheet

School of Automotive Skills

1st Semester, 2nd In-Sem. Examination

B. Voc. Program, Summer Semester (2018-19)

Course Code: AUT1105 **Time: 1 Hour**

Course Name: Automotive electrical fundamental &air conditioning **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 marks.
3. Answer all questions from section – C, each question carries three marks.

Section – A

05x01 = 05 Marks

Q 1. What is the unit of current?

Answer: ampere.

Q 2. Which type of circuits have same voltage and different current?

Answer: Parallel circuit

Q 3. Resistance will increase as..

Answer: Length of the conductor increase

Q 4. Current flows in the direction of....

Answer: Opposite to the direction of drift of electron

Q 5. Is it possible to flow the current through any insulator?

Answer: Yes, it is possible.

Section – B

03X02 = 06 Marks

Q 6. Define voltage, current and resistance.

Answer:

Voltage: voltage is also called as electromotive force; it is a quantitative expression of potential difference in charge between two points in an electric field.

Resistance: Resistance Is a measure of its opposition to the current flow in electric current, Resistance is measured in Ohm. It is symbolized by the Greek letter omega.

Current: electric current is the flow of electric charge. In electric circuits this charge is often carried by moving electrons in wire. It can also be carried by ions in an electrolyte or both by electrons and ions

Q 7. Give any six (6) cable color codes.

Answer:

1. RED-BLCK
2. RED-YLW
3. WHT-BLCK
4. LT GRN-WHT
5. GRN-YLW
6. PNK-WHT

Q 8. What is ohm's law? Write its statement.

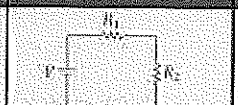
Answer:

Potential difference across the ideal conductor is proportional to the current through to it. The constant of proportionality is called the resistance R.

Section – C

03X03 = 09 Marks

Q 9. Give any two difference between series, parallel and series - parallel circuit.

	Series	Parallel
How it looks		
Current	Always remains same in series	Divides in parallel
Voltage	Divides in parallel	Remains same in series
Equivalent resistance	$R_{eq} = R_1 + R_2 + R_3$	$\frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \cdots \frac{1}{R_n}$

Q 10. Why we use Grounding? What is the Electrical symbol for grounding?

Answer: The process of transferring the **immediate discharge of the electrical energy directly to the earth by the help of the low resistance wire** is known as the electrical **earthling**

Q 11. What is the basic principle for the flow of electric current?

Answer: 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.

Registration No.: .....

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School of Automotive Skills

1st Semester, 2nd In-Sem. Examination

B. Voc. Program, Summer Semester (2018-19)

Course Code: AUT1106 **Time: 1 Hour**

Course Name: Automotive tools and measurement **Max. Marks: 20**

Instructions: 1. Attempt all questions from section-A and each question carries 1 mark.

2. Attempt all questions from Section-B and each question carries 2 marks.

3. Attempt all questions from Section-C and each question carries 3 marks.

Section-A

05X01 = 05 Marks

1. (a) The cold chisel is a hand cutting tool used by fitters for.....(chipping/filing).
   (b) ..... (Cross-Cut/Flat) chisels are used to remove metal from large surfaces.

2. (a) The angle between top face of cutting point and normal to work surface at cutting edge is known as ..... (Clearance/Rake) angle.
   (b) The major parts of a hammer are a ..... (Face/Head) and a handle.

3. (a) An engineer's hammer is specified by their ..... (Length/Weight) and shape of the peen.
   (b) Standard wooden mallets are used for general purpose work like .....(Stretching/Flattening).

4. (a) Numeric values are obtained in.....(measuring/gauging).
   (b) Spanners are used for operating.....(Threaded fasteners/Nails).

5. (a) Still son pipe wrenches are used for gripping and turning of .....(pipes/bolts)
   (b) In India, we are using.....(first/third) angle of projection.

Section-B

03X02 = 06 Marks

6. What is tolerance?
7. Write down the names of all six general workshop operations for which a hammer is used.
8. Write down different types of wrenches.

Section-C

03X03 = 09 Marks

9. Write short notes on Spanners and their uses.
10. What is scaling? Explain types of scaling.
11. List out six major equipment of an automotive workshop and mention the applications of each.

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of Automotive Skills

1st Semester, 2nd In-Sem. Examination

B. Voc. Program, Summer Semester (2018-19)

Course Code: AUT1106 **Time: 1 Hour**

Course Name: Automotive tools and measurement **Max. Marks: 20 marks**

Instruction: Attempt all questions.

Section-A

05X01 = 05 Marks

1. (a) The cold chisel is a hand cutting tool used by fitters for **Chipping** (chipping/filing).
   (b) **Flat** (Cross-Cut/Flat) chisels are used to remove metal from large surfaces.

2. (a) The angle between top face of cutting point and normal to work surface at cutting edge is known as **Rake** (Clearance/Rake) angle.
   (b) The major parts of a hammer are a **Head** (Face/Head) and a handle.

3. (a) An engineer's hammer is specified by their **Weight** (Length/Weight) and shape of the peen.
   (b) Standard wooden mallets are used for general purpose work like **Flattening** (Stretching/Flattening).

4. (a) Numeric values are obtained in **Measuring** (measuring/gauging).
   (b) Spanners are used for operating **Threaded fasteners** (Threaded fasteners/Nails).

5. (a) Still son pipe wrenches are used for gripping and turning of **Pipes** (pipes/bolts)
   (b) In India, we are using **First** (first/third) angle of projection.

Section-B

03X02 = 06 Marks

6. What is tolerance?

Ans It can also be defined as the total variation permitted in the size of a dimension, and is the algebraic difference between the upper and lower acceptable dimensions. It is an absolute value.

The basic purpose of providing tolerances is to permit dimensional variations in the manufacture of components, adhering to the performance criterion as established by the specification and design

7. Write down the names of all six general workshop operations for which a hammer is used.

Ans An engineer's hammer is a hand tool used for striking purposes while:

a. Punching
b. Bending
c. Straightening
d. Chipping
e. Forging
f. Riveting

8. Write down different types of wrenches.

Ans Types of Wrenches:

- Still Son Pipe Wrench
- Footprint Pipe Wrench
- Tension Wrench
- Hexagon Socket Wrench

Section-C 03X03 = 09 Marks

9. Write short notes on Spanners and their uses.

Ans Spanners are used for operating: **(1 mark)**

a. Threaded Fasteners
b. Bolts
c. Nuts

Spanners are made with jaws or opening that fit square or hexagonal nuts and bolts and screw heads. They are made of High Tensile or alloy steel. They are drop forged and heat treated for strength. They are given a smooth surface finish for easy gripping. **(1 mark)**

The basic types of spanners are:

- Open end spanners
- Tube or tubular box spanners
- Socket Spanners
- Ring Spanners

The correct spanner to use is the one that fits exactly and allows room for use. They should also permit the job to be done in shorter time. **(1 mark)**

10. What is scaling? Explain types of scaling.

Ans:- Scaling is defined as the enlarging or reducing of actual drawing for purpose of easy understanding and reading.

Types of scaling:-

1. Reducing scale

2. Enlarging scale

3. Actual/same scale

11. List out six major equipment of an automotive workshop and mention the applications of each.

Ans:- Two post lift: lifting car in various position **(0.5 marks)**

Tyre changer: for installing and uninstalling tyre from wheel**(0.5 marks)**

Wheel Aligner: for adjusting alignment of wheels including angles like camber castor and king pin inclination**(0.5 marks)**

Wheel balancer: for balancing the wheels**(0.5 marks)**

Car washing system: for cleaning and washing the car**(0.5 marks)**A.C. recycling machine: for servicing and re charging the car A.C. system**(0.5 marks)**