



Registration No.....

SCHOOL OF AUTOMOTIVE SKILLS
2nd IN-SEMESTER EXAMINATION – 18
WINTER SEMESTER, B.VOC. COURSE

Session: 2107-18

Course Code: AUT1001

Time: 1 Hour

Course name: Automotive Power Trains, Chassis & Suspension

Max. Marks: 20

Instructions: Attempt all questions.

Section (A)

5X1=5 Marks

Directions: Select any one correct answer from the given options:

Q1. When brakes are applied on a moving vehicle; the kinetic energy is converted to...

- a. Mechanical energy
- b. Heat energy
- c. Electrical energy
- d. Potential energy

Q2. Hydraulic brakes function on the principle of...

- a. Law of conservation of momentum
- b. Law of conservation of energy
- c. Pascal's law
- d. None of the above

Q3. Full form of ABS is...

- a. Anti-lock braking system
- b. Anti-skid braking system
- c. Both (A) & (B)
- d. None of above

Q4. The process of removing air from the brake system is known as...

- a. Bleeding
- b. self-energizing
- c. servo action
- d. Energization

Q5. Compression ratio is defined as...

- a. Ratio of total cylinder volume to clearance Volume.
- b. Ratio of clearance volume to Sweft volume
- c. Ratio of clearance volume to total cylinder volume
- d. None of above

Section (B)

3X2=6 Marks

Q6. Explain different types of gears with their application

Q7. Write four differences between SI engine & CI engine.

Q8. What is the role of differential in the drive line of a vehicle?

Section (C)

3X3=9 Marks

Q9. Explain MPFI System? What are the advantages of MPFI System?

Q10. Write down the difference between single plate clutch & Multiplate clutch.

Q11. Explain exhaust components with neat sketch.

Registration No.....

SCHOOL OF AUTOMOTIVE SKILLS
2nd IN-SEMESTER EXAMINATION – 18
WINTER SEMESTER, B.VOC. COURSE

Session: 2107-18

Course Code: AUT1001

Time: 1 Hour

Course name: Automotive Power Trains, Chassis & Suspension

Max. Marks: 20

Instructions: Attempt all questions.

Section (A)

5X1=5 Marks

Directions: Select any one correct answer from the given options:

Q1. When brakes are applied on a moving vehicle; the kinetic energy is converted to...

- a. Mechanical energy
- b. Heat energy**
- c. Electrical energy
- d. Potential energy

Q2. Hydraulic brakes function on the principle of...

- a. Law of conservation of momentum
- b. Law of conservation of energy
- c. Pascal's law**
- d. None of the above

Q3. Full form of ABS is...

- a. Anti-lock braking system
- b. Anti-skid braking system
- c. Both (A) & (B)**
- d. None of above

Q4. The process of removing air from the brake system is known as...

- a. Bleeding**
- b. self-energizing
- c. servo action
- d. Energization

Q5. Compression ratio is defined as...

- a. Ratio of total cylinder volume to clearance Volume.**
- b. Ratio of clearance volume to Swept volume
- c. Ratio of clearance volume to total cylinder volume

- d. None of above
- e. Explain different types of gears with their application

Section (B)

3X2=6 Marks

Q6. Explain different types of gears with their application

Ans.

Spur Gear

The most common and easy to produce parallel shaft cylindrical gears. Of a pair of gears, the larger one is called a gear and the smaller one a pinion.

Helical Gear

Quiet and able to transmit larger torque than spur gears. Cylindrical gears with spiral shaped tooth trace

Bevel Gear

Cone shaped gears used in intersecting shaft applications. There are also bevel gears with spiral shaped tooth trace called spiral bevel gears.

Worm Gear

Used when a large speed reduction is needed. Worm and worm gear set. Normally, different materials are used for worm and worm gear.

Q7. Write four differences between SI engine & CI engine.

Ans.

S.no	Parameter	SI Engine	CI Engine
1.	Definition	It is an engine in which the spark is used to burn the fuel.	It is an engine in which heat of compressed air is used to burn the fuel.
2.	Fuel used	Petrol is used as fuel.	Diesel is used as fuel.
3.	Operating cycle	It operates on Otto cycle.	It operates on Diesel cycle.
4.	Compression ratio	Low compression ratio.	High compression ratio.
5.	Thermal efficiency	High thermal efficiency.	Less thermal efficiency.
6.	Method of ignition	Spark plug is used to produce spark for the ignition.	Heat of compressed air is used for the ignition.
7.	Engine Speed	High speed engines.	Low speed engines.
8.	Pressure generated	Low pressure is generated after combustion.	High pressure is generated after combustion.

Q8. What is the role of differential in the drive line of a vehicle?

Ans. The differential is a device that splits the engine torque two ways, allowing each output to spin at a different speed.

The differential is found on all modern cars and trucks, and also in many all-wheel-drive (full-time four-wheel-drive) vehicles. These all-wheel-drive vehicles need a differential between each set of drive wheels, and they need one between the front and the back wheels as well, because the front wheels travel a different distance through a turn than the rear wheels.

Q9. Explain MPFI System? List out difference between MPFI & CRDI Engine.

Ans. The MPFI is a system or method of injecting fuel into internal combustion engine through multi ports situated on intake valve of each cylinder. It delivers an exact quantity of fuel in each cylinder at the right time. There are three types of MPFI systems – Batched, Simultaneous and Sequential.

In the batched MPFI system fuel is injected to the groups or batches of the cylinders without bringing their intake stroke together. In the simultaneous system, fuel is inserted to all cylinders at the same time, while the sequential system injection is timed to overlap with intake stroke of each cylinder.

MPFI includes a fuel pressure regulator, fuel injectors, cylinders, pressure spring and a control diaphragm. It uses multiple individual injectors to insert fuel in each cylinder through intake port situated upstream of cylinder's intake valve. The fuel pressure regulator, connected to the fuel rail by means of an inlet and outlet, directs the flow of the fuel. While the control diaphragm and pressure spring controls the outlet valve opening and the amount of fuel that can return. The pressure in the intake manifold significantly changes with the engine speed and load.

Advantages of multi point fuel injection system?

The multi-point fuel injection technology improves fuel efficiency of the vehicles. MPFI uses individual fuel injector for each cylinder, thus there is no gas wastage over time. It reduces the fuel consumption and makes the vehicle more efficient and economical.

The vehicles with MPFI automobile technology have lower carbon emissions than a few decades old vehicles. It reduces the emission of the hazardous chemicals or smoke, released when fuel is burned. The more precise fuel delivery cleans the exhaust and produces less toxic byproducts. Therefore, the engine and the air remain cleaner.

MPFI system improves the engine performance. It atomizes the air in small tube instead additional air intake, and enhances the cylinder-to-cylinder fuel distribution that aid to the engine performance.

It encourages distribution of more uniform air-fuel mixture to each cylinder that reduces the power difference developed in individual cylinder.

Q10. Write down the difference between single plate clutch & Multiplate clutch.

Ans.

Sr.No.	Single Plate Clutch	Multiplate Clutch
1	As the name suggests, single plate clutch consists of a clutch plate whose both sides are coated with a frictional material.	The multi Plate clutch consists more than one clutch plate.
2	Torque transmitting capacity is less.	High torque transmitting capacity or multi plate clutch is smaller than the single plate clutch for a given torque capacity.
3	Heat generation is less, so there is no need of a cooling medium. It is called "dry clutches."	Heat generation is more due to more frictional surface. So it needs a cooling medium and referred as "wet type" clutch.
4	The coefficient of friction is high.	The coefficient of friction is low.
5	Faster response; Clutch engagement is almost instantaneous.	Clutch engagement not instantaneous.
6	Single plate clutch used where large radial space available. e.g. Trucks, Cars	Multiple Disc clutch is used where compact construction is desirable. E.g. Motorcycle, Scooter.

Q11. Explain exhaust components with neat sketch.

Ans. An exhaust system is usually piping used to guide reaction exhaust gases away from a controlled combustion inside an engine or stove. The entire system conveys burnt gases from the engine and includes one or more exhaust pipes. Depending on the overall system design, the exhaust gas may flow through one or more of:

Cylinder head and exhaust manifold

A turbocharger to increase engine power.

A catalytic converter to reduce air pollution.

A muffler (North America) / silencer (UK/India), to reduce noise.

Sketch to be drawn by students.



Registration No:

SCHOOL OF AUTOMOTIVE SKILLS
SECOND IN-SEMESTER EXAMINATION
WINTER SEMESTER, B. VOC. PROGRAM
SESSION 2017-2018

Course Code: AUT1002

Time: 1 Hour

Course Name: Automotive Wheel Care & Steering system

Max. Marks: 20

Instructions: Attempt all questions.

Section-A

Directions: Select any one correct answer from the given options:

5x1 =05 Marks

Q 1. What is full form of TPMS:

- | | |
|------------------------------------|-------------------------------------|
| A) Tyre Pressure Monitoring Sensor | B) Tyre Pressure Maintenance Sensor |
| C) Tyre Pressure Master Cylinder | D) Tyre Puncture Management Sensor |

Q 2 How many kinds of weight are used for wheel balancing

- | | |
|------|------|
| A) 4 | B) 6 |
| C) 2 | D) 3 |

Q 3. Which Type of Bearing Use in Wheel Assembly:

- | | |
|--------------------------|--------------------------|
| A) Roller Bearing | B) Ball Bearing |
| C) Tapper Roller Bearing | D) Self Aligning Bearing |

Q 4. Select any two Suitable Process for Removing tyre Wear & Vibration Problem.

- | | |
|--------------------|------------------|
| A) Wheel Alignment | B) Tyre Changing |
| C) Wheel Balancing | D) None of These |

Q 5. Q 5. What is full form of OEM:

- | | |
|------------------------------------|------------------------------------|
| A) Original Equipment Manager | B) Original Equipment Master |
| C) Optional Equipment Manufacturer | D) Original Equipment Manufacturer |

Section-B

3x2 =06 Marks

Q 6. Write Wheel Bearing Maintenance Steps..

Q 7. Write briefly about tyre nomenclature and give one example .

Q 8. Write the Part Names of tyre.

Registration No:

Section-C

3x3 =09 Marks

- Q 9. Explain Caster and Caster Angle with Diagram.
- Q 10. Explain Total Wheel Alignment Procedure
- Q 11. What is wheel Balancing, Also Write Advantages of wheel Balancing.



Registration No:

SCHOOL OF AUTOMOTIVE SKILLS
SECOND IN-SEMESTER EXAMINATION
WINTER SEMESTER, B. VOC. PROGRAM
SESSION 2017-2018

Course Code: AUT1002

Time: 1 Hour

Course Name: Automotive Wheel Care & Steering system

Max. Marks: 20

Instructions: Attempt all questions.

Section-A

Directions: Select any one correct answer from the given options:

5x1 =05 Marks

Q 1. What is full form of TPMS:

- | | |
|------------------------------------|-------------------------------------|
| A) Tyre Pressure Monitoring Sensor | B) Tyre Pressure Maintenance Sensor |
| C) Tyre Pressure Master Cylinder | D) Tyre Puncture Management Sensor |

Answer: A

Q 2 How many kinds of weight are used for wheel balancing.

- | | |
|------|------|
| A) 4 | B) 6 |
| C) 2 | D) 3 |

Answer: 2

Q 3. Which Type of Bearing Use in Wheel Assembly:

- | | |
|--------------------------|--------------------------|
| A) Roller Bearing | B) Ball Bearing |
| C) Tapper Roller Bearing | D) Self Aligning Bearing |

Answer: C

Q 4. Select any two Suitable Process for Removing tyre Wear & Vibration Problem.

- | | |
|--------------------|------------------|
| A) Wheel Alignment | B) Tyre Changing |
| C) Wheel Balancing | D) None of These |

Answer: A & C

Q 5. Q 5. What is full form of OEM:

- | | |
|------------------------------------|------------------------------------|
| A) Original Equipment Manager | B) Original Equipment Master |
| C) Optional Equipment Manufacturer | D) Original Equipment Manufacturer |

Answer: D

Section-B

3x2 =06 Marks

Q 6. Write Wheel Bearing Maintenance Steps.

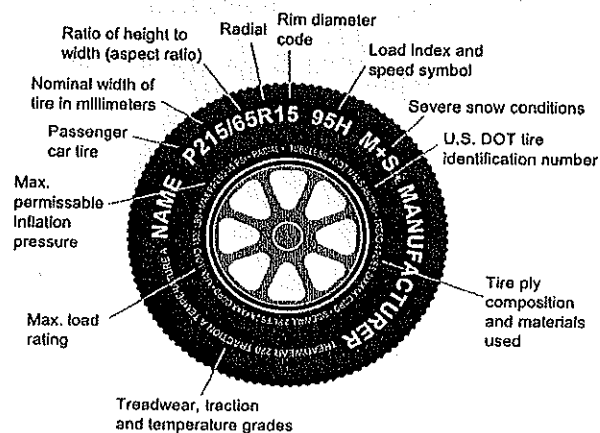
Answer:

- A. Tyre Belts
- B. Tyre Sipes
- C. Tyre Tread
- D. Tyre Grooves
- E. Tyre Shoulder
- F. Tyre Sidewall
- G. Tyre Inner Liner
- H. Tyre Bead
- I. Tyre Body Plies

Q 7. Write short note on tyre nomenclature.

Answer:

The sidewall of typical tyre is imprinted with myriad codes and numbers that are used to identify the size and physical features of that tyre as well as details relating to its manufacture. Many of these tyre markings are of little or no importance to the driver while others are essential when it comes to choosing a replacement tyre.



If you are looking for new tyres you should familiarize yourself with the following tyre markings.

- Tyre Size
- Speed Rating
- Load Index

- Date of Manufacture
- Reinforced
- Run Flat
- Homologation

Q 8. Write the Part Names of tyre.

Answer:

- Tire Belts
- Tire Sipes
- Tire Tread
- Tire Grooves
- Tire Shoulder
- Tire Sidewall
- Tire Inner Liner
- Tire Bead
- Tire Body Plies

Section-C

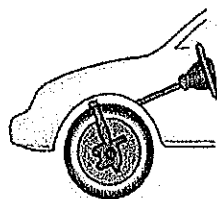
3x3 =09 Marks

Q 9. Explain Caster and Caster Angle with Diagram.

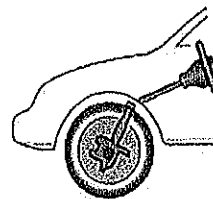
Answer:

Caster

- This angle shows the forward or backward slope of a line drawn through the upper and lower steering pivot points, when viewed directly from the side of the vehicle.
- Also expressed in degrees, caster is measured by “comparing a line running through the steering system’s upper and lower pivot points to a line drawn perpendicular to the ground,”

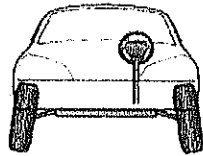


Negative Caster

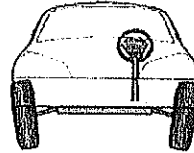


Positive Caster

Camber: This suspension angle shows how the tire angles away from 0 degrees vertical when viewed from either the front or rear of the vehicle. Expressed in degrees, negative camber means the top of the tire tilts toward the centre of the vehicle, while positive camber means the top of the tire tilts away from centre. A visual cue for a camber problem is excessive tire wear on the inner or outermost ribs.



Negative Camber



Positive Camber

Q 10. Explain Total Wheel Alignment Procedure.

Answer:

Total Wheel Alignment Process

- Step 1: Depending on your alignment equipment, enter the vehicle year, make, model and design into the system's computer to determine the **OEM (Original equipment manufacturer)** alignment specifications.
- Step 2: Next, drive the vehicle onto your alignment rack.
- Step 3: Next, check and adjust tire pressures to OEM Remove hubcaps if present.
- Step 4: Mount targets to wheel ends as required by the rack manufacturer.
- Step 5: Depending on your alignment equipment and system, there are unique procedures that will measure the current camber, caster and toe angles of the vehicle and report that information either on a print-out or on a diagnostic screen.
- Step 6: If the rear alignment needs to be adjusted, this has to be performed before working on front-end adjustments.
- Step 7: With front-end alignments, correct caster and camber adjustments first.
- Step 8: With caster and camber adjusted, then adjust toe angles.
- Step 9: Restart the car, remove the steering wheel lock, turn the steering wheel back and forth a couple times, then re-centre and replace the steering wheel lock. Recheck alignment specifications, and then readjust angles as necessary.
- Step 10: Remove the alignment heads and lower the vehicle.
- Step 11: Complete the alignment by taking a test drive to ensure any previously noted symptoms are gone or can be attributed to other vehicle issues.

Q 11. What is wheel Balancing, Also Write Advantages of wheel Balancing.

Answer:

- Wheel balancing, also known as Tyre balancing, is the process of equalizing the weight of the combined tire and wheel assembly so that it spins smoothly at high speed

Advantages of wheel balancing

- It helps to minimize potential vibration in your steering wheel
- Increase Fuel Efficiency.
- Reduce Expensive Auto Repairs.
- Experience Smoother Driving.
- Improve Vehicle Safety.
- Increase the Life of Your Tyres.



Registration No:

SCHOOL OF AUTOMOTIVE SKILLS
SECOND IN- SEMESTER EXAMINATION – 2018
WINTER SEMESTER, B. VOC. PROGRAM
SESSION 2017-2018

Course Code: AUT1003

Time: 1 Hour

Course Name: AUTOMOTIVE BODY REPAIR

Max. Marks: 20

Instructions: Attempt all questions.

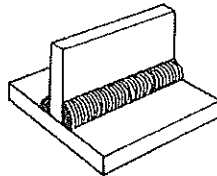
Section-A

Directions: Select any one correct answer from the given options:

(5x1=05) Marks

1.) The diagram given below shows.....Joint.

- | | |
|---------------|-----------------|
| a) Butt Joint | c) Corner Joint |
| b) I-Joint | d) T-Joint |



2.) Which of the following is Destructive Type of testing method?

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

3.)is the example of an Inert gas.

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

4.) MIG Welding is always performed on Alternating Current.

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

5.) Heat Generation in welding can be expressed as.....

- | | |
|------------------|--------------------|
| a) $Q = I^2 R T$ | c) $Q = I R T^2$ |
| b) $Q = I R^2 T$ | d) $Q = I^2 R T^2$ |

Section-B

(3x2=06) Marks

6.) Define welding.

7.) Draw the diagrams of any four weld seam symbols.

8.) What are the safety equipment used in welding?

Section-C

(3x3=09) Marks

- 9.) Explain the weld seam inspection procedures.
- 10.) Discuss the process of MIGMAG welding.
- 11.) Explain the process of Resistance Spot Welding

Registration No:

SCHOOL OF AUTOMOTIVE SCHOOL
FIRST IN-SEMESTER EXAMINATION – 2017-18
SUMMER SEMESTER, B. VOC. PROGRAM
winter

Course Code: AUTO1003

Course Name: BODY SHOP

Time: 1 Hour

Max. Marks: 20

Instructions: Attempt all questions.

Section-A

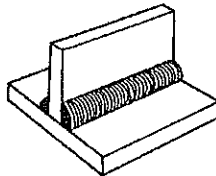
Five questions of one mark each

05 Marks

Objective Type Questions

1.) Write the name of the joint type:

- a) Butt Joint
- b) I-Joint
- c) Corner Joint
- d) T-Joint



Ans: - d)

2.) Select Destructive type testing methods:

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

Ans: - b)

3.) Example of Inert gas are:

- a) Carbon dioxide
- b) Hydrogen
- c) Oxygen
- d) Argon

Ans: - d)

4.) MIG Welding is always performed on Alternating Current.

- a) True
- b) False.
- c) Both a) & b)
- d) Don't know

Ans: - b)

5.) Heat Generation in welding can be expressed as....

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

Ans: - a)

Section-B

06 Marks

Three questions of two marks each

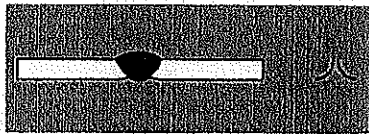
Short-Answer Type Questions

6.) Define welding.

Ans: - Welding is the process of joining two similar or dissimilar metal with the help of heat. It is used to join parts permanently together with the help of heat.

7.) What are the different weld seam symbol?

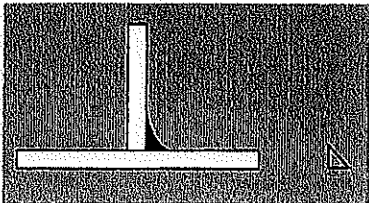
Ans:- The different welding seam symbol are:



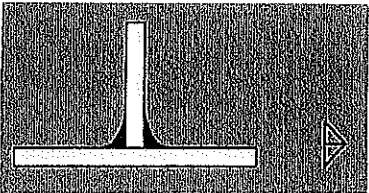
► Flanged seam



► I-groove weld



► Fillet weld



► Double fillet weld

8.) What are the safety equipment used in welding? Write any four.

Ans: - The safety equipment used in welding are:

- a. King Shield
- b. Hand Gloves
- c. Welding Apron

- d. Safety Shoes
- e. Safety Goggle
- f. Ear Plug

Section-C

09 Marks

Three questions of three marks each

Essay Type Questions

9.) Explain the welding inspection procedures.

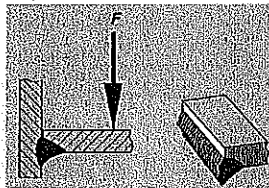
Ans: - Welding Inspection Process

- Destructive Testing
- Non- Destructive Testing

Destructive Testing

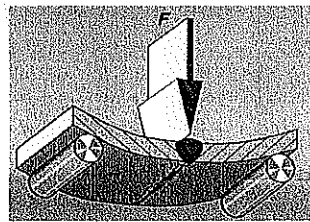
1. Fracture Test

The weld seam is mechanically broken.



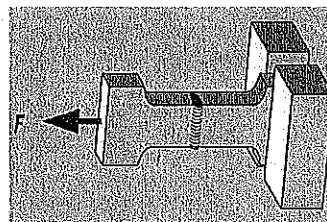
2. Bend Test

The welded seam is bend under a press until it breaks.



3. Tensile Test

During the tension test, flat or round stock is stretched until it breaks.



Non- Destructive Testing

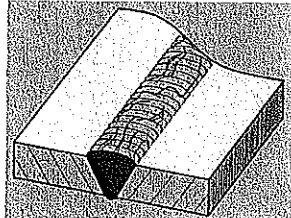
1. Visual Examination

Use the naked eye and magnifying lens.

2. Liquid penetration

During the liquid penetration, special red liquid is sprayed on the seam. The liquid penetrates through the capillary action, even into very thin cracks and gaps.

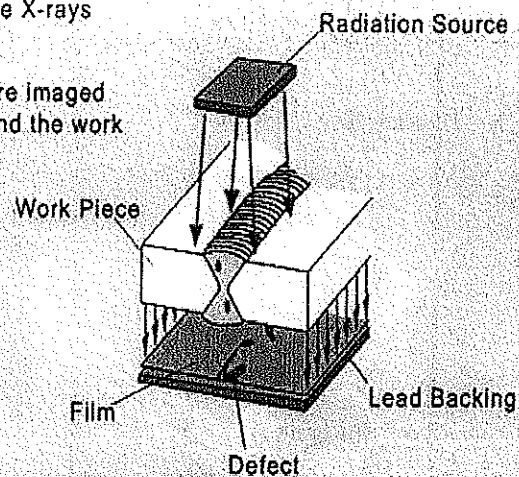
After drying, a white powder is applied which makes the red visible.



3. X-ray Inspection

During an X-ray inspection, the X-rays penetrate the weld seam.

Possible weld seam defects are imaged on a sheet of film placed behind the work piece.



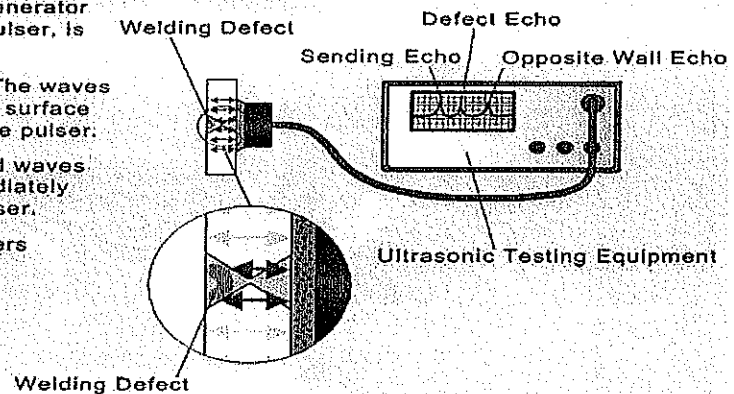
4. Ultrasonic Testing

During ultrasonic testing, a signal generator with an oil coupling, a so-called pulser, is placed on the site of the weld.

The pulser projects sound waves. The waves reflect off the opposite work piece surface and are then collected again by the pulser.

If there is a weld defect, the sound waves that strike the defect reflect immediately and return more quickly to the pulser.

The testing equipment then registers a defect echo.



10.) Explain MIGMAG welding.

Ans :-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:

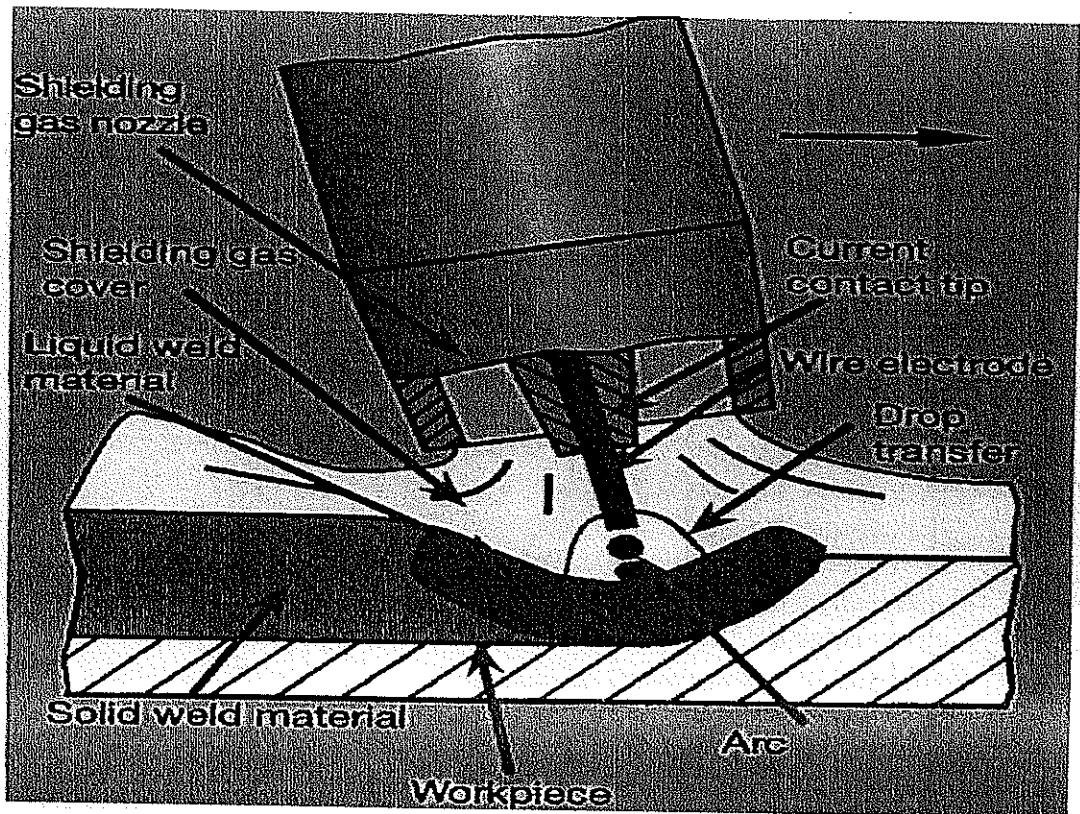
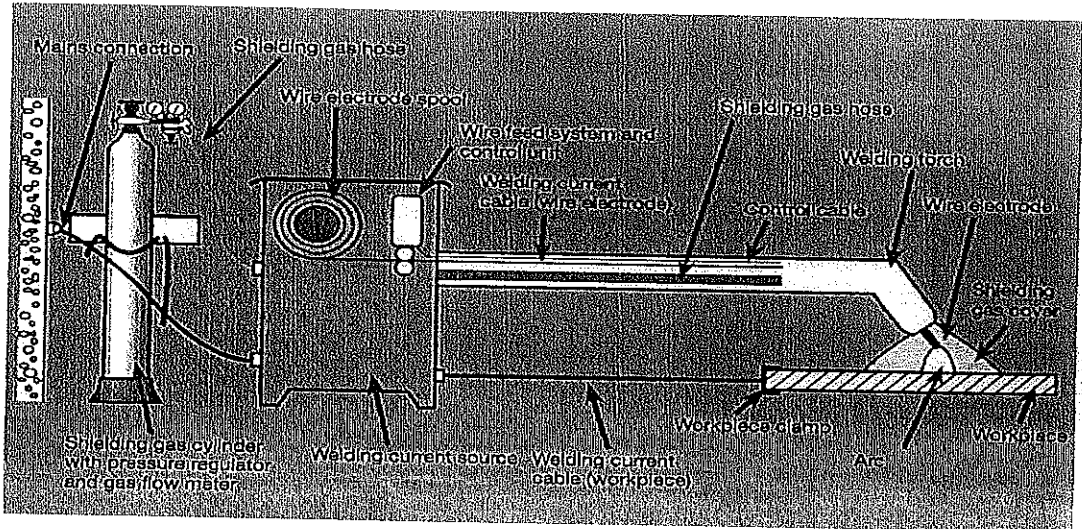
- Helium
- Argon
- Neon
- Xenon
- Krypton
- radon

MAG Welding

- 1) Metal Active Gas Welding takes its name from the active welding gas used (CO₂ 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.

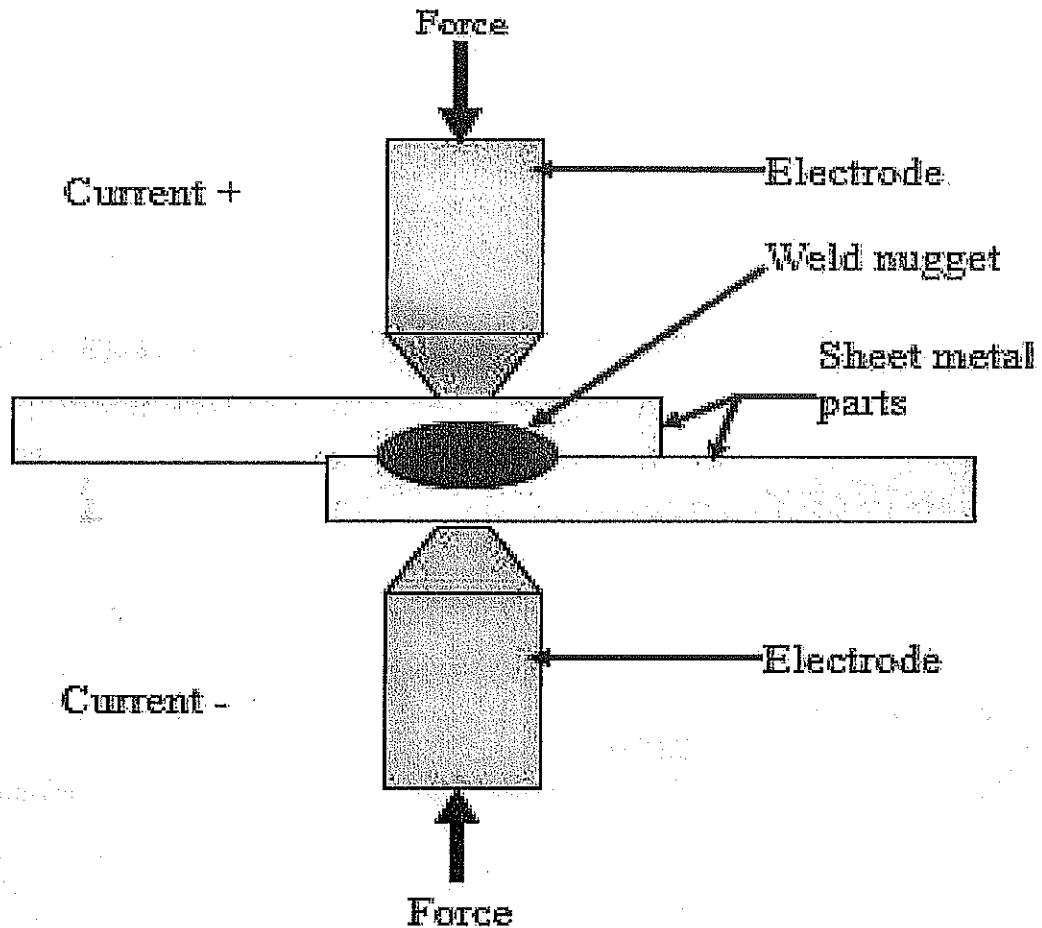
Some examples of the Active Gases:

- carbon dioxide
- Oxygen
- nitrogen
- hydrogen



11.) Explain the process of Resistance Spot Welding.

Ans: - 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

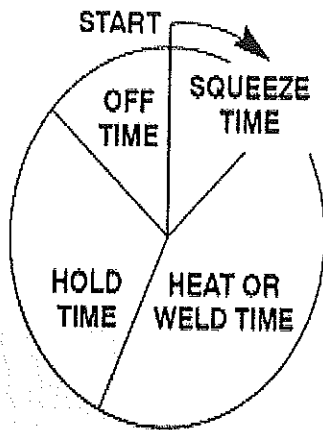
R= Resistance of the conductor

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.



Registration No:

**SCHOOL OF AUTOMOTIVE SKILLS
SECOND IN-SEMESTER EXAMINATION – 2018
WINTER SEMESTER, B. VOC. PROGRAM**

**Course Code: AUT1004
Course Name: Automotive Spray Painting**

Time: 1 Hour

Max. Marks: 20

Instructions: Attempt all questions.

Section-A

Direction : Select the one correct option from the given options in the following questions :-

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

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

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

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

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

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

Section-B

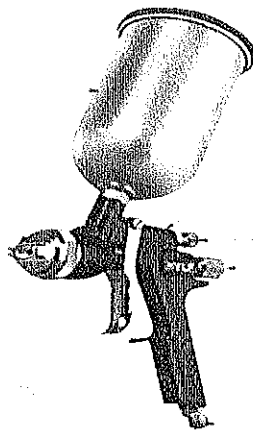
3x2=6 Marks

- Q-6. Explain any five safety equipment used in paint shop.
- Q-7. Explain HVLP gun used in paint shop with its application.
- Q-8. What is paint? Name different components of paint.

Section-C

3x3=9 Marks

- Q-9. Name the different parts of spray gun in the image given below.



- Q-10. What is Spray gun? Name different types of spray guns used in paint shop.
- Q-11. Explain about different types of primers used in paint shop.



SCHOOL OF AUTOMOTIVE SKILLS
SECOND IN-SEMESTER EXAMINATION – (2017-2018)
WINTER SEMESTER, B. VOC. PROGRAM

Course Code: AUT1004

Time: 1 Hour

Course Name: Automotive Spray Painting

Max. Marks: 20

Instructions: Attempt all questions.

Objective type questions: -

Question No.	Type	Answer	Marks allotted
1	Objective type	Hardener	1
2	Objective type	Oval	1
3	Objective type	Mask and Respirator	1
4	Objective type	Dry Sander	1
5	Objective type	Putty Spreader Sheets	1
		Total	5

Short answer type questions :-

Question No.	Type	Answer	Marks allotted
6	Short answer type	Nylon Gloves	0.5
		Painting coat.	0.5
		Mask and respirator	0.5
		Ear plugs	0.5
		Safety Shoes	
7	Short answer type	<p>HVLP stands for high-volume, low-pressure.</p> <ul style="list-style-type: none"> • 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. 	1
	Short answer type	<ul style="list-style-type: none"> • Paint is a mixture of different chemicals which gives aesthetic appearance, provides strength and prevent from atmospheric conditions. 	1
8		<p>Paint is made up of five basic elements :-</p> <ol style="list-style-type: none"> 1. Binder/Resin 2. Pigment 3. Additives 4. Hardener 5. Solvent 	1

Handwritten scribbles and faint markings on the left side of the page.

Faint horizontal markings or text in the center of the page.

Faint markings or text at the bottom left corner.

Faint markings or text at the bottom right corner.





Registration No.....

SCHOOL OF AUTOMOTIVE SKILLS
FIRST SEMESTER, SECOND IN-SEMESTER EXAMINATION
WINTER SEMESTER, B.VOC. PROGRAM- 2017-18

Course Code: AUT1005

Time: 1 Hour

Course name: Automotive Electrical Fundamentals and A.C.

Max Marks: 20

Instructions: Attempt all questions.

Section-A

Five questions of one marks each

1. In a refrigeration and air conditioning system, the expansion device is connected between the
 - a) Compressor and condenser
 - b) Condenser and receiver
 - c) Receiver and evaporator
 - d) evaporator and Compressor
2. The refrigerants supplied to a compressor must be
 - a) superheated vapor refrigerant
 - b) dry saturated liquid refrigerant
 - c) a mixture of liquid and vapor refrigerant
 - d) none of the above
3. Pumping down is similar to
 - a) Recovery
 - b) Vacuuming
 - c) Recharging
 - d) Perfect vacuuming
4. Vacuuming is done
 - a) To remove moisture from the system
 - b) To remove air from the system
 - c) To remove both air and moisture
 - d) To shift the system from one place to another place.
5. Which one is the function of Oxygen / Lambda Sensor?
 - a) Monitors the correct air-fuel ratio for an engine
 - b) Monitors the position of the throttle in an engine
 - c) Monitors the amount of oxygen in the exhaust
 - d) Used to regulate fuel metering

Section-B

Three questions of two marks each

1. Write four components and its function used in automobile air conditioning system.
2. What are the three ways of leak testing?
3. What are Engine Sensors? Give some examples of engine sensors.

Section-C

Three questions of three marks each

4. Draw with neat sketch principal, construction and working of the scroll compressor.
5. Explain the steps for AC servicing.
6. Write a short note on Thermistors.



Registration No.....

SCHOOL OF AUTOMOTIVE SKILLS

FIRST SEMESTER, SECOND IN-SEMESTER EXAMINATION

WINTER SEMESTER, B.VOC. PROGRAM- 2017-18

Course Code: AUT1005

Time: 1 Hour

Course name: Automotive Electrical Fundamentals and A.C.

Max Marks: 20

Instructions: Attempt all questions.

Section-A

Five questions of one marks each

1. In a refrigeration and air conditioning system, the expansion device is connected between the
 - a) Compressor and condenser
 - b) Condenser and receiver
 - c) **Receiver and evaporator**
 - d) evaporator and Compressor
2. The refrigerants supplied to a compressor must be
 - a) **superheated vapor refrigerant**
 - b) dry saturated liquid refrigerant
 - c) a mixture of liquid and vapor refrigerant
 - d) none of the above
3. Pumping down is similar to
 - a) **Recovery**
 - b) Vacuuming
 - c) Recharging
 - d) Perfect vacuuming
4. Vacuuming is done
 - a) To remove moisture from the system
 - b) To remove air from the system
 - c) **To remove both air and moisture**
 - d) To shift the system from one place to another place.
5. Which one is the function of Oxygen / Lambda Sensor?
 - a) Monitors the correct air-fuel ratio for an engine
 - b) Monitors the position of the throttle in an engine
 - c) **Monitors the amount of oxygen in the exhaust**
 - d) Used to regulate fuel metering

Section-B

Three questions of two marks each

1. Write four components and its function used in automobile air conditioning system.

Components: Compressor, condenser, expansion valve and evaporator.

Function: To compress the refrigerant

To remove heat from condenser

To decrease the pressure

To extract heat from room

2. What are the three ways of leak testing?

Leak testing with dry nitrogen

Leak testing with refrigerant

Leak testing with vacuuming

3. What are Engine Sensors? Give some examples of engine sensors.

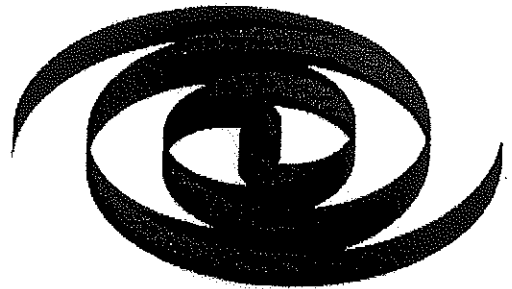
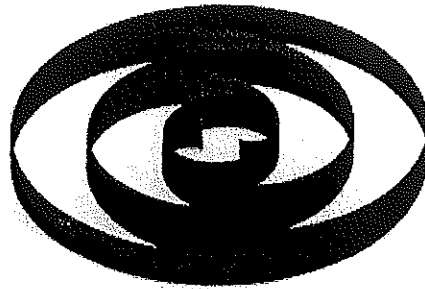
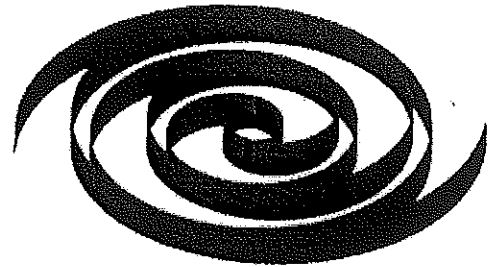
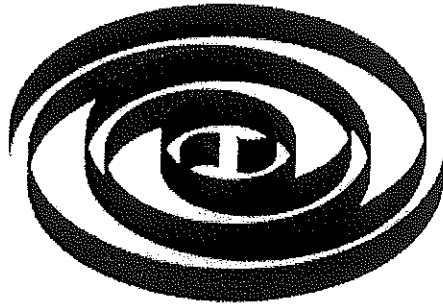
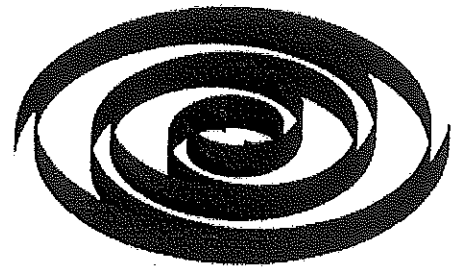
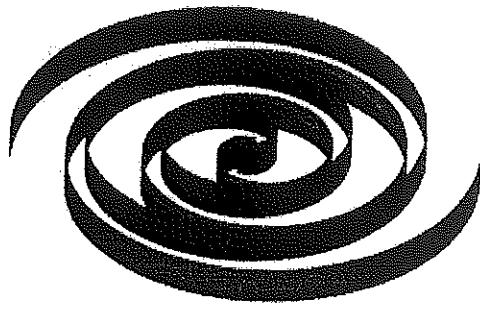
Engine sensors are electro-mechanical devices which monitor various engine parameters. An engine uses different types of sensors which primarily consists of Thermo-couple, Resistance Temperature Detectors (RTDs), and Hall Effect sensors. These are the examples of engine sensors.

Section-C

Three questions of three marks each

4. Draw with neat sketch principal, construction and working of the scroll compressor.

Principal: positive displacement pump



5. Explain the steps for AC servicing.

Recovery: Recovery is to accumulate refrigerant and compressor oil in a place.

Place can be a tank in a recovery machine or it can be outdoor unit or a tank in case of a domestic Air-conditioner.

Vacuuming: It is a process in which air and moisture is removed from the system. It is done with the help of a vacuum pump

Recharging: Process of filling of required amount of refrigerant and compressor oil in the system. Amount of refrigerant and compressor oil varies with systems.

6. Write a short note on Thermistors.

Commonly used for temperature measurement on vehicles. They are made out of semiconductor materials such as cobalt or nickel oxides. Change in temperature causes change in resistance of the thermistor. Most of the thermistors are of the negative temperature coefficient (NTC) type.

Resistance range – Several Kilo Ohms at 0°C to a few hundred Ohms at 100°C . Thus it can be more sensitive. Following are important factors for accurate measurements:

- Supply must be constant
- Current through the thermistor should be negligible (i.e. No heating effect)

These devices are commonly used as sensors for-

- Air intake
- Battery
- Engine and transmission temperature
- Air conditioning and internal/external environmental temperature
- Oil and gas temperatures.

Registration No.....

SCHOOL OF AUTOMOTIVE SKILLS

FIRST SEMESTER, SECOND IN-SEMESTER EXAMINATION

WINTER SEMESTER, B.VOC. PROGRAM- 2017-18

Course Code: AUT1006

Time: 1 Hour

Course name: Automotive Workshop Maintenance & Documentation

Max. Marks: 20

Instructions: Attempt all questions.

Section-A

Five questions of one mark each

1. (a) A flat nose plier is used for(cutting/bending) narrow metal strips.
(b) A snip is used for..... (cutting/bending) thin metal sheets
2. (a) (clamps/bolts) are used for preventing the movement of work and for holding the job tight.
(b) The size of a vice is specified by the (weight of vice/ width of jaw).
3. (a) Set screws are used to fasten..... (pulleys/keys) to a shaft.
(b) (Hexagonal/ Square) nuts are most commonly used nut is in structures and machine tool construction.
4. (a) Hexagon socket screw keys are made from hexagonal section bars of
(Aluminium alloy/Chrome Vanadium steel).
(b) Spanners are used for operating.....(Threaded fasteners/Nails)
5. (a) Stillson pipe wrenches are used for gripping and turning of(pipes/bolts)
(b) The four flats of Phillip's screw driver is tapered to an angle of(43/53) degree.

Section-B

Three questions of two mark each

6. What is the importance of a Torque Wrench in wheel care section of an automotive workshop?
7. Write short notes on: (a) Pliers (b) Snips
8. List out the features of a standard screw driver with the help of a diagram.

Section-C

Three questions of three mark each

9. Explain about spanners and their uses in an automotive workshop.

10. What are the main components of service documentation in an automotive workshop? Explain briefly.
11. List out six power tools used in automotive workshop and mention the applications of each.

Registration No.....

SCHOOL OF AUTOMOTIVE SKILLS

FIRST SEMESTER, SECOND IN-SEMESTER EXAMINATION

WINTER SEMESTER, B.VOC. PROGRAM- 2017-18

Course Code: AUT1006

Time: 1 Hour

Course name: Automotive Workshop Maintenance & Documentation

Max. Marks: 20

Instructions: Attempt all questions.

Section-A

Five questions of one mark each

1. (a) A flat nose plier is used for **bending** narrow metal strips.
(b) A snip is used for **bending** thin metal sheets
2. (a) **clamps** are used for preventing the movement of work and for holding the job tight.
(b) The size of a vice is specified by the **width of jaw**.
3. (a) Set screws are used to fasten **pulleys** to a shaft.
(b) **Hexagonal** nuts are most commonly used nut is in structures and machine tool construction.
4. (a) Hexagon socket screw keys are made from hexagonal section bars of **Chrome Vanadium steel**.
(b) Spanners are used for operating **Threaded fasteners**
5. (a) Stillson pipe wrenches are used for gripping and turning of **pipes**.
(b) The four flats of Phillip's screw driver is tapered to an angle of **43 degree**.

Section-B

Three questions of two mark each

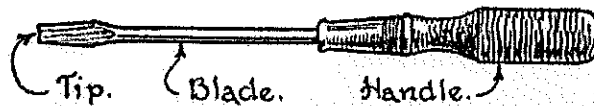
6. What is the importance of a Torque Wrench in wheel care section of an automotive workshop?
Torque wrenches acts as a torque limiting device for turning (rotating) nuts to a predetermined degree of tightness. This avoids breaking of fasteners. It is also essential to avoid warping or springing components held by multiple fasteners that could be unevenly or excessively tightened.
To apply correct torque with tension wrench:
 - Check that the threads of nut and bolt are clean and well formed
 - Pull slowly with evenly increasing effort on the hand grip of the handle

7. Write short notes on:

- (a) Pliers: Pliers have a pair of legs joined by a pivot, hinge or fulcrum pin (combination pliers) Each leg consists of long handle and a short jaw
- Elements of pliers:
 - Flat Jaw: Serrated for general gripping
 - Pipe Grip: serrated for gripping cylindrical objects
 - Side Cutters: for cutting off soft wires
 - Joint Cutters: two joint cutters for cutting or shearing off steel wires
 - Handles: for applying pressure by hand
- Available in sizes from 150 mm to 230 mm (Size = Overall length)
- (b) Snips: A snip also called a hand shear is used like a pair of scissors to cut thin, soft metal sheets. Snips are used to cut sheet metal up-to 1.2 mm thickness. There are several types of snips available for making straight or circular cuts. The most common snips are straight snips and curved/bent snips. The choice of snips depends on the shape and type of cut required. Snips are specified by overall length and shape of the blade.

8. List out the features of a standard screw driver with the help of a diagram.

A **screwdriver** is a tool, manual or powered, for screwing and unscrewing (inserting and removing) screws. A typical simple screwdriver has a handle and a shaft, ending in a tip the user puts into the screw head before turning the handle. The shaft is usually made of tough steel to resist bending or twisting. The tip may be hardened to resist wear, treated with a dark tip coating for improved visual contrast between tip and screw—or ridged or treated for additional 'grip'. Handles are typically wood, metal, or plastic and usually hexagonal, square, or oval in cross-section to improve grip and prevent the tool from rolling when set down.



Section-C

Three questions of three mark each

9. Explain about spanners and their uses in an automotive workshop.

- Solution: Spanners are used for operating:
 - Threaded Fasteners
 - Bolts
 - 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. 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

- The size of the spanner is determined by nut or bolt it fits. The distance across the flats of a nut or bolt varies both with the size and thread system. In British system the nominal size of bolt is used to identify the spanner. In unified standard system the spanners are marked with a number based on the decimal equivalent of the nominal fractional size across the flats of hexagon, following the sign A/F or with fractional size across the flats following the sign A/F. In Metric system, spanners are marked with size across the jaw opening followed by abbreviation mm.

10. What are the main components of service documentation in an automotive workshop? Explain briefly.

Main components of Service documentation are:

- Details of Customer
- Details of vehicle
- Inventory in the vehicle
- Body damages (dent and scratches)
- Fuel
- Demanded jobs by customer
- Recommended jobs by service advisor
- Total cost estimate
- Promised delivery date

11. List out six power tools used in automotive workshop and mention the applications of each.

Impact wrench: acts as a is also known as air wrenches, air guns, torque guns, impactors and more, which acts as merely a powered socket wrench. It gives us a very high amount of torque with low exertion by the user — the energy is stored in a rotating mass and then delivered as we wish to the output. They're typically powered by compressed air, but there are a few electric and even hydraulic models out there.

Jib Crane: A type of crane, which has a horizontal member (known as jib or boom) that supports a moveable hoist fixed to a wall or to a floor-mounted pillar is known as jib crane. Used mostly in industrial premises and on military vehicles, the jib may swing through an arc, giving additional lateral movement.

Hydraulic Jack: Hydraulic jacks are typically used for shop work, rather than as an emergency jack to be carried with the vehicle.

Orbital Sanders: They are used in paint shop for stripping the paint and sanding of putty. They work on pneumatic power through compressed air.

Spray Guns: They are used for deposition of paint material on the surface of the panel. They are operated through pneumatic power through compressed air.

Air Blow Gun: for dry cleaning of dust and dirt using compressed air.

1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that this is crucial for ensuring the integrity and transparency of the financial system. The text also mentions the need for regular audits and the role of independent auditors in this process.

2. The second part of the document focuses on the implementation of internal controls. It outlines various measures that organizations should take to prevent fraud and errors. These include the separation of duties, the use of standardized procedures, and the establishment of a strong internal control environment. The text also discusses the importance of training and awareness programs for employees.

3. The third part of the document addresses the issue of risk management. It explains how organizations can identify, assess, and mitigate risks that could impact their financial performance. The text highlights the importance of a proactive risk management approach and the role of risk management frameworks in this process.

4. The final part of the document discusses the importance of communication and reporting. It emphasizes that clear and timely communication is essential for ensuring that all stakeholders are informed of the organization's financial performance and the results of its internal control and risk management efforts. The text also mentions the role of the board of directors and the audit committee in this process.