Lib0088

BSDU

School of Automotive Skills

THEORY 2nd - IN-SEM EXAMINATION			
SESSION: 2022-23(SUMMER SEMESTER)			
B.Voc	**B.Voc**	**Semester**	3rd
Course name / Module	Automotive Power Train II		
Course code	AUT1301		
Date			
Name of the Student		**Reg. No.**	

INSTRUCTIONS

- Maximum Marks: **20**
- Duration of Examination: **01 Hour**
- Attempt all questions.

1. Section A (05 objective type questions, each question carries 01 mark)	**05×1 = 05**

Q1. The main function of a resonator is that it

A Regulates the intake air flow rate
B Reduces the intake air noise
C Enhances intake efficiency
D Regulates the intake air temperature

Q2. The main purpose of an engine's air cleaner is that it

A. Controls the engine's air intake volume
B. Reduces the engine's air intake noise
C. Prevents rain water from entering the engine
D. Prevents dust and other foreign matter from entering the engine

Q3.The exhaust gas from petrol engine contains

A Petrol vapours
B Water vapours
C Carbon monoxide
D All of these

Q4.The evaporative emission (EVAP) system is designed to ensure that hydrocarbons are released into the atmosphere.

A. True
B. False

Q5.Tech A says that hydrocarbons are created when raw fuel does not burn completely in the combustion chamber and is exhausted out of the tailpipe. Tech B says that hydrocarbons are created when raw fuel evaporates into the atmosphere. Who is correct?

A. Tech A
B. Tech B
C. Both Techs A and B
D. Neither Tech A nor B

2. **Section B** (03 short answer type questions, each question carries 02 marks)	**03×02 = 06**

Q6.What is the function of air induction system?

Q7.Explain the working of throttle body.

Q8.Classify different types of air induction system.

3. **Section C** (03 long type questions, each question carries 03 marks)	**03×03 = 09**

Q9. Explain the various components of Air Induction system.

Q10.What are the Major Components of an IC Engine? Explain with their Function.

Q11.Explain the EVAP system used in cars.

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D. Neither Tech A nor B

2. **Section B** (03 short answer type questions, each question carries 02 marks)	**03×02 = 06**

Q6.What is the function of air induction system?

Ans: Following are the function of air induction system

1. Supply the filter air to combustion chamber
2. Meter the amount of air entering.
3. muffles induction noise

Q7.Explain the working of throttle body.

Ans: The amount of air that enters a spark ignition engine is primarily controlled by the driver moving the accelerator pedal. The foot-operated pedal connects through linkage or cable to the throttle valve in the throttle body. This is air-control device for all spark ignition engines.

Depressing the accelerator pedal opens the throttle valve. This allows fresh air from the air cleaner to enter the intake manifold. The throttle valve controls only air if the engine has port (multipoint) or throttle body injection.

Throttle valve is fitted with following sensors and actuator

- MAP Sensor
- TPS Sensor
- IAC Valve

Q8.Classify different types of air induction system.

Ans: Following type of air induction system is commonly used in ICE

Cold Air Intake Systems: Cold air intake assemblies feature a longer tube with an air filter positioned on the front end. Because this filter is mounted further away from the engine block itself, it can draw air that's actually cooler in temperature. The filter is often positioned near the front corner of the vehicle or even directly behind a bumper or grille.

Hot Air Intake system: A heated air inlet or warm air intake is a system commonly used on the original air cleaner assemblies of carbureted engine to increase the temperature of the air going into the engine for the purpose of improving the consistency of the air/fuel mixture to reduce engine emissions and fuel usage

Ram Air Intake system: Another method of channeling cooler air into the engine is the "ram air" intake design. In this setup, a longer tube scoops up air from high-pressure areas at the front of the vehicle. But unlike cold air intakes which have the air filter positioned at the front of the tube, ram air assemblies have air filters mounted in a traditional location back by the engine.

3. **Section C** (03 long type questions, each question carries 03 marks)	**03×03 = 09**

Q9. Explain the various components of Air Induction system.

Ans: Following are the major components of Air Induction System

Air Cleaner: The air cleaner actually contains an air filter which removes solid particles such as dust, pollen, and mold from air that enters the engine. Air enters the engine through the air intake or air induction system. The grit and dust particles in this air must be removed before it enters the engine. The air cleaner also muffles induction noise.

Throttle body: The amount of air that enters a spark ignition engine is primarily controlled by the driver moving the accelerator pedal. The foot-operated pedal connects through linkage or cable to the throttle valve in the throttle body. This is air-control device for all spark ignition engines.Depressing the accelerator pedal opens the throttle valve. This allows fresh air from the air cleaner to enter the intake manifold. With a carburetor, the throttle valve controls the amount of air-fuel mixtures that enters inside the cylinders

The throttle valve controls only air if the engine has port (multipoint) or throttle body injection.Instead of a mechanically-operated throttle valve, some cars have an electronic throttle control or drive-by-wire system. A sensor on the accelerator pedal signals its position to the electronic control module (ECM). The ECM computes the proper opening of the throttle valves. Signals then are sent to small motors on the throttle body which open and close the throttle valves as required.

Intake Manifold: The primary function of the intake manifold is to evenly distribute the combustion mixture (or just air in a direct injection engine) to each intake port in the cylinder head(s). Even distribution is important to optimize the efficiency and performance of the engine. It may also serve as a mount for the carburetor, throttle body, fuel injectors and other components of the engine. The Intake manifold connects to the throttle body with the intake ports in the cylinder head. The manifold has a set of passages of runners through which air or air-fuel mixture flows. With port fuel injection, only air flows through. Fuel is injected into the air as it flows through the intake ports. With a carburetor or throttle body injection, fuel mixed with the air as it enters the intake manifold.

Q10.What are the Major Components of an IC Engine? Explain with their Function.

Ans: Following are the main components of IC Engine

1.Cylinder-block: The cylinder is the main body of the IC engine. The cylinder is a part in which the intake of fuel, compression of fuel, and burning of fuel take place. The main function of the cylinder is to guide the piston. It is in direct contact with the products of combustion so it must be cooled. For cooling the cylinder, a water jacket (for liquid cooling used in most cars) or fin (for air cooling used in most bikes) are situated on outer side of the cylinder.

2.Cylinder-head: The top end of the engine cylinder is closed by means of a removable cylinder head. There are two holes or ports at the cylinder head, one for intake of fuel and the other for exhaust. Both the intake and exhaust ports are closed by the two valves known as the inlet and exhaust valve.

3.Piston: A piston is fitted to each cylinder as a face to receive gas pressure and transmit the thrust to the connecting rod. It is a prime mover in the engine. The main function of the piston is to give a tight seal to the cylinder through the bore and slide freely inside the cylinder.

4.Piston-rings: To provide a good sealing fit and less friction resistance between the piston and cylinder, pistons are equipped with piston rings. These rings are fitted in grooves that have been cut in the piston.

5.Connecting-rod: Connecting rod connects the piston to the crankshaft and transmits the motion and thrust of the piston to the crankshaft. It converts the reciprocating motion of the piston into the rotary motion of the crankshaft.

6.Crank-shaft: The crankshaft of an internal combustion engine receives the efforts or thrust supplied by the piston to the connecting rod and converts the reciprocating motion of the piston into the rotary motion of the crankshaft.

7.Crankcase: The main body of the engine at which the cylinder is attached and which contains the crankshaft and crankshaft bearing is called the crankcase. It serves as the lubricating system too and sometimes it is called an oil sump. All the oil for lubrication is placed in it.

8.Valves: To control the inlet and exhaust of an internal combustion engine, valves are used. The number of valves in an engine depends on the number of cylinders.

9.Sparkplug: It is used in a spark-ignition engine. The main function of a spark plug is to conduct a high potential from the ignition system into the combustion chamber to ignite the compressed air-fuel mixture.

10.Injector: An injector is usually used in a compression ignition engine. It sprays the fuel into the combustion chamber at the end of the compression stroke. It is fitted on the cylinder head.

11.Camshaft: The camshaft is used in the IC engine to control the opening and closing of valves at proper timing. For proper engine output inlet valve should open at the end of the exhaust stroke and close at the end of the intake stroke.

Q11.Explain the EVAP system used in cars.

Ans: Evaporative emissions are raw gasoline vapors that can escape from a vehicle under several different circumstances. Evaporative emissions are in addition to those released from the tail pipe. Gasoline fuel molecules are large and heavy and stay close to the ground. They contribute significantly to urban smog. The whole idea of evaporative emissions controls is to trap these fuel vapors before they can escape to the atmosphere

Working of EVAP

When the engine is shut off, fuel vapors feed on the tank (and float bowl in case of carburetor vehicle) into the charcoal canister.

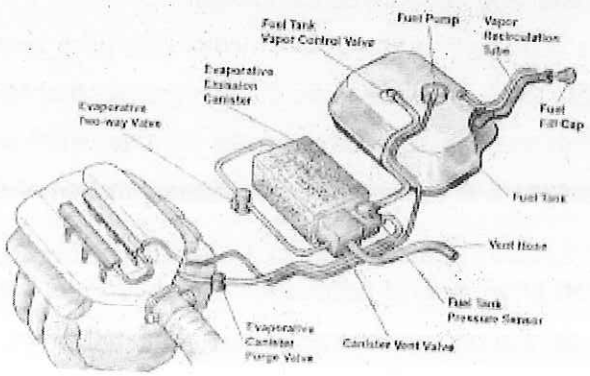
The activated charcoal in the canister traps or adsorbs the fuel vapors

Later when the engine starts, fresh air flows through the canister and picks up gasoline vapor.

The air then flows into the intake manifold and becomes part of the air-fuel mixture entering the engine cylinders

This action of clearing the trapped fuel vapor from the canister is called purging.

Running the engine removes or purges the vapor from the canister.



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School of Automotive Skills.

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

THEORY 2nd - IN-SEM EXAMINATION			
SESSION: 2022-23(SUMMER SEMESTER)			
B.Voc	**Semester**	3rd	
Course name / Module	Automotive Braking, Suspension and Steering System		
Course code	AUT1302		
Date			
Name of the Student		**Reg. No.**	

INSTRUCTIONS
• Maximum Marks: **20**
• Duration of Examination: **01 Hour**
• Attempt all questions.

1. Section A (05 objective type questions, each question carries 01 mark)	**05×1 = 05**

Q.1 Full form of ESP is:

a) Electronic stability program
b) Electric stability program
c) End stability program
d) None of the above

Q.2 The shock absorber is also known as a damper because they:

a) Absorb the sound of springs
b) Absorb the vibrations of springs
c) Absorb the heat of springs
d) All of the above

Q.3 Which type of suspension system allows one wheel to move up and down with minimum effect on the other?

a) Independent
b) Rigid
c) Flexible
d) None of the above

Q.4 If a person turns the steering wheel 110 degrees, how much should the wheel turn while having a steering ratio of 11:1?

a) 111 degrees
b) 110 degrees
c) 10 degrees
d) None of the above

Q.5 Which material is used to manufacture springs used in suspension systems?

a) Mild Steel

b) Spring Steel

c) Stainless Steel

d) High Carbon Steel

2. Section B (03 short answer type questions, each question carries 02 marks)	**03×02 = 06**

Q.6 What do you understand by Spring Rate in case of coil springs? Also, write down the formula of the spring rate.

Q.7 What are the functions of a suspension system in an automobile?

Q.8 Briefly explains types of re-treading.

3. Section C (03 long type questions, each question carries 03 marks)	**03×03 = 09**

Q.9. Explain the construction and working of a Wish bone suspension system with the help of a neat sketch.

Q.10 Explain the methods for diagnosis/testing of a suspension system to identify the related problems.

Q.11 Write a short note on:

a. Macpherson Strut Suspension

b. Tyre Noise

Registration No.: .....

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BHARTIYA SKILL DEVELOPMENT UNIVERSITY

THEORY 2nd - IN-SEM EXAMINATION			
SESSION: 2022-23(SUMMER SEMESTER)			
B.Voc	**Semester**	3rd	
Course name / Module	Automotive Braking, Suspension & Steering System		
Course code	AUT1302		
Date			
Name of the Student		**Reg. No.**	

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2. **Section B** (03 short answer type questions, each question carries 02 marks)	**03×02 = 06**

Q.6 What do you understand by Spring Rate in case of coil springs? Also, write down the formula of the spring rate.

Ans. • Ans, The spring rate (K) for coil springs is expressed by the formula:

$$K = \frac{Gd^4}{8ND^3}$$

- Where , G 11,250,000 (constant for steel), d diameter of wire , N number of coils

D diameter of the coil

Types of spring on basis of spring rate

- A constant-rate spring compresses at the same rate regardless of the amount of weight that is applied.
- Variable-rate springs come in a variety of shapes and compress more slowly as weight is applied.

Q.7 What are the functions of a suspension system in an automobile?

- Ans. The suspension system must provide proper steering control and ride quality. Performing these functions is extremely important to maintain vehicle safety and customer satisfaction.
- The suspension system and frame must also position the wheels and tires properly to provide normal tire life and proper steering control. If the suspension system does not position each wheel and tire properly, wheel alignment angles are incorrect and usually cause excessive tire tread wear.
- When the suspension system positions the wheels and tires properly, the steering should remain in the straight-ahead position if the car is driven straight ahead on a reasonably straight, smooth road surface.

Q.8 Briefly explains types of re-treading.

3. **Section C** (03 long type questions, each question carries 03 marks)	**03×03 = 09**

Q.9. Explain the construction and working of a Wish bone suspension system with the help of a neat sketch.

Ans.

Constructed of one or more strips of long, narrow spring steel. These metal strips, called leaves, are assembled with plastic or synthetic rubber insulators between the leaves, allowing for freedom of movement during spring operation.

The ends of the longest spring leaf are rolled or looped to form eyes. Rubber bushings are installed in the eyes of the spring and act as noise and vibration insulators. The leaves are held together by a **centre bolt,** also called a *centring pin.*

Q.10 Explain the methods for diagnosis/testing of a suspension system to identify the related problems.

Ans. **ROAD TEST DIAGNOSIS:** If possible, perform a road test of the vehicle with the owner of the vehicle. It is also helpful to have the owner drive the vehicle. While driving, try to determine when and where the noise or problem occurs, such as the following:

1. In cold or warm weather

2. With cold or warm engine/vehicle

3. While turning, left only, right only

- A proper road test for any suspension system problem should include the following:

1. Drive beside parked vehicles
2. Drive into driveways.
3. Drive in reverse while turning
4. Drive over a bumpy road

Q.11 Write a short note on:

a. Macpherson Strut Suspension

b. Tyre Noise

Ans. Macpherson Strut Suspension

- MacPherson Sturt: The **MacPherson strut** is a type of automotive **suspension** system that uses the top of a telescopic damper as the upper steering pivot. It is widely used in the front **suspension** of modern vehicles and is named for American automotive engineer Earle S. **MacPherson**, who originally invented and developed the design. A MacPherson strut includes the suspension spring that transfers the weight of the body to the wheel. A MacPherson strut is the main, load-carrying suspension spring.

- A MacPherson strut typically incorporates an upper and a lower spring seat, a shock absorber mount and dust cap, a dust cover for the piston rod, and a bump stop

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THEORY 2nd - IN-SEM EXAMINATION			
SESSION: 2022-23 (SUMMER SEMESTER)			
B.Voc/M.Voc	**B.VOC** **Semester**	3rd	
Course name / Module	AUTOMOTIVE BODY WORKS		
Course code	AUT1303		
Date			
Name of the Student		**Reg. No.**	

INSTRUCTIONS
• Maximum Marks: **20** • Duration of Examination: **01 Hour** • Attempt all questions. •

1. Section A (05 objective type questions, each question carries 01 mark)	**05×1 = 05**

Q1. What is the first step in preparing a bare metal surface from corrosion protection?

a) Clean with lacquer thinner
b) Clean with soap and water
c) Sand with coarse sand paper
d) Clean with wax and grease removal

Q2. ..... is the event in which two or more bodies exert forces on each other in about a relatively short time.

a) Denting
b) Bending
c) Clamping
d) Collision

Q3. ..... is an essential tool for the quick removal of paint, primer and old body filler from an area being repaired**?**

a) Sliding hammers
b) Sander
c) Shears
d) Nibbler

Q4. Which of the following would you use first when preparing bare metal surface for corrosion protection?

a. Sand with coarse sand paper
b. Clean with wax and grease remover
c. Clean with lacquer thinner
d. Clean with soap and hot water

Q5. A stamping tool is used for .....the dented panel.

a) Restoring Bodyline

b) Making Holes

c) Pulling out dents

d) Pressing

2. Section B (03 short answer type questions, each question carries 02 marks)	**03×02 = 06**

Q6. Differentiate between dolly-on and dolly-off hammering.

Q7. What are the advantages and disadvantages of chemical stripping?

Q8. Differentiate sanding and grinding.

3. Section C (03 long type questions, each question carries 03 marks)	**03×03 = 09**

Q9. Write down the procedure to repair rusted Panels?

Q10. How to remove front bumper assembly? Write steps.

Q11. Explain window mechanism with diagram

Lib0090

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a) Restoring Bodyline
b) Making Holes
c) Pulling out dents
d) **Pressing**

2. Section B (03 short answer type questions, each question carries 02 marks)	**03×02 = 06**

Q6. Mention the differences between dolly-on and dolly-off hammering.

Ans. **Dolly- on hammering**

- Hold dolly against back of damage and hammer right over to of dolly.
- Repeatedly move point of hammer impact and dolly slightly, each blow overlapping.
- Start at outside and work towards center.
- Shapes of dolly and hammer must match desired shape of panel.
- Start with light hammer blows, and work up to stronger blows.

Dolly-off hammering

- It is used to raise low spots and lower high sport simultaneously.
- The hammer hits the panel slightly to one side of where the dolly is being held.
- It is often used to rough out or shape large areas of damage during initial straightening.

Q7. What are the advantages and disadvantages of chemical stripping?

Ans: -

Advantages

- It is used to remove all types of liquid as well as powder paints, lacquers, enamels & polyurethanes from the metal surface.
- It reduces the cleaning effort.
- It saves time.
- It strips large area like doors, panel, bonnet, etc.
- Capability to strip tough configurations.

Disadvantages

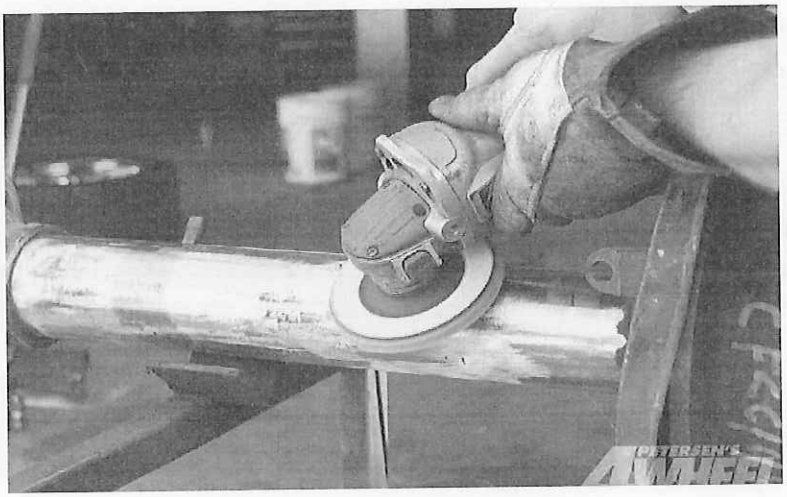
It couldn't be applicable for plastic materials like front and rear bumper.

- Waste could be hazardous.
- It causes irritation while contact to our skins.
- Slow stripping rate.

Q8. Write short note on sanding and grinding.

Ans. Grinding

A grinder is a power tool with a spinning abrasive disc, used for grinding, smoothing, and shaping materials, usually metal.



Sanding

Sanding is the process of smoothing or polishing a surface with sandpaper.

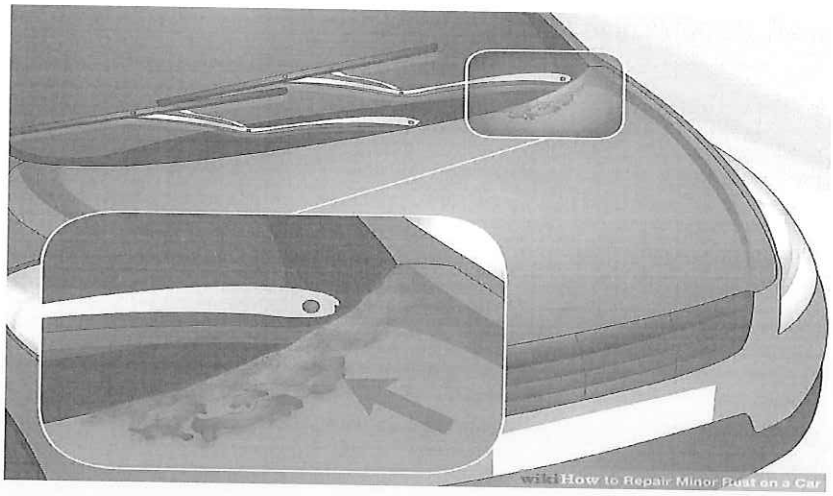
3. Section C (03 long type questions, each question carries 03 marks)	**03×03 = 09**

Q9. How to repair rusted Panels?

Ans: -

Although we usually envision collision repair whenever we think of automotive bodywork, rust repair is often just as common. Rust may be rare in some regions, but it is all too common in the rest of the world.

Anywhere that humidity meets unprotected sheet metal, rust is hard at work eating its way through your automobile's sheet metal. Sadly, you may not even know that the rust is present, as it tends to do its damage to area of your vehicle that you don't normally see during everyday operation. When you dealing with rust, you should determine whether it is just surface rust or a rust-through.



MINOR SURFACE RUST REMOVAL

1) Mask off the affected area with paint-appropriate tape. You want a few inches of protection surrounding the rust spot.

2) Follow the directions on the rust remover, usually spraying or brushing it onto the rust and letting it sit for a few minutes. Then, wipe off any residue with a clean rag. Remember that rust remover is nasty stuff, so be sure to wear the appropriate protective gear when handling it.

3) The rust should be gone, but remove any leftover rust with sandpaper.

4) Clean with a grease and wax remover soap, then air dry.

5) Spray primer in a light-to-medium coat, and allow an hour to dry. Spray three coats.

6) Spray the color base coat, going thinner than the primer. You may have to do five or six coats for complete coverage. Give it plenty of time between coats to prevent drips.

7) Spray the clear coat. Wait two or 3 days before washing, and wait a minimum of two months (some body shops suggest waiting for six) before waxing.

MAJOR RUST REMOVAL

1) Mask off the affected area. If sanding through paint and primer, cover the rest of the vehicle to protect it from the super-fine dust.

2) Use a grinder with a sanding wheel to remove as much surface rust as you can. When removing the rust, remember not to bear down any heavier than you absolutely need to.

3) Clean the work area with grease remover.

4) Use a fiberglass-reinforced body filler for holes and depressions left over after digging out the rust. Allow it to cure completely. This could take quite some time, and shouldn't be done at all if it's any cooler than about 65 degrees outside.

5) Sand the filler with progressively finer grit sandpaper, and then clean with wax and grease remover.

6) Tape off the area to be painted.

7) Use the self-etching primer and wait the required drying time.

8) Spray several light coats of paint.

9) Finish with a coat or two of clear. Like above, hold off on washing and waxing.

Q10. Write steps to remove front bumper assembly.

Ans: -

Step 1- Remove Front Beauty Cover

- Remove plastic push-pins holding the top plastic shroud that rests on top of the front clip and extends around the engine bay, including the weather-stripping used to seal out water.
- Once all pins are removed, peel back the weather stripping to loosen the cover.
- Pins locations shown with arrows in the photo below. Once free, set the cover aside.

Step 2- Remove Plastic fasteners

- Remove the plastic fasteners on the upper portion of the front bumper on each side.
- Use a flathead screw driver or the appropriate removal tool and pry upward.

Step 3 - Remove Upper portion bolts

- Remove the 10mm Bolts on the upper portion of the bumper as pictured.

Step 4 - Remove Clips from Under Bumper

- Remove push pin clips from the bottom side of the bumper which hole the splash shield in place.
- Use a flathead screw driver or the appropriate removal tool and pry away.

Step 5 - Remove Clips from the fender areas

Use a flathead screw driver or the appropriate removal tool and pry away.

Step 6 - Remove Front Clip

- Pull sides of front bumper outward until retention clips release on driver and passenger side.
- See photo below for arrows showing location of retention clips.
- After each side is successfully released, remove front bumper by pulling forward from the grill area. You will not be fully removing the bumper from the car at this moment.

Step 7 - Remove Fog Light Clips and Head Lamp Washer

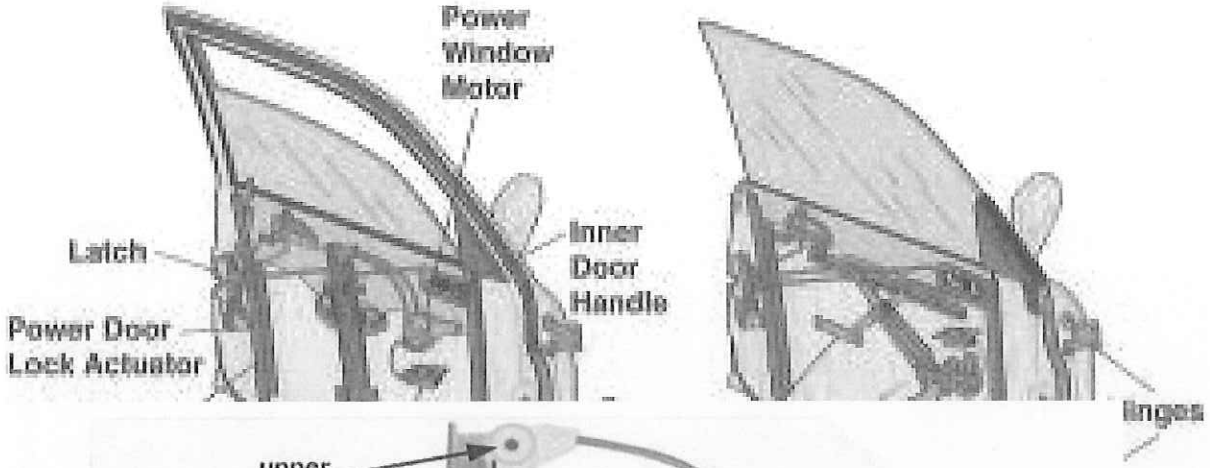
Step 8 - Complete Removing the Front Bumper

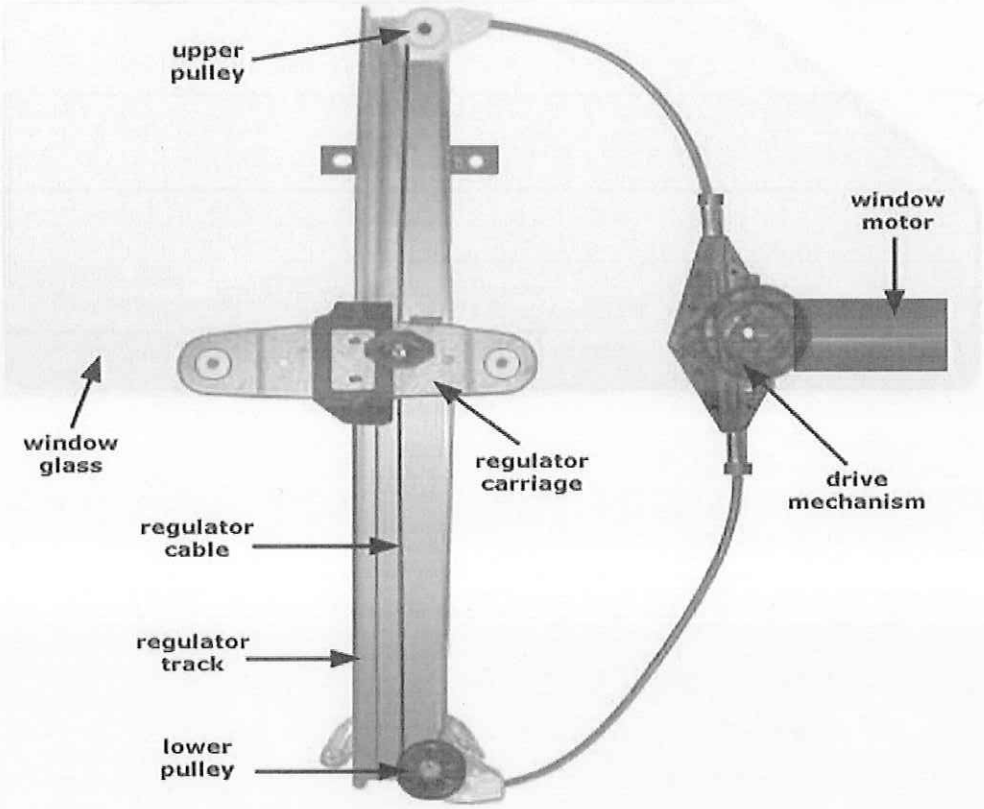
- Fully remove the front bumper by continuing to pull forward in a slow motion.
- If removing the bumper yourself, its recommended to place a towel/blanket on the ground so that you do not scrape anything if dragged or dropped on the ground.

Q11. Explain window mechanism with diagram

Windows Mechanisms

Among the items in the door that that can be damaged, other key areas include the window glass, the window riser mechanism (manual or electric), and the window channel in which the glass slides. If they are damaged, these items are most likely to require replacement, rather than repair. Anything that cause glass to be misaligned or in a bind will eventually lead it to break, so it is better to replace the necessary parts now while the vehicle is disassembled, instead of waiting until later, when you will have to disassemble and reassemble the door again.


Power
Window
Motor
Latch
Inner
Door
Handle
Power Door
Lock Actuator
Hinges


upper
pulley
window
motor
window
glass
regulator
carriage
drive
mechanism
regulator
cable
regulator
track
lower
pulley

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School of Automotive skills

THEORY 2nd - IN-SEM EXAMINATION			
SESSION: 2022-23(SUMMER SEMESTER)			
B.Voc/M.Voc	**B.Voc**	**Semester**	3rd
Course name / Module	Automotive Refinish Painting		
Course code	AUT1304		
Date			
Name of the Student		**Reg. No.**	

INSTRUCTIONS

- Maximum Marks: **20**
- Duration of Examination: **01 Hour**
- Attempt all questions.
- Marks will be deducted if over writing is found in answer copy.

1. Section A (05 objective type questions, each question carries 01 mark)	**05×1 = 05**

Q-1. What do we use for cleaning Spray gun?

a. Prep clean
b. PU thinner
c. Anti-static cleaner
d. None of these

Q-2. What is not mixed in metallic paint?

a. Hardener
b. Thinner
c. Metallic Particle
d. None of the above

Q-3. Which problem generally occurs if the feed of Paint applicator is slow and discharge Is high?

a. Runs
b. Orange peel
c. Mottling
d. None of the above

Q-4. surfacer is a.....primer?

a. Anti-Rust Coat
b. Adhesion promoter
c. Both (a) and (b)
d. None of the above

Q-5. How much hardener is mixed generally in Wash Primer?

a. 19
b. 20
c. According to manufacturer mixing Ratio
d. None of the above

2. Section B (03 short answer type questions, each question carries 02 marks)	03×02 = 06

Q-6. What are the difference between Solid and Metallic Paint in Refinish Painting Skills?

Q-7. What are the difference between Spot repair and Standard Repair?

Q-8. What is the difference between tinting and Toning?

3. Section C (03 long type questions, each question carries 03 marks)	03×03 = 09

Q-9. Explain the process of spot repair technique.

Q-10. Write down the Steps for color matching and mention the procedure to be sure in Accurate paint matching.

Q-11. Explain the need of Paint booth in Spray Painting.

THEORY 2nd - IN-SEM EXAMINATION			
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B.Voc/M.Voc	**B.Voc** **Semester**	3rd	
Course name / Module	Automotive Refinish Painting		
Course code	AUT1304		
Date			
Name of the Student		**Reg. No.**	

INSTRUCTIONS

- Maximum Marks: **20**
- Duration of Examination: **01 Hour**
- Attempt all questions.
- Marks will be deducted if over writing is found in answer copy.

1. Section A (05 objective type questions, each question carries 01 mark)	**05×1 = 05**

Q-1. What do we use for cleaning Spray gun?

a. Prep clean
b. PU thinner
c. Anti-static cleaner
d. None of these

Q-2. What is not mixed in metallic paint?

a. Hardener
b. Thinner
c. Metallic Particle
d. None of the above

Q-3. Which problem generally occurs if the feed of Paint applicator is slow and discharge Is high?

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b. Orange peel
c. Mottling
d. None of the above

Q-4. surfacer is a.....primer?

a. Anti-Rust Coat
b. Adhesion promoter
c. Both (a) and (b)
d. None of the above

Q-5. How much hardener is mixed generally in Wash Primer?

a. 19
b. 20
c. According to manufacturer mixing Ratio
d. None of the above

2. Section B (03 short answer type questions, each question carries 02 marks)	03×02 = 06

Q-6. What are the difference between Solid and Metallic Paint in Refinish Painting Skills?
Ans. Metallic paints are essentially a solid paint mixed with metallic particles. The type, amount, size and Colour of the particles can vary to produce all kinds of glitter and sparkle effects, some more subtle than others, but all metallic paints will give you a shinier finish than a solid paint.

Q-7. What are the difference between Spot repair and Standard Repair?
Ans. Standard repair is the process in which entire panel is repaired with the help of filler and liquid coats whereas spot repair is the process to repair minor dents and scratches on the particular area.

Q-8. What is the difference between tinting and Toning?
Ans. A tint is where an artist adds a colour to white to create a lighter version of the colour. An example of a tint is pink. Pink is a tint created by adding white to red. A shade is where an artist adds black to a colour to darken it down. A tone is where an artist adds grey to a colour.

3. Section C (03 long type questions, each question carries 03 marks)	03×03 = 09

Q-9. Explain the process of spot repair technique.

Ans. Steps are as follows: -

1. Clean the repair area with soap and water.
2. Clean area with wax and grease remover.
3. Sand the small area with 600 grit sandpaper. Try to keep the area small to for a smaller blending area.
4. Extend the sanded area using 1500 grit sandpaper.
5. Using a compound, compound the area sanded and around the area that is sanded. This will provide additional adhesion for the clear to bite too.
6. Clean the repair area with soap and water again.
7. Clean with wax and grease remover again.
8. Mask any moldings, chrome or anything you do not want painted. Do not mask on the panel itself. This will leave a hard edge.
9. Spray self etching primer is you sanded to bare metal. Keep the primer area small. Tip: Cut a small hole in a peice of cardboard and hold between the spray gun and the panel. This will help keep the primer area small without leaving a hard edge.
10. Spray the basecoat until hiding. You do not need to use the cardboard for this, but keep paint small. Just extend the paint past the primer. This may take 2 to 3 coats to acheive hiding. (Be sure to wait recommended flash times between coats.)
11. Apply the first coat of clear and lightly dust Fade Out to the edges of the clear coat. This will help metl the edges.
12. Apply the second coat extending the first coat of clear.
13. Dust another coat of Fade Out to clear edges to help blend edges.
14. Once dry, lightly polish the edge to remove any haze. Care should be taken not to polish too hard, as this may result in removing the blend clear coat edge.

This has worked for me and is a fairly simple process. However, if you have never done this, I recommend you practice on a spare panel to get your technique down before attempting repairs on a live project.

Resources:

Wax and Grease Remover

- Degreaser Product Information
- Degreaser Technical Data Sheet

Self Etching Primer

- Self Etch Primer Product Information
- Self Etch primer Technical Data Sheet

Fade Out

- Fade Out Product Information
- Technical Data Sheet

Q-10. Write down the Steps for color matching and mention the procedure to be sure in Accurate paint matching.

Ans. Color matching is the process in which pigments, dyes, and special effect colors are combined to achieve a specified color in a specific polymer. A color match often contains additives in addition the colors, such as dispersants and stabilizers. All vehicle paint is color-coded, and touch up paint products are marked to simplify the matching process. If you want to match the paint in your house, you usually must take a sample to a store. They'll scan your piece and mix a paint batch for you that closely matches the original color. in the case of variants, or aged paint, it is up to the body shop to determine the best color to spray. This is done by mixing a batch of paint and spraying a small test card. Once the paint dries on the test card, it is held up next to the vehicle to see if the color matches.

Q-11. Explain the need of Paint booth in Spray Painting.

Ans. Using a spray booth ensures that paint jobs are done faster, safer and cleaner. The most important function of a paint booth is to contain paint overspray, keeping your employees and the environment safe. a paint booth is not only needed to meet national, state and local code requirements, it helps woodworkers protect their employees and avoid environmental issues. Do I need a paint booth to paint a car?
If you're running any sort of auto body shop, you're going to need a paint booth on hand. Paint booths are essential to the productivity of an auto shop business.

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THEORY 2nd - IN-SEM EXAMINATION			
SESSION: 2022-23(SUMMER SEMESTER)			
B.Voc/M.Voc	**B. Voc** **Semester**	3rd-----	
Course name / Module	Automotive Electrical & A.C.		
Course code	AUT1305		
Date			
Name of the Student		**Reg. No.**	

INSTRUCTIONS
• Maximum Marks: **20**
• Duration of Examination: **01 Hour**
• Attempt all questions.
•

1. Section A (05 objective type questions, each question carries 01 mark)	**05×1 = 05**

1. The battery capacity of is expressed in terms of:
   a) Current rating
   b) Voltage rating
   c) Ampere hour rating
   d) None of the above
2. If a battery is to be charged at a much faster rate as compared to normal charging rate, the charging should be restricted to:
   a) 95% of the capacity of battery
   b) 80% of the capacity of battery
   c) 55% of the capacity of battery
   d) 35% of the capacity of battery
3. The process of producing induced electric current through the variation of magnetic field is called.....
   (a) Electrification
   (b) Patience
   (c) Electromagnetic induction
   (d) Parabolic
4. A transformer helps in transforming:
   (a) Current
   (b) Voltage
   (c) Both A and B
   (d) frequency
5. The materials property by which the application of force/pressure generates electricity is called:

a) Static electricity

b) Piezoelectricity

c) Conductivity

d) None of the above

2. Section B (03 short answer type questions, each question carries 02 marks)	**03×02 = 06**

1. Define transformer, Explain the function of a transformer.
2. Explain piezoelectricity.
3. The charging and discharging of vehicle battery done through which external and internal electrical components? Name them.

3. Section C (03 long type questions, each question carries 03 marks)	**03×03 = 09**

1. Explain principal of operation, construction and chemical reaction of lead acid battery.
2. Explain faraday law of electromagnetic induction.
3. Differentiate between step up transformer and step down transformer.

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THEORY 2nd - IN-SEM EXAMINATION			
SESSION: 2022-23(SUMMER SEMESTER)			
B.Voc/M.Voc	**B. Voc** **Semester**	3rd-----	
Course name / Module	Automotive Electrical & AC		
Course code	AUT1305		
Date			
Name of the Student		**Reg. No.**	

INSTRUCTIONS

- Maximum Marks: **20**
- Duration of Examination: **01 Hour**
- Attempt all questions.
- Any other instruction may be included, If required.

1. Section A (05 objective type questions, each question carries 01 mark)	**05×1 = 05**

1. The battery capacity of is expressed in terms of:
   a) Current rating
   b) Voltage rating
   c) Ampere hour rating
   d) None of the above
2. If a battery is to be charged at a much faster rate as compared to normal charging rate, the charging should be restricted to:
   a) 95% of the capacity of battery
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   c) 55% of the capacity of battery
   d) 35% of the capacity of battery
3. The process of producing induced electric current through the variation of magnetic field is called.....
   (a) Electrification
   (b) Patience
   (c) **Electromagnetic induction**
   (d) Parabolic
4. A transformer helps in transforming:
   (a) Current
   (b) Voltage
   (c) **Both A and B**
   (d) frequency

5. The materials property by which the application of force/pressure generates electricity is called:

   a) Static electricity

   b) **Piezoelectricity**

   c) Conductivity

   d) None of the above

2. Section B (03 short answer type questions, each question carries 02 marks)	**03×02 = 06**

1. Define transformer? Explain the function of a transformer.

   A transformer is a device that transfers electric energy from one alternating-current circuit to one or more other circuits, either increasing (stepping up) or reducing (stepping down) the voltage.

2. Explain piezoelectricity.

   Piezoelectricity is the electric charge that accumulates in certain solid materials—such as crystals, certain

3. The charging and discharging of vehicle battery done through which external and internal electrical components? Name them.

   Startor and Alternator

3. Section C (03 long type questions, each question carries 03 marks)	**03×03 = 09**

1. Explain principal of operation, construction and chemical reaction of lead acid battery.

Chemical Reaction for Discharging

When the battery is discharged, it acts as a galvanic cell and the following chemical reaction occurs.
Negative:
$Pb(s) + HSO_4^- + H_2O(l) \rightarrow 2e^- + PbSO_4(s) + H_3O^+(aq)$ (oxidation)
Positive:
$PbO_2(s) + HSO_4^-(aq) + 3H_3O^+(aq) + 2e^- \rightarrow PbSO_4(s) + 5H_2O(l)$ (reduction)

2. Explain faraday law of electromagnetic induction.

   Faraday's first law of electromagnetic induction states, "Whenever a conductor is placed in a varying magnetic field, an electromotive force is induced. Likewise, if the conductor circuit is closed, a current is induced, which is called induced current

3. Differentiate between step up transformer and step down transformer.

   Difference are:

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BASIS FOR COMPARISON	STEP-UP TRANSFORMER	STEP-DOWN TRANSFORMER
Definition	Step-up transformer increase the output voltage.	Step-down transformer reduces the output voltage.
Voltage	Input voltage is low while the output voltage is high.	Input voltage is high while the output voltage is low.
Winding	High voltage winding is the secondary winding.	High voltage winding is the primary winding.
Current	Current is low on the secondary winding.	Current is high on the secondary winding.
Rating of output voltage	11000 volts or above	110v ,24v, 20v, 10v, etc.
Size of the conductor	Primary winding is made up of thick insulated copper wire.	Secondary winding is made up of thick insulated copper wire
Application	Power plant, X-rays	Doorbell, voltage

3. Safety sandwich