GAUTENG DEPARTMENT OF EDUCATION
SENIOR CERTIFICATE EXAMINATION

MOTOR BODY REPAIRING SG

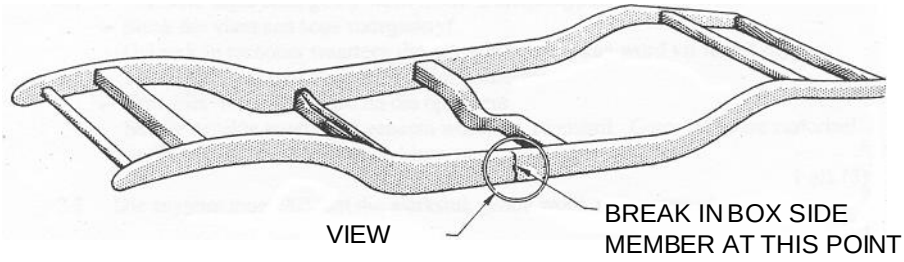
Possible Answers / Moontlike Antwoorde
Feb / Mar / Maart 2006

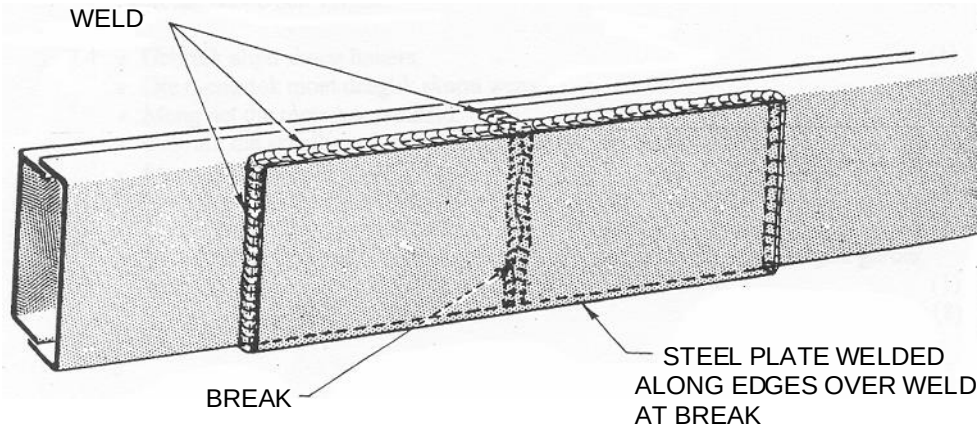
QUESTION 1

1.1 In the sketch below a crack can be seen. In the following sketch the reinforcing plate that is welded on can be seen. (1)

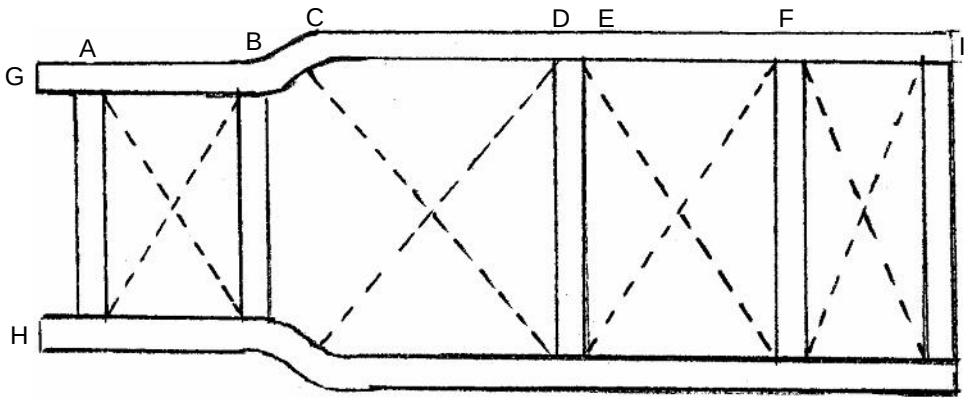
- Clean the surface using a grinder. (2)
- Grind the crack in the form of a V. (2)
- Before welding can take place, remove the battery cables to prevent damage to the alternator. (1)
- Weld the crack with arc welding. (2)
- Grind the weld joint smooth with the grinding machine. (2)
- Place the reinforcing over the crack and weld. (2)
- Use the grinder to clean up the welding. (2)

(13)





1.2



X method

Length A = B
Length C = D
Length E = F
Floor height of G, H, I and J must be the same.

Sketch 5
Measuring points 5

(10)

1.3 The X method (1)
The comparison method (1)

[25]

QUESTION 2

2.1
- A small cutting nozzle must be used.
- Light the flame as indicated.
- Use a straight-edge holder along which the nozzle can be moved for cutting in a straight line.
- Heat up till red and then press the oxygen lever.
- Pull the torch at a slow speed against the guide towards the operator.
- Certain aspects must be taken into consideration:
  - Welding goggles and no flammable material near the cutting operation
  - Protective clothing.

1 each (5)

2.2 Must be held down at 90º. (2)

2.3 It is not advisable to mix acrylic paint from different manufacturers. If we take a yellow colour, it can differ slightly from manufacturer to manufacturer. To make the acrylic paint competitive, the ingredients can also differ. (2)

2.4
- Always use clean containers. (1)
- The mixing stick must be thoroughly clean. (1)
- Only mix the right amount of paint for use. (1)
- Use the scale paint rule for the right mix, as prescribed. (1)
- Mix thoroughly. (1)
- Before use the paint must be filtered. (1)
- Use paint from the same manufacturer. (1)
- Stir the paint thoroughly after every refill. (1)

1 each (8)

2.5
- Dust-proof
- Less body noise
- Solid bodywork
- It can be made lighter in weight 1 each (3)

2.6
- Expensive to manufacture (1)
- Difficult to repair after an accident (1)

2.7 Straightening of the frame first. (3)

[25]

QUESTION 3

The following is the latter of two methods that may be used. The one is to respray the bonnet in place, the other is to completely remove the bonnet and to perform the work elsewhere.

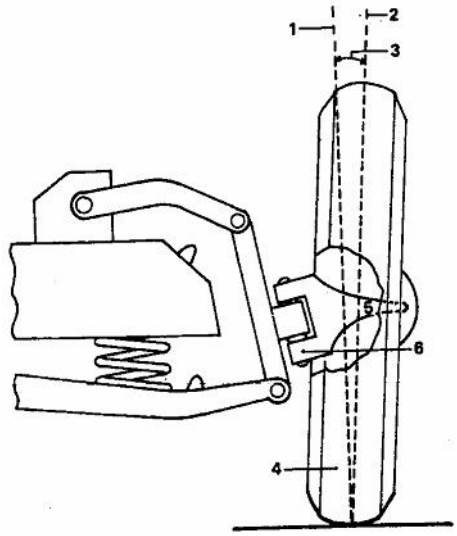
- Remove the bonnet. (2)
- Rub the whole area with 600 water paper. (2)
- Check for scratches or dents that are visible. (1)
- Apply a thin layer of primer first. (1)
- Leave to dry for 1 hour. (1)
- Spray 2 to 3 layers of primer. (1)
- Rub lightly with 600 water paper for smooth appearance. (2)
- Mix the right paint colour. (1)
- Pour through a filter into the spray gun. (1)
- Use a special cloth to wipe bonnet surface (tack cloth). (1)
- Spray the first layer only with a dry spray. (2)
- The final coat of 2 to 3 layers can now be sprayed on. (1)
- Leave to dry for 6 to 8 hours. (1)
- Use 1 500 water paper to smooth the surface to a dull appearance. (2)
- Use a buffing machine with a special rubbing compound (cutting compound) to get a high-gloss finish. (1)
- Apply a car polish and shine. (2)
- Replace bonnet and fit properly, so that gaps at mud guards are equal. (1)
- Final finishing can now be done.

[25]

QUESTION 4

4.1 Tyre pressures must be the same
Check front wheel bearings.
Check the steering box.
Check for the right ground height when loaded.
Check the steering knuckles for wear.
Same size tyres and wheels must be used all round on the car. 1 each (5)

4.2



Positive chamber 1. plumb line; 2. wheel centre line; 3. positive camber angle; 4. wheel; 5. stub axle; 6. king pin.

Sketch 8
Label 2
Degrees 2

Description

- The contact point of the wheel and road surface is placed under the load. (2)
- The load on the stub axle is reduced. (2)
- Steering action will be easy because the turning point of the wheel is directly under the kingpin. (2)
- The side pressure on the kingpin bushes is reduced for easier handling of the steering. (2)

[25]

QUESTION 5

5.1
- Clean and remove all loose particles.
- Clean on the inside.
- Roughen the inside and outside.
- Apply resin and hardener to the inside.
- Apply matting to the resin and another layer of resin by dabbing with the brush.
- When enough layers of matting have been applied to the whole of the inside one can start the same process on the outside.
- Apply resin and hardener and follow up with matting.
- When the hole is filled, wait to dry.
- Rub down till smooth and spray special fibre-glass primer.
- Final colour can now be sprayed on, let dry and finish off. 2 each (20)

5.2
- Coarse file
- Grinding machine
- Spray gun
- Rubber sanding block
- Old paint brush to apply resin and matting 1 each (5)

[25]

QUESTION 6

6.1 Because of oil or polish that is not properly cleaned. (2)

6.2 Remove all the paint and rub with water paper. Thinners can also be used to remove the paint.

6.3 Metalic pigments
Aluminium powder
Zink-dust
Bronze powder 1 each (3)

6.4 Carbon black is used in the manufacture of black paint and is obtained in the form of epoxy when gas flame and cold steel combine in a partial burning process. (5)

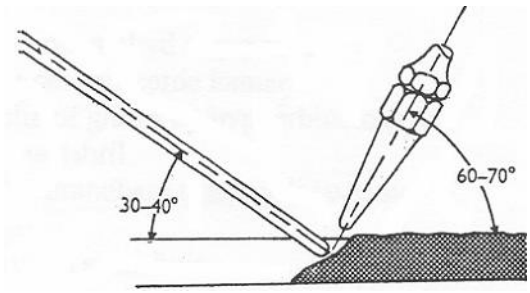
6.5 A rubber block is used to get an even, smooth surface. With hand rubbing small dents can occur. (5)

6.6 The answer is true because the one cylinder with oxygen is a right hand thread and acetylene cylinder is a left hand thread. (5)

[25]

QUESTION 7

7.1



Sketch 10
Degrees 5

(15)

7.2
- Use a soap solution on the connections. If there is a leak, bubbles will occur. (2)
- Acetylene has an awful smell (2)

7.3
- Body putty is cheaper than body lead. (3)
- The process of rubbing flat is much easier with body putty than body lead. (3)

[25]

QUESTION 8

8.1 Rust is an iron oxide which changes when water and oxygen are in contact at the same time. A chemical reaction takes place which changes a bright metal into a brown, useless oxide. (5)

8.2 There are various methods to repair a rusted panel:

- Fibre glass is often used, but this method is only temporary. (2)
- The rusted panel can be cut out and replaced with new surface by welding it in. (1)
- To stop rust, specially where it is impossible to replace a panel, Russist is used to stop the rust by means of a chemical process which stops the rust immediately. (2)

8.3

- Under beadings
- Under fenders
- Under doors
- At chassis reinforcing beams 1 each (3)

8.4

- Use a spray mask.
- Fresh air must be allowed to flow into the spray booth only through filters.
- All electrical connections must be flame proof.
- Mix only enough paint for the job.
- Enough working space
- Enough lighting 1 each (5)

8.5

- Cylinders in upright position
- Keep in ventilated room.
- No oil or greese at connections
- Wear welding glasses.
- Don't use near flammable material. 1 each (3)

8.6

- Use a welding helmet.
- Wear protective clothing.
- Good earth connection.
- Weld behind a welding curtain. 1 each (3)

8.7

- Fire-extinguishers are most important in the workplace where flammable material and gases are used during motor body repairing work. Fires can start in petrol tanks, seats or upholstery when gas welding or arc welding is done. (1)

[25]

TOTAL: 200

END