

Qualification title: 0171-33 Level 3 Advanced Technical Extended Diploma in Agriculture (Farm Mechanisation) (1080)

Test title: 0171-514

Version: Sample

Q1	
<p>a) State three main electrical components in the charging system of a land-based power unit. (3 marks)</p> <p>b) Describe one function of each of the components stated in 1a). (3 marks)</p> <p>Answer:</p> <p>a) One mark for each component stated, up to a maximum of three marks:</p> <ul style="list-style-type: none"> • Battery (1) • Fuse (1) • Alternator (1) • Any other suitable answer <p>b) One mark for each described function, up to a maximum of three marks:</p> <ul style="list-style-type: none"> • The battery stores the electricity. (1) • The fuse protects the electrical circuit in case of overload. (1) • The alternator charges the battery. (1) 	
Test spec reference: Unit 310 (AO1 & AO2) Topic 1.1	Total marks: 6 marks

Q2

Explain **one** reason why shear bolts are sometimes used in the line of drive on a land-based machine. (2 marks)

Answer:

Up to two marks for a full explanation:

- To protect the line of drive from damage (1) in the case of sudden overload. (1)

Test spec reference: Unit 310 (2 AO2)
Topic 2.2

Total marks: 2 marks

Q3

a) State **four** important details that should appear on a land-based power unit service record sheet. (4 marks)

b) Describe **two** reasons why it is important to keep a record of service tasks carried out on a land-based power unit. (2 marks)

Answer:

a) **One mark for each detail, up to a maximum of four marks:**

- Date of service. (1)
- Vehicle recognition; make and model, serial or registration number. (1)
- Maintenance task carried out. (1)
- Replacement components used. (1)
- Date when next service due. (1)
- Any other relevant answer

b) **One mark for each description, up to a maximum of two marks:**

- Proof of service, in case of any warranty claims. (1)
- To know when a future service is due. (1)
- To be able to view the service history of the machine. (1)
- Any other relevant answer

Test spec reference: Unit 310 (AO1 & AO2)
Topic 3.3

Total marks: 6 marks

Q4

Explain **four** reasons why diesel engines, rather than spark ignition engines, are predominantly used in land-based power units. (8 marks)

Answer:

Up to two marks per full explanation, to a maximum of eight marks:

- They are heavier and more robust (1) to cope with the high compression pressures. (1)
- They generally provide more torque at lower revs (1), ideally suited for the type of work. (1)
- They produce torque over a wide rev range (1) and so when the revs drop they can 'hang on' for longer. (1)
- They usually require lower maintenance (1) as they have no spark plugs and run at lower revs. (1)
- They are more efficient, (1) as they use less fuel for a given amount of work. (1)
- Fuel handling and storage is easier and safer with diesel (1) as it is less combustible and lasts longer than petrol. (1)

Any other reasonable answer

Test spec reference: Unit 310 (AO2)
Topic 2.1 + 4.1 + 4.2 + 4.3

Total marks: 8 marks

Q5

State the **full name** of the acronym **COSHH**? (1 mark)

Answer:

One mark for the following:

Control of Substances Hazardous to Health (1)

Test spec reference: Unit 318 (AO1)
Topic 1.2

Total marks: 1 mark

Q6

Describe **two** reasons for using a torque wrench. (2 marks)

Answer:

One mark for each description, up to a maximum of two marks:

- To tighten nuts and bolts to a specific torque (tightness) so they do not come undone or shear off. (1)
- To tighten a series of bolts, to the exact same tightness (such as on a cylinder head) to ensure even clamping. (1)

Test spec reference: Unit 318 (AO2)
Topic 2.1

Total marks: 2 marks

Q7

State the direction the teeth should face when replacing the blade in a hand-held hacksaw. (1 mark)

Answer:

One mark for the following:

Forwards (1) / away from the handle (1)

Test spec reference: Unit 318 (AO1)
Topic 2.3

Total marks: 1 mark

Q8

You are about to change the points on a large cultivator attached to a tractor, in a land-based workshop.

Discuss the procedures you need to follow, before, during and after changing the points, in order to carry out the task safely and efficiently and in accordance with the current legislation and code of practice. (12 marks)

Indicative content

Before:

- Carry out a risk assessment or follow any risk assessment already produced for the task – including reference to accident book and RIDDOR
- PPE: wear steel toe cap boots, goggles, overalls, ear defenders, barrier cream or gloves to protect hands as appropriate
- Pressure wash cultivator if necessary
- Make sure work area is clean and tidy before you start
- Do not rely on the tractor hydraulics, use axle stands
- Make sure the new points and bolts are the right ones before starting (refer to manufacturer's parts book)
- Check the first aid kit is complete
- Appropriate training undertaken

During:

- Ensure tools fit for purpose are selected (ring spanners or sockets of the correct size)
- Use of air tools would speed up the work
- Beware heads of bolts may be sharp, do not hold with hands
- If the bolts will not undo, use angle grinder, oxy-acetylene, or cold chisel to remove them
- Use exhaust gas extraction system if starting the tractor
- Do not climb on, or put yourself under the machine unnecessarily
- Keep the work area secure

After:

- Clean and replace tools
- Dispose of old points and bolts in metal re-cycling and other waste appropriately
- Wash hands after use
- Update records of the service and any advice for future operations
- Ensure PPE used is cleaned and stored correctly

Band 1 (1 – 4 marks)

The candidate has failed to discuss many of the procedures for each of the stages (before, during and after) of the task. The candidate has provided minimal rationale as to why the procedures are required to carry out the task safely and efficiently. The candidate's response is just a list of procedures not following a logical order.

Band 2 (5 – 8 marks)

The candidate has discussed a range of appropriate procedures for each of the stages of the task. The candidate has occasionally provided reasons as to why the procedures are required to carry out the task safely and efficiently. The candidate's response is unlikely to have followed a logical order.

Band 3 (9 – 12 marks)

The candidate has discussed a broad range of appropriate procedures for each of the stages of the task. The candidate has provided clear reasons as to why the procedures are required to carry out the task safely and efficiently. The candidate's response is comprehensive and follows a logical order.

Test spec reference: Units 310 + 318 (12 AO4)

Total marks: 12 marks