



**NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY**

FACULTY OF NATURAL RESOURCES AND SPATIAL SCIENCES

DEPARTMENT OF NATURAL RESOURCES AND AGRICULTURE SCIENCES

QUALIFICATION : BACHELOR OF OFFICE MANAGEMENT AND TECHNOLOGY	
QUALIFICATION CODE: 27AGR	LEVEL: 7
COURSE CODE: AMC520S	COURSE NAME: Agriculture Mechanisation
DATE: July 2019	PAPER: Theory
DURATION: 3 Hours	MARKS: 100

SECOND OPPORTUNITY/SUPPLEMENTARY EXAMINATION QUESTION PAPER	
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INSTRUCTIONS
<ol style="list-style-type: none">1. This paper consists of 7 Sections with questions2. All the questions are compulsory3. Read all questions carefully before answering.4. Number your answers clearly.5. Make sure your student number appears on the answering script.

PERMISSIBLE MATERIALS

1. Examination paper.
2. Examination script.

THIS QUESTION PAPER CONSISTS OF 4 PAGES (Including this front page)

SECTION A – MOTOR

Question 1

1. State the functions of the following components in the lubrication system:

a. Oil pump (1)

Forces the oil through a series of channels to all parts of the engine requiring lubrication.

b. Oil filter (1)

To clean the oil

c. Dipstick (1)

To indicate oil level

d. Drain plug (1)

To drain the oil

Question 2 (4)

2. Name the parts in the cooling system that are responsible for the following functions:

a. Circulating water through the cooling system (1)

Water pump

b. Control the temperature of the engine (1)

Thermostat

c. Increase the pressure to increase of the engine (1)

Filler cap or radiator

d. Sucks air through the radiator (1)

Fan

Question 3

Briefly discuss what happens during the four-stroke cycle of an IC petrol engine. (8)

- Intake: Piston moves down, and intake valve is open and exhaust valve is closed. Fuel mixture enters piston reach B.D.C intake valve closed.
- Compression: Intake and exhaust valve are closed piston moves from B.D.C to T.D.C compress the fuel mixture.
- Power: Electric spark ignited fuel mixtures and gas expanding and force piston down from T.D.C to B.D.C.
- Exhaust: Exhaust valve open and intake valve closed. Piston moves from B.D.C to T.D.C and exhaust valve closed.

SECTION B – SAFETY

Question 1

Discuss safety regulations regarding the following:

- a. Portable electrical equipment (5)
 - It must be ensured that the plug cord insulation covers switches are in good condition.
 - The appliance cord and plug must be absolutely dry.
 - If there is any sign of moisture the appliance must not be used.
 - Avoid standing on damp spots or water.
 - Your footing must be firm and secure.

- b. Workshop machinery (3)
 - All safety guards must be in position at all times.
 - The machines must be in a perfect working condition.
 - The machines must be mounted properly.

Question 2

What is the purpose of a safety switch on electrical equipment? (2)

A **safety switch** is a device that quickly **switches** off the electricity supply if an electrical fault is detected, to minimise the risk of electricity-related fires, electric shock, injury and death.

[10]

SECTION C – WELDING

Question 1

State the use or function of the welding tools and equipment below:

- a. Welding machine (2)
A transformer that supplies high amps to enable metals to joint
- b. Chipping hammer (2)
Steel hammer used to remove the slag
- c. Welding screen (2)
Protect the eyes from bystanders against ultraviolet rays
- d. Leather gauntlets (2)
Protecting limbs from burning

e. Leather apron (2)

Protect clothing and body from burning

f. Leather gloves (2)

Protect hands and arms from burning

g. Wire brush (2)

Tool used to clean surface before and after welding

Question 2

Mention ten (10) safety aspects that should be taken in consideration during an arc welding activity.

- Only electricians are allowed to connect power cables to the power source.
- Always attach welding earth clamp tightly to actual workplace.
- Avoid accidental arcing and use fully insulated holders.
- Keep welding holders securely on insulated hooks
- Gas cylinder and inflammable material away from arc welding activities.
- Wear suitable welding safety clothing.
- Provide adequate welding screens to protect other workers from the flashes of the arc.
- Always use fully insulated cables
- Always check for loose connections and repair to prevent arcing elsewhere.

Question 3

What are the causes of the following in welding? (2)

a. Difficulty with striking and holding the arc. (1)

Too low current or too thick welding rod

b. Poor welding penetration (1)

Too low current or too thick welding rod

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SECTION D – FENCING

Question 1

State any two (2) major reasons for good fencing in farming. (2)

- Control the movement of livestock (1)
- Improvement of grazing management (1)
- Disease control (1)
- Breeding control (1)

Question 2

Identify and state the use of the tools needed to put up a Vermin proof (Jackal proof) fence. (10)

- Wire plier – binding the wire
- Strainer – Straining the wire between posts
- Koevoet & Spade – To dig the holes for the post
- Hammer – To drive steel posts into the ground
- Wood saw – Notch on droppers for the wire

Question 3

Mention the requirements of a good fence.

- Straight line from straining post to straining post
- All post and standards in perfect alignment
- Straining, corner and gate posts show good quality
- Stable, sturdy and set vertically into the ground
- Line posts and droppers stand erected same height above ground level
- Straining posts not too far apart
- Each wire at a specific height above ground level and parallel to others
- Standards and droppers are secured that it won't move up and down.
- Droppers spaced so that the distance between standards are equally divided
- It should not be erected with inferior materials

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SECTION E – ALTERNATIVE ENERGY

Question 1

Give one word for each of the following statements:

1. The Unit of electric current. (1)
Ampere
2. A device which prevents overcharging of the battery. (1)
Regulator
3. Unit of resistance. (1)
Ohms
4. A negatively charged particle. (1)
Electron

5. Unit of power. (1)

Watts

Question 2

Identify any six (6) components of a solar system. (6)

- Solar panel
- Battery
- Regulator
- Inverter
- Control Unit
- Solar load
- Electric wires

[11]

SECTION F – WATER PUMPS AND INSTALLATION

Question 3

State the functions of the following tools and equipment when pulling pipes:

a. Set of cable and pulleys (1)

Lift the pipes out of the borehole

b. 450mm pipe wrench (1)

To unscrew the rods (sockets & nuts)

c. 900 pipe wrenches (1)

To loosen the pipes from the sockets

d. Zulu (1)

To fasten around the pipe in order to pull

e. Pipe cutter (1)

To cut the pipes

f. Thread cutter set (1)

To cut threads on the pipe ends

Question 1

Mention any four (4) parts of the reciprocating water pump. (4)

- Cylinder
- Piston

- Piston valve
- Foot valve
- Piston leather washer

[10]

SECTION G – CONCRETE

Question 2

Briefly describe the steps you would follow when fresh concrete is attached to concrete which is older than three years. (5)

- Surface of old concrete chipped away to prepare rough surface
- Scrubbed with a wire brush to remove the dust
- Clean creamy cement paste brushed over
- Then layer of mortar brushed over
- Continue work before it gets dry

[5]

TOTAL [100]