higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

ELECTRICAL WORKMANSHIP
NQF LEVEL 3

(12041013)

14 November 2022 (X-paper)
09:00–12:00

This question paper consists of 5 pages.

267Q1N2214

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TIME: 3 HOURS
MARKS: 100

INSTRUCTIONS AND INFORMATION

1. Answer all the questions.
2. Read all the questions carefully.
3. Number the answers according to the numbering system used in this question paper.
4. Start each section on a new page.
5. Use only a blue or black pen.
6. Write neatly and legibly.

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QUESTION 1

1.1 Sometimes, unexpected incidents prevent you from keeping to your daily, weekly, or monthly plan.

State SIX possible incidents that may cause your plan not to be completed in time. (6)

1.2 State FOUR advantages of a task list when you do planning. (4)

1.3 Acting to prevent an incident is the third step of dealing with hazards in the workplace.

1.3.1 Define the term *hazard* and give ONE example of a hazard. (2)

1.3.2 List THREE steps to prevent an incident. (3)

1.4 State FIVE functions and responsibilities of health and safety representatives according to the OHSA. (5)

1.5 List FIVE procedures to follow in the investigation of an incident according to the OHSA. (5)

[25]

QUESTION 2

2.1 A wattmeter measures power in a circuit.

2.1.1 Draw a fully labelled circuit diagram of a wattmeter. (4)

2.1.2 Explain the operation of a wattmeter in full. (3)

2.2 Name THREE factors affecting the accuracy a of meter or instrument. (3)

2.3 Your instructor has requested you to calibrate an instrument.

2.3.1 Explain what you will do if the readings of the instrument deviate from those of the standard during the calibration process. (2)

2.3.2 State THREE reasons why instruments must be calibrated. (3)

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QUESTION 3

3.1 You have to do a visual inspection on different types of kettles.

3.1.1 Name THREE types of kettles. (3)

3.1.2 Fully explain the operation of an electric kettle that switches OFF automatically when water boils. (6)

3.2 What is the function of a thermostat in an oven? (2)

3.3 Explain how a geyser should be connected according to the SANS 6.16.2 regulations for domestic appliances. (4)

[15]

QUESTION 4

4.1 In your OWN words, explain the FOUR common causes of power tool failure. (4)

4.2 State SIX factors that increase the risk of electrocution. (6)

4.3 In FIVE points, state how the owner or user of a heater should care for and maintain it. (5)

[15]

QUESTION 5

5.1 Suppose that you are to work on machinery that, although it is disconnected from all sources of electrical energy, could still acquire, or retain an electrical charge.

Which precautionary measure will you take to prevent the machinery from being charged or made alive while you are working on it? Give a reason for your answer. (3)

5.2 Give THREE applications for each of the following motors:

5.2.1 A single-phase AC induction motor. (3)

5.2.2 A universal motor. (3)

5.3 Name FOUR components of a single-phase capacitor-start induction-run motor. (4)

5.4 How would you reverse the direction of rotation for a single-phase AC motor? (2)

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QUESTION 6

6.1 List FOUR factors that determine the choice of an electrode holder. (4)

6.2 Choose personal protective equipment from COLUMN B that matches a term in COLUMN A. Write only the letter (A–E) next to the question number (6.2.1–6.2.6) in the ANSWER BOOK.

COLUMN A		COLUMN B	
6.2.1	Ear	A	Hard hat
6.2.2	Eyes	B	Safety boots
6.2.3	Lungs	C	Ear muffs
6.2.4	Hand	D	Face shield
6.2.5	Head	E	Welding gloves
6.2.6	Feet	F	Respiratory

(6 × 1) (6)

6.3 List and explain TWO basic categories of weld joints. (5)
[15]

TOTAL: 100

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