higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

ELECTRICAL WORKMANSHIP
NQF LEVEL 3

(12041013)

19 November 2018 (X-Paper)
09:00–12:00

This question paper consists of 5 pages.

NCV

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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. Write neatly and legibly.

NSC

QUESTION 1

1.1 List TWO aims of the Occupational Health and Safety Act. (4)

1.2 Name TWO obligations of the employee to the employer. (4)

1.3 A permit to work is required when working on power lines.

In SIX points, explain what this document is used for? (6)

1.4 A special lock is used in the lockout procedure to prevent anyone from accidentally turning on the circuit during maintenance or repairs.

Name FOUR situations one can use the lockout procedure. (4)

1.5 Name TWO causes of accidents in the workplace. (2)

1.6 What are the THREE main reasons why calibration is important? (3)

1.7 Explain why it is important to rectify/correct a hazardous condition in the workplace. (2)

[25]

QUESTION 2

2.1 Name the type of test associated with the measuring instruments below.

2.1.1 A clamp-on meter

2.1.2 An earth leakage/polarity tester

2.1.3 An insulation resistance tester

(3 × 1) (3)

2.2 List THREE points to consider when maintaining testing and measuring equipment. (3)

2.3 Name THREE requirements to consider when installing metering and measuring equipment. (3)

2.4 Name TWO steps to be taken when installing and connecting metering equipment. (2)

2.5 Draw a fully labelled circuit diagram of a voltage transformer in circuit. (4)

[15]

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QUESTION 3

3.1 What is the operating principle of an oven thermostat switch? (2)

3.2 Briefly explain the operation of an automatic kettle circuit. (2)

3.3 Compare the thermal switching of an oven with that of an automatic kettle by giving the main difference between the thermal switching principles used. (2)

3.4 Name TWO appliances that use the same thermal regulation operating principles. (2)

3.5 With regard to the SANS 10142-1:2012; regulations concerning fixed appliances:

Complete the following sentences/paragraph(s) by filling in the missing word(s). Write only the word(s) next to the question number (3.5.1–3.5.4) in the ANSWER BOOK.

Fixed appliances do not form part of the (3.5.1 …) other than their positioning in relation to the (3.5.2 ...) and the wiring carried out between different (3.5.3 …) of the (3.5.4 …). (4)

3.6 Name THREE of the steps to be followed in fault finding and testing of portable appliances. (3)

[15]

QUESTION 4

4.1 With reference to washing machines, complete the following sentences by filling in the missing word(s). Only write the word(s) next to the question numbers (4.1.1–4.1.5) in the ANSWER BOOK.

4.1.1 The wash process consists of four basic elements/factors, namely (a) …, (b) …, (c) …, and (d) … (4)

4.1.2 Detergent is available either as powder or as … (1)

4.1.3 The three motors in a typical twin tub washing machine are (a) …, (b) …, and (c) … (3)

4.1.4 The pump motor is usually of a … pole design. (1)

4.1.5 Since a washing machine uses water as a primary element, water may … at some stage. (1)

4.2 You are required to do fault finding and testing on a kettle.

Name FIVE steps to be followed when diagnosing the problem. (5)

[15]

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QUESTION 5

5.1 Name any THREE types of couplings found in motors. (3)

5.2 State THREE steps to follow when planning an electrical task successfully when selecting single-phase AC machines and control gear. (3)

5.3 List THREE tasks that are needed when planning the installation of electrical motors. (3)

5.4 Name the THREE electrical tests that are usually performed on motors. (6)
[15]

QUESTION 6

6.1 Define the term *bevel* applicable to welding. (2)

6.2 Name FIVE personal protective equipment (PPE) one should wear when welding. (5)

6.3 Name THREE physical effects of electric shock that may cause death or serious injury. (3)

6.4 Explain the technique of weaving an electrode. (5)
[15]

TOTAL: 100

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