higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE

FAULT FINDING AND PROTECTIVE DEVICES N6

(8080126)

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

Drawing instruments may be used.

This question paper consists of 4 pages.

104Q1E2221

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE
FAULT FINDING AND PROTECTIVE DEVICES N6
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 What is the electrolyte used in lead acid batteries made up of? (2)

1.2 State FIVE advantages of secondary types of batteries. (5)

1.3 Explain the term *relative density.* (3)

1.4 Explain how you would set up a constant voltage current limited-type charger for a bank of nickel-cadmium cells. (4)

[14]

QUESTION 2

2.1 Draw a schematic diagram of a Translay relay system for a single-phase feeder including the current transformer, wiring and relays at both ends. (6)

2.2 Study FIGURE 1 and explain the operation of the relay circuit breaker system.

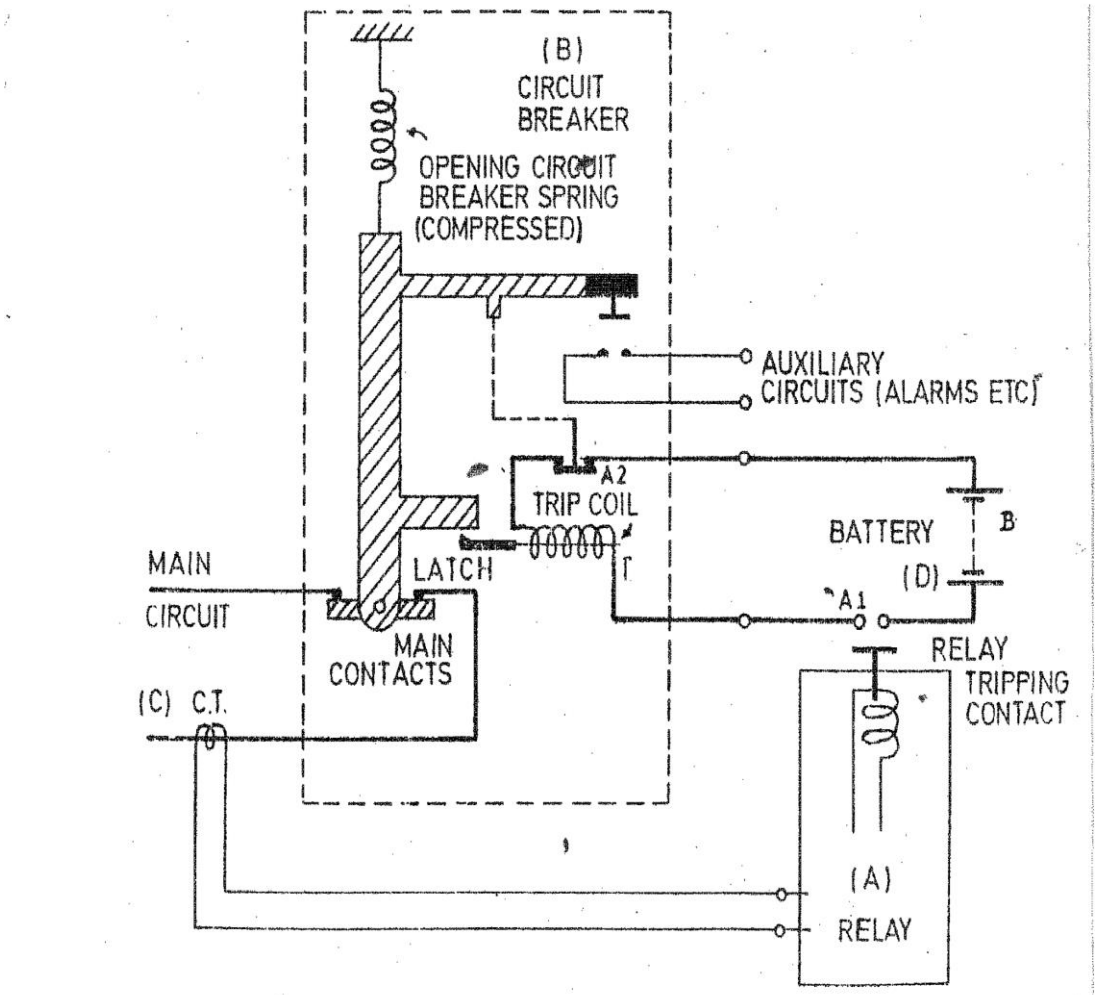


FIGURE 1 (6)

[12]

QUESTION 3

3.1	Name EIGHT tests carried out on high voltage surge arresters.	(8)
3.2	Give FOUR methods of protection used against lightning.	(4)
3.3	Explain the term auto-reclosing system.	(5)
3.4	Draw a simple labelled diagram of the attracted armature relay.	(7)

[24]

QUESTION 4

4.1	Explain how you would protect a transformer against overheating.	(3)
4.2	Name THREE gasses that are of significance in establishing the nature of the fault in the transformer.	(3)
4.3	When testing transformer oil what would the minimum dielectric strength breakdown be for oil delivered in drums with a 2,5 mm gap?	(2)
4.4	At what setting would you set a top oil thermometer to make an alarm and trip?	(2)

[10]

QUESTION 5

5.1	Give FIVE approaches you will consider when testing a faulty cable.	(5)
5.2	What is the function of the Wheatstone bridge measuring instrument?	(3)
5.3	State SIX causes of a fault within the cable itself.	(6)
5.4	Name FIVE advantages of oil circuit breakers.	(5)

[19]

QUESTION 6

6.1	Explain the procedures to be followed when using a Logic pulsar and Logic probe when doing troubleshooting on the electronic circuit.	(10)
6.2	Define the term snubber.	(3)
6.3	Name FOUR causes of a false triggering on a transistor drive.	(4)
6.4	What is a metal oxide resistor and what are its advantages?	(4)

[21]

TOTAL: 100

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