



<u>FACULTY</u>	: Education
<u>DEPARTMENT</u>	: Science and Technology Education
<u>CAMPUS</u>	: APK
<u>MODULE</u>	: TEACHING METHODOLOGY AND PRACTICUM: FET ELECTRICAL TECHNOLOGY (MPFETY1)
<u>SEMESTER</u>	: Second
<u>EXAM</u>	: SSA January 2020

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MODERATOR : MR J COETZEE (UFS)

DURATION : 2 HOURS **MARKS** : 100

NUMBER OF PAGES: 10 PAGES

INSTRUCTIONS:

1. Answer ALL THE QUESTIONS.
 2. Number your answers clearly.
 3. You may consult the NCS and CAPS.
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QUESTION 1

1.1 Briefly explain the nature of electrical technology. (3)

1.2 Briefly describe the rationale for Electrical Technology as a school subject. (3)

[6]

QUESTION 2

2.1 The CAPS document serves as a guideline for teaching Electrical Technology. Analyse the document and comment on the various aspects of teaching it provides guidelines for.

[6]

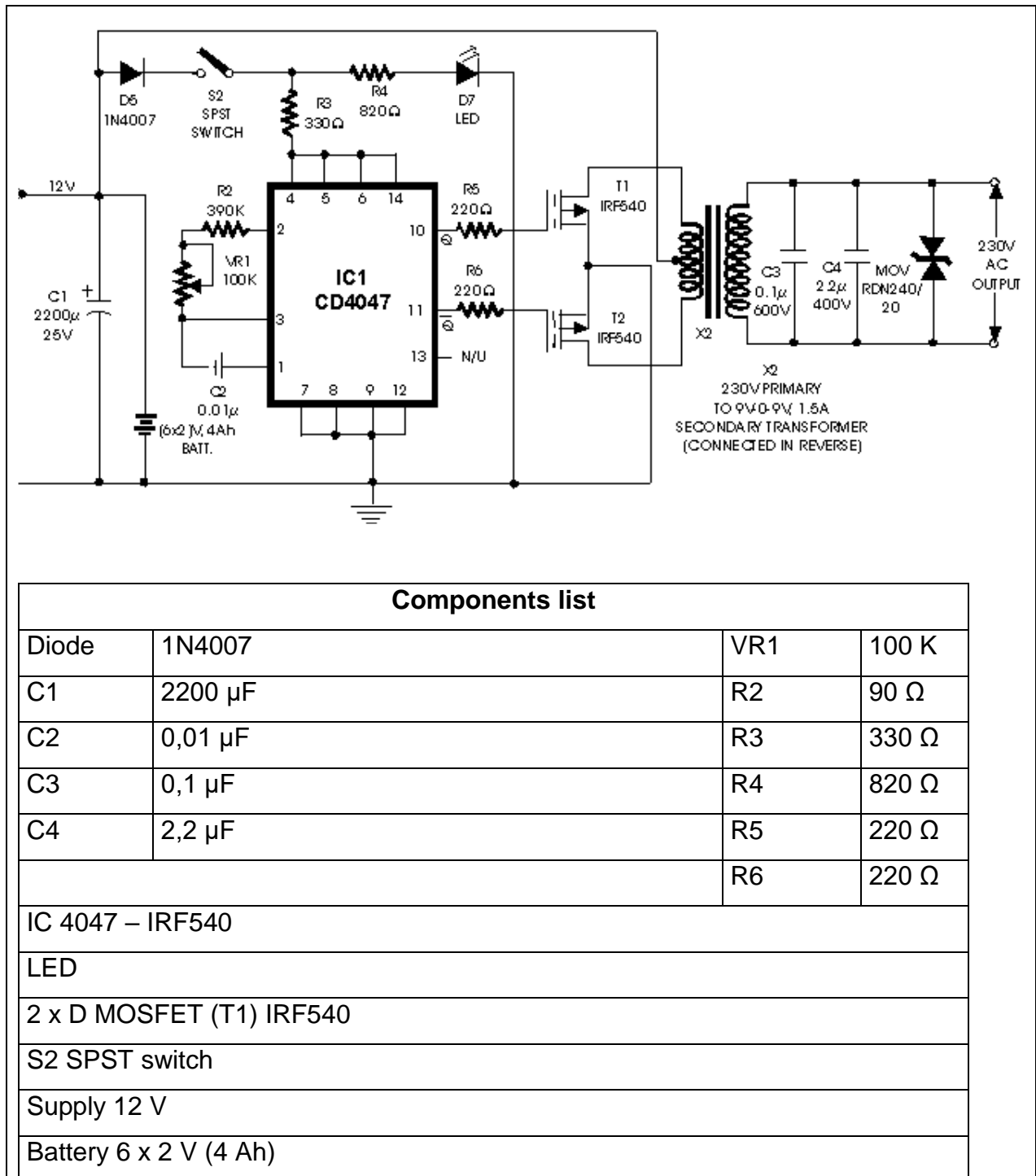
QUESTION 3

Practical assessment tasks (PAT) are designed to develop and demonstrate a learner's ability to integrate a variety of skills in order to solve a problem. The PAT also uses the technological process to guide the learner on the steps that need to be followed to arrive at a solution for the problem at hand. The PAT consists of a design portfolio, working drawings and a product/model.

The following Practical project is given in the guidelines for a PAT in Electrical Technology:

Practical Project 1: Inverter 100 W 12 VDC to 230 V by IC 4047 – IRF540

100 W inverter circuit inverts 12 VDC to 230 VAC by IC 4047 – IRF540. The circuit applied IC 4047 to generate a continuous wave signal and IRF540 to amplify the signal to be stepped up by the transformer. Take a note that you will need a 2 to 3 A centre-tapped transformer to handle/supply 100 W load.



3.1 Briefly describe by means of a step by step explanation how you as Electrical Technology teacher will facilitate the execution of this task. (10)

3.2 What conceptual knowledge will the learner need to execute this task successfully?

(6)

4/...

3.3 It is stated in the PAT that the learner's work should not leave the classroom/workshop. Briefly discuss the educational value of this statement. (4)

3.4 Both formal and informal assessment should be conducted during the execution of the PAT as well as after completion. Briefly discuss how you will assess this process. (10)

[30]

QUESTION 4

When teaching the learners a new skill during a practical session the teacher will start the lesson with a more behavioral instructional approach and proceed towards a more constructivist instructional approach. Briefly motivate this way of teaching by referring to the following:

- Focus;
- Educator control;
- Thinking; and
- Strategies.

[8]

QUESTION 5

Write your name and student number on the lesson plan template provided at the end of this question paper. Use this lesson plan template and design a 40 minute lesson on the following:

- Area of specialisation: **Electrical (Power systems)**
- Grade: **10**
- Term: **1**
- Topic: **OCCUPATIONAL HEALTH AND SAFETY – Workshop safety**

Note: According to the CAPS, twelve (12) hours are allocated for teaching generic safety requirements. This is equal to eighteen (18) periods of 40 minutes each.

[25]

QUESTION 6

Due to the fact that the practice of teaching is complex, it is essential that teachers, as reflective practitioners, intentionally construct a teaching philosophy. Discuss your own teaching philosophy as an Electrical Technology teacher by referring to the following aspects:

- Your objectives as a teacher;
- Methods to be used to achieve these objectives;
- How the effectiveness of these objectives and methods can be measured; and
- Your view on why teaching is important.

[8]**QUESTION 7****Teen dies in freak electric shock**

Cape Town - A 14-year-old Khayelitsha teen was electrocuted to death in a freak accident at the TR informal Settlement over the weekend. Amahle Masala, a Grade 9 pupil at Ntlanganiso High School, was killed when she held on to a metal wire connected to a shack which had an electric cable running through the zinc roof. The incident took place on Saturday at around 11am.

According to witness Lungile Jungwana, Amahle was stretching her arms out when she held on to the metal wire, used as a washing line, for support. "We had just been joking around when she stood and held the wire. The next thing I saw was her body shaking and she was screaming for her friend Wendy to help her."

Jungwana said at first he was so shocked that he stayed rooted to the spot. But he was triggered into action by the sight of flashing sparks coming from the wire near the roof. "I quickly grabbed a wooden rake and tried hitting her away from the wire. We tried moving her with the rake several times until the wire broke."

Jungwana said when the wire broke it got tangled around Amahle's body causing her to choke even more. "It lasted for a few minutes, but when we managed to set her loose from the wire she had already lost so much strength." Amahle collapsed and, according to Jungwana, her mouth and tongue had turned white. Neighbours arrived and threw water on her. She was taken to the nearby fire station as the area's clinics were closed for the weekend. Amahle died at the fire station.

Eskom spokesman Andrew Etzinger confirmed the incident. He said Eskom management was deeply saddened. "Our heartfelt condolences go out to her family." Etzinger said based on an initial investigation, it appeared that Amahle held on to a washing line for support as she stood up from her seat and was subsequently electrocuted. He said Eskom technical staff arrived on the scene and inspected the area. There was no apparent indication as to how the washing line had been electrified. The incident is under investigation."

7.1 Analyse the passage above and briefly discuss the topic(s) in the CAPS which relates to the incident described above. (3)

7.2 How do you think this incident could have been prevented? (4)

7.3 The news clip above can be used to bring reality into the classroom. Briefly explain how you would do it. What teaching approach and what strategy(s) would you use? (4)

[11]

QUESTION 8

You spent seven weeks at a school for the purpose of work integrated learning (WIL). Write a short reflection on the challenges and the good practices that you have experienced. Conclude your reflection by elaborating on how you think these experiences will prepare you for your career as an Electrical Technology teacher.

[6]

Total: 100

LESSON PLAN TEMPLATE

NAME: _____ STUDENT NUMBER: _____

SUBJECT: _____

PHASE: _____

GRADE: _____

TITLE/TOPIC OF LESSON: _____

1.1 SITUATION ANALYSIS (Who? When? Where?)

(3)

1.2 SPECIFIC AIMS (What for?)

Curriculum and Assessment Policy Statement (CAPS), p. _____

(2)

1.3. LESSON OBJECTIVE (What for?)

(2)

2.1. **LEARNING CONTENT** (What?)

Procedural knowledge: (Thinking processes and skills)

(2)

Conceptual knowledge (Factual knowledge: Definitions, concepts, rules, etc.)

(2)

CURRICULUM AND ASSESSMENT POLICY STATEMENT (CAPS)
Focus/Content, concepts and skills, p. _____

(4)

2.2. **TEACHER ACTIVITIES** (How?)

2.2.1 Setting the context (Introduction)

(3)

2.2.2 Instruction

a) Instructional approach

(2)

b) Instructional strategy(ies)

(2)

c) Instructional skill(s)

(3)

2.3. **LEARNER ACTIVITIES** (Types of tasks) (What for?)

(2)

2.4. **RESOURCES**

2.4.1 Instructional media

(2)

2.5. QUESTIONS (Questions to be asked: relate to Bloom's taxonomy)

Formulate four (4) questions, one (1) on the lower cognitive level (knowledge), two (2) on the middle cognitive level (comprehension and application) and one (1) on the higher cognitive level (analysis, evaluation and synthesis)

(16)

2.6 ASSESSMENT**2.6.1 Type** (Person, time, manner)

(3)

2.6.2 Technique

(1)

2.6.3 Instrument

(1)

[50 ÷ 2] = [25]