



NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF SCIENCE AND TECHNOLOGY EDUCATION

POWER SOURCES AND CONTROL

PDT4229

MAIN Second Semester Examination Paper

May 2019

This examination paper consists of 2 pages

Time allowed: 3 hours

Total Marks: 100

Special requirements: NONE

Examiner's name: Mrs D. Chasokela

INSTRUCTIONS

1. The paper has 2 printed pages.
2. Each question carries 20 marks.
3. Answer all questions.
4. Start your answer for each question on a fresh page.

MARK ALLOCATION

QUESTION	MARKS
1.	20
2.	20
3	20
4.	20
5.	20
TOTAL	100

QUESTION 1

Design a system that switches on the outside light when an object moves closer to the main door at night. Be creative and make use of electronic devices effectively. Give a brief operation of the designed system. **[20 marks]**

QUESTION 2

Differentiate a series circuit from a parallel circuit in terms of I, R, V and ohm's law. Illustrate the circuits using both resistors and lamps in separate circuits.

[20 marks]

QUESTION 3

Draw symbols and explain operations and applications for the following electronic devices used in electronic circuit laboratory: diode, zener diode, light emitting diode and photo diode. **[20 marks]**

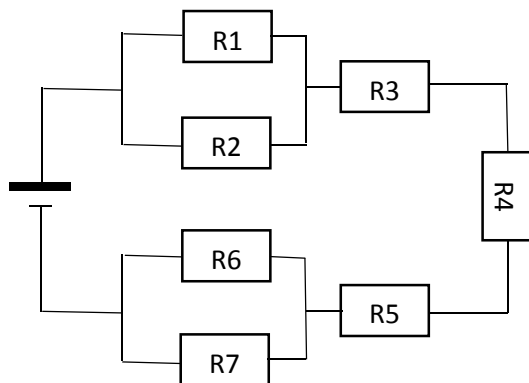
QUESTION 4

Differentiate AC and DC by sketches, flow of current etc.

[20 marks]

QUESTION 5

Fig 1 shown below indicates $R_1=20\Omega$; $R_2=20\Omega$; $R_3=5\Omega$; $R_4=10\Omega$; $R_5=15\Omega$; $R_6=25\Omega$; $R_7=100\Omega$ and $V_{bat}=120V$.



Calculate (a) Current leaving the battery

[6 marks]

(b) Power supplied by the battery

[7 marks]

(c) Voltage across R_5

[7 marks]