KWAZULU-NATAL PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

GENERAL EDUCATION AND TRAINING

GRADE 8

NATURAL SCIENCES
PLC PRE-EXAMINATION TEST
2025 TERM 4

Time: 1½ Hours

Marks: 60

Instructions and Information

1. You must **answer all the questions**.
2. Read the instructions carefully, and answer questions as instructed.
3. Number your answers exactly as the questions are numbered.
4. Write neatly and legibly.

NB. This question paper consists of **7 pages** and contains **9 questions**.

SECTION A - ENERGY AND CHANGE (60% TERM 3 CONTENT)

QUESTION 1

Four options are provided as possible answers to the following questions. Each question has only ONE correct answer. Write **ONLY** the letter (A–D) next to the question number in your ANSWER sheet.

1.1. One of the examples of electric spark.

A Current electricity
B Friction
C Lightning
D Flow of electrons in a conductor (1)

1.2. Which instrument is used to measure the flow of charge in an electric circuit?

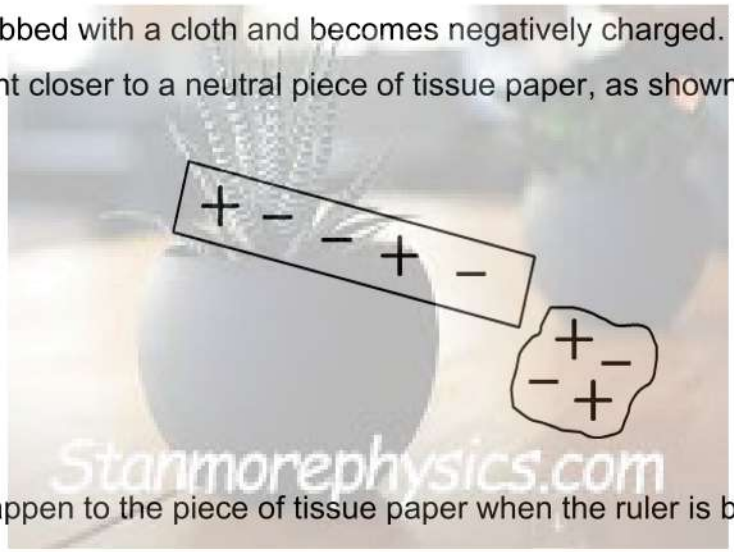
A Voltmeter
B Ammeter
C Telescope
D Ohmmeter (1)

1.3. Why is it better to wear white clothes instead of black cloths on a hot day?

A White clothes radiate light and absorb more heat.
B White clothes refract light and heat.
C White clothes reflect light and absorb less heat.
D White clothes absorb light and heat. (1)
[3]

QUESTION 2

A plastic ruler is rubbed with a cloth and becomes negatively charged. The negatively charged ruler is then brought closer to a neutral piece of tissue paper, as shown below.



2.1. What will happen to the piece of tissue paper when the ruler is brought close enough? (1)

2.2. Redraw the ruler and the piece of cloth. Show how the charges will be REDISTRIBUTED (rearranged) to explain your answer in question 2.1. (2)

[3]

QUESTION 3

The diagram below shows some electrical components connected in a circuit.

3.1. Redraw the circuit diagram, using the correct symbols for each component. (4)

3.2. What will happen to the two light bulbs when the switch is closed? (1)

A third light bulbs is now connected to this circuit in series.

3.3.1. What will happen to the brightness of the light bulbs? (1)

3.3.2. Explain your answer in question 3.3.1. in terms of the total resistance. (1)

3.4. The diagram below shows three electrical appliances.

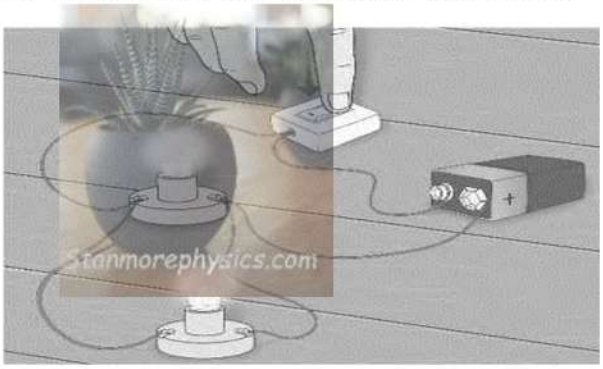
3.4.1. Which effect of electric current is being investigated in the diagram above? (1)

3.4.2. Give the main energy conversion that takes place in the appliances. (2)

3.4.3. Explain what causes these energy conversions in question 3.4.2. to take place. (2)
[12]

QUESTION 4

Study the circuit diagram below and answer the questions that follow.

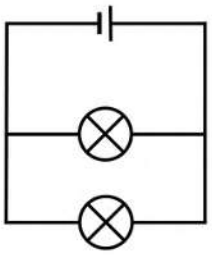


4.1. State whether this is a SERIES or PARALLEL circuit? (1)

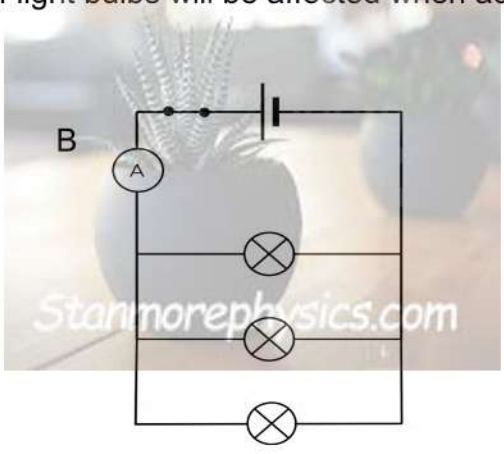
4.2. Give a reason for your answer in question 4.1. (1)

4.3. A learner investigates how the brightness of light bulbs will be affected when adding light bulbs in the following way:

A



B



4.3.1. Redraw and complete the table of the learner's observations below:

Circuit	Number of bulbs	Brightness of bulbs
A		
B		

(2)

4.3.2. Formulate an investigative question for this investigation. (1)

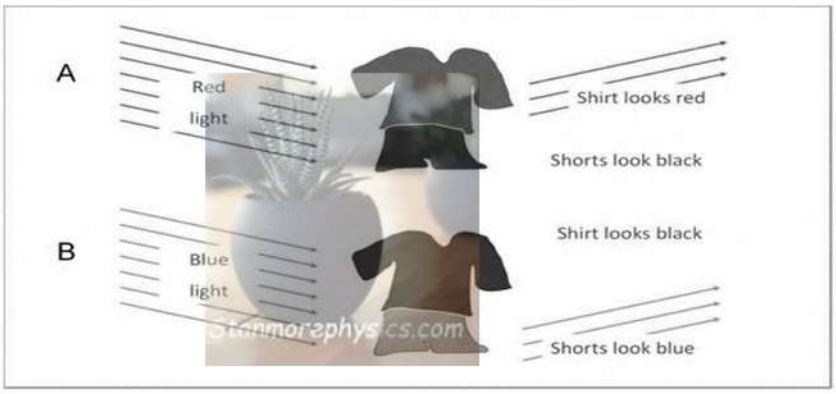
4.3.3. Identify the DEPENDENT variable. (1)

4.3.4. What conclusion did the learner reach during this investigation? (1)

[7]

QUESTION 5

Study diagram A and B



In A: Red light shines on a shirt and shorts. The shirt looks red and the shorts black.
In B: Blue light shines on the same shirt and shorts. Now, the shirt looks black and the shorts blue.

5.1. What is the real colour of the shirt? (1)

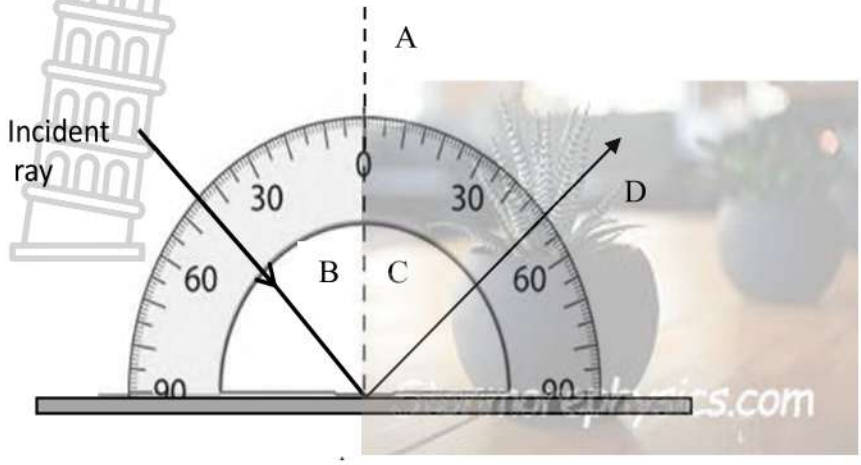
5.2. What is the real colour of the shorts? (1)

5.3. Explain your answer in question 5.2. (2)

5.4. What must the colour of the light be to observe the real colours of the shirt and shorts? (1)

5.5. What will the colour of the shirt and shorts be in green light? (1)

A ray of light falls onto a mirror and is reflected so that the angle of incidence is equal to the angle of reflection.



5.6.1. DEFINE the phenomena of light depicted (shown) in the diagram above. (1)

5.6.2. Provide labels for A to D. (4)

[11]

SECTION A [36]

SECTION B - EARTH & BEYOND (40% TERM 4 CONTENT)

QUESTION 6

6.1. The second closest gas planet to the Sun.

A Venus
B Neptune
C Saturn
D Jupiter (1)

6.2. It takes light 1,28 s to travel from the Moon to the Earth at a speed of 300 000 km/s. What is the distance between the Moon and the Earth?

A 3084 km
B 384 000 km
C 3 840 000 km
D 384 000 000 km (1)

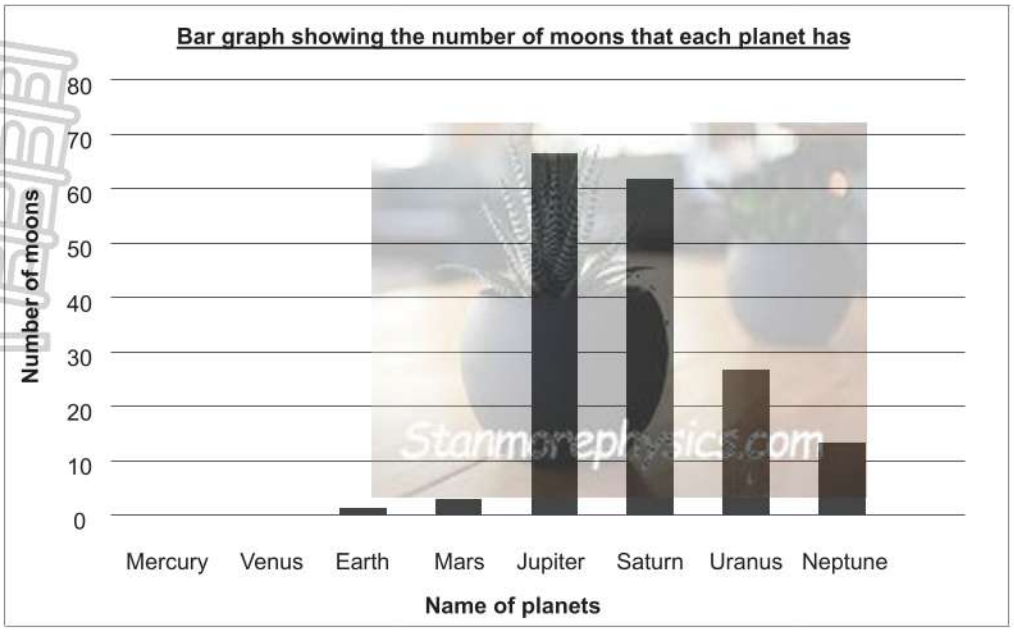
6.3. How old is the Sun?

A 4.6 billion years
B 5 billion years
C 4.6 million years
D 5 million years (1)

[3]

QUESTION 7

Study the graph below.



7.1. What is the general shape of the Solar System? (1)

7.2. Which planet has 68 moons? (1)

7.3. What happens inside our Sun that creates vast amounts of energy? (1)

7.4. List and describe TWO factors that makes life possible on Earth. (4)

7.5.

Name of Planet	Diameter	Distance from Sun (Millions of km)	Number of Moons	Surface temperature	Day length (Rotation on its own axis)	Year length (Revolution around the Sun)
Mercury	4 800 km	58	0	-180 ℃ to 427 ℃	59 days	88 days
Venus	12 100 km	108	0	471℃	243 days	225 days
Earth	12 756 km	150	1	-88℃ to 58℃	23h56min	365 days
Mars	6 794 km	228	2	-87℃ to 0℃	24h31min	687 days

7.5.1. What do all the planets in the table have in common? (1)

7.5.2. Which of the four planets is the largest? Support your answer using the table above. (2)

[10]

QUESTION 8

Study the diagram below and answer the following questions.

8.1. Define the term *galaxy*. (1)

8.2. Why is our galaxy called the Milky Way? (1)

8.3. Discuss the difference between a galaxy and a universe (2)

8.4. Approximately where in the Milky Way galaxy is our sun located? (1)

[5]

QUESTION 9

9.1. What did people in ancient times use the stars for? (2)

9.2. What is a person who studies the stars called? (1)

SALT is an optical telescope built near Sutherland in the Northern Cape province.

9.3. What does SALT stand for? (1)

9.4. What is meant by *optical* telescope? (1)

9.5. Which famous optical telescope, named after the scientist who observed that the universe is expanding, orbits the Earth in space? (1)

[6]

SECTION B [24]

TOTAL: 60 MARKS

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GENERAL EDUCATION AND TRAINING

GRADE 8

NATURAL SCIENCES

PLC PRE-EXAMINATION MEMORANDUM

2025 TERM 4

Time: 1½ Hours

Marks: 60

This memorandum consists of 4 pages (excluding cover page).

SECTION A ENERGY AND CHANGE (60%)

QUESTION 1

1.1 C ✓
1.2 B ✓
1.3 C ✓ **[3x1=3]**

QUESTION 2

2.1 The piece of tissue paper will be attracted towards the ruler / stick to the ruler. ✓ (1)

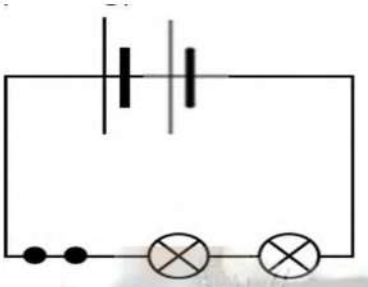
2.2
Marking criteria:

Negatively charged ruler / Ruler drawn as is. ✓

Negative charges in the tissue paper are pushed away / repelled by the negatively charged ruler to the opposite side of the piece of tissue paper. ✓ (2)
[3]

QUESTION 3

3.1



Marking criteria:
✓Two cells in series
✓Two bulbs
✓Bulbs in series
✓Open OR closed switch

(4)

3.2 The bulbs will light up ✓ (1)

3.3.1 The brightness will decrease✓ (1)

3.3.2 The resistance increase ✓ (therefore the current decreased) (1)

3.4.
3.4.1 Heating effect ✓ (1)

3.4.2 Electrical energy ✓transformed to heat (thermal) energy. ✓ (2)

3.4.3 The electrons try to overcome the high resistance of the coil causing energy conversions to take place during this process. ✓✓ (2)
[12]

QUESTION 4

4.1 Parallel ✓ (1)

4.2 Electric current has multiple paths to flow through. ✓ (1)

4.3

4.3.1 Three/3 ✓ (1)

4.3.2

Circuit	Number of bulbs	Brightness of bulbs
A	2	Bright
B	3	Similar brightness / brighter
	✓	✓

Correct number of bulbs in each circuit (column 2)

Correct brightness of bulbs (2)

4.3.3 Any relevant question indicating a relationship between the two variables: ✓

- What is the relationship between number of bulbs in series and brightness of the bulbs?
- What is the relationship between total resistance and current?
- Will the brightness (stay the same/increase/decrease) when adding light bulbs in parallel?

(1)

4.3.4 Any relevant answer: ✓

- Adding lightbulbs in parallel, causes no change in the brightness of the light bulbs.
- Adding light bulbs in parallel, decreases resistance, an increases current and brightness. (1)

[7]

QUESTION 5

5.1 Red ✓ (1)

5.2 Blue ✓ (1)

5.3 Only blue shorts/surfaces ✓ can reflect blue light. ✓ (2)

5.4 White light ✓ (1)

5.5 Black ✓ (1)

5.6

5.6.1 When light changes direction and stays in the same medium. ✓ (1)

5.6.2

A-Normal ✓
B-Angle of incident ✓
C- Angle of reflection ✓
D- reflected ray ✓ (4)

[11]

SECTION A [36]

SECTION B - EARTH AND BEYOND (40%)

QUESTION 6

6.1 C ✓ (1)

6.2 B ✓ (1)

6.3 A ✓ (1)

[3]

QUESTION 7

7.1 Disk-shaped / Circular / Spiral shaped ✓ (1)

7.2 Jupiter ✓ (1)

7.3. Nuclear (fusion) reactions ✓ (1)

7.4. **(TWO relevant factors and descriptions)**

Distance away from the Sun✓

The Earth's distance from the sun creates ideal temperatures for life to exist. ✓

Sunlight✓

Light from the sun is used during the process of photosynthesis to produce food that is passed on through the food webs. ✓

Atmosphere

Earth's atmosphere contains 21% oxygen, making life possible.

Water

Water on Earth exists in three phases: solid, liquid and gas. (4)

7.5

7.5.1 They are all rocky/terrestrial planets. ✓ (1)

7.5.2 Earth✓, it has the longest diameter✓. (2)

[10]

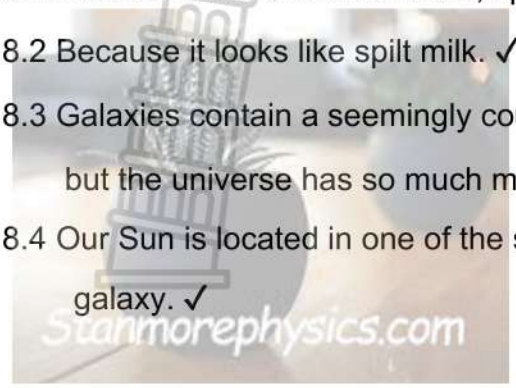
QUESTION 8

8.1 A collection of billions of stars, space dust and gas, held together by gravity. ✓ (1)

8.2 Because it looks like spilt milk. ✓ (1)

8.3 Galaxies contain a seemingly countless number of stars✓,
but the universe has so much more / contains all galaxies. ✓ (2)

8.4 Our Sun is located in one of the spiral arms, towards the edge of the Milky Way galaxy. ✓ (1)
[5]



QUESTION 9

9.1 They used the movement of the stars and planets to mark the passage of time✓✓. (2)

9.2 Astronomer ✓ (1)

9.3 South African Large Telescope (1)

9.4 A telescope that works with lenses and mirrors. (1)

9.5 The Hubble telescope (1)
[6]

SECTION B [24]

Total Marks: 60

BALANCED MARKING GRID FOR NS GRADE 8 PLC PRE-EXAMINATION 2025

SECTION A				
QUESTION NO.	**LOW ORDER**	**MIDDLE ORDER**	**HIGH ORDER**	**TOTAL**
QUESTION 1				
1.1	1			**1**
1.2	1			**1**
1.3		1		**1**
QUESTION 2				
2.1	1			**1**
2.2		2		**2**
QUESTION 3				
3.1		4		**4**
3.2	1			**1**
3.3		2		**2**
3.4.1	1			**1**
3.4.2		2		**2**
3.4.3			2	**2**
QUESTION 4				
4.1	1			**1**
4.2		1		**1**
4.3.1		2		**2**
4.3.2		1		**1**
4.3.3		1		**1**
4.3.4.		1		**1**
QUESTION 5				
5.1			1	**1**
5.2			1	**1**
5.3			2	**2**
5.4			1	**1**
5.5			1	**1**
5.6.1	1			**1**

5.6.2	4			4
SECTION B				
QUESTION NO.	**LOW ORDER**	**MIDDLE ORDER**	**HIGH ORDER**	**TOTAL**
QUESTION 6				
6.1		1		**1**
6.2			1	**1**
6.3	1			**1**
QUESTION 7				
7.1	1			**1**
7.2		1		**1**
7.3		1		**1**
7.4	4			**4**
7.5.1		1		**1**
7.5.2	1	1		**2**
QUESTION 8				
8.1	1			**1**
8.2		1		**1**
8.3		2		**2**
8.4	1			**1**
QUESTION 9				
9.1		2		**2**
9.2	1			**1**
9.3	1			**1**
9.4	1			**1**
9.5	1			**1**
% IN EXAMS	**40%**	**45%**	**15%**	
TOTAL MARKS	**24**	**27**	**9**	**60**