GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

PROVINCIAL EXAMINATION

NOVEMBER 2022

GRADE 9

MARKING GUIDELINES

NATURAL SCIENCES

7 pages

SECTION A

QUESTION 1: MULTIPLE-CHOICE QUESTIONS

1.1 C ✓

1.2 B ✓

1.3 B ✓

1.4 A ✓

1.5 A ✓

1.6 C ✓

1.7 B ✓

1.8 C ✓

1.9 B ✓ **[9]**

QUESTION 2: TERMINOLOGY

2.1 Resistor ✓

2.2 Gravity ✓

2.3 Switch ✓

2.4 Magma ✓

2.5 Lightning ✓

2.6 Ore ✓ **[6]**

QUESTION 3: MATCHING ITEMS

3.1 E/Open cast mining ✓

3.2 D/Mesopause ✓

3.3 F/Atmosphere ✓

3.4 C/Planetary nebulae ✓

3.5 A/Pumice ✓ **[5]**

TOTAL SECTION A: 20

SECTION B

QUESTION 4: FORCES

4.1 4.1.1 To investigate what happens to two similar rods ✓ that are rubbed with the same type of cloth. ✓

OR

To investigate static electricity ✓ through rubbing. ✓

OR

To investigate whether there will be a force of attraction or repulsion ✓ between two glass rods rubbed with the same cloth. ✓ (2)

4.1.2 Charges (electrons) move (are transferred) ✓ from the cloth to the rod, making it negatively charged. ✓

OR

Charges are transferred ✓ from the cloth to the glass rod. ✓ (2)

4.1.3 The rod on the retort stand will move away✓ from the rod held by the hand. ✓ (The rod on the retort stand will be repelled./They will repel each other.) (2)

4.2 4.2.1 C ✓ D ✓ B ✓ A ✓ (4)

4.2.2 Stay away from trees. ✓
Seek shelter inside a building or car. ✓
Stay away from high places.
Crouch in the smallest, lowest possible position with your feet together.
(Accept any other safety measure.)
(Mark any two.) (2)

4.3 Weight = Mass in kg x 9,8 N
= 1 485 kg x 9,8 N ✓
= 14 553 ✓ N ✓
Accept 14 850 ✓ N ✓ (3)
[15]

QUESTION 5: CELLS AND ENERGY, RESISTANCE

5.1 5.1.1 D✓ (1)

5.1.2 Battery ✓ (1)

5.1.3 It is a source of (electrical) energy.✓ (1)

5.1.4 3 ÷ 2 ✓ = 1,5 V ✓
(Award 2 marks if a learner wrote 1,5 V only.) (2)

5.1.5 B ✓ (1)

5.2 Temperature✓ of the resistor.
Type✓ of a resistor.
Thickness✓of the resistor.
Length✓ of the resistor.
(Mark any two.) (2)

5.3 **Temperature of the conductor:** The hotter the conductor, the higher the resistance.✓
Type of material: Different conducting materials have different resistances to an electric current.✓
Thickness of the conductor: Thinner wires have more resistance than thicker wires.✓
Length of the conductor: Longer wires have more resistance than shorter wires.✓
(Mark any two.) (2)

5.4 5.4.1 Fuse ✓ (1)

5.4.2 Variable resistor **OR** Rheostat ✓ (1)

5.4.3 LED **OR** Light bulb ✓ (1)

5.5 Circuit breaker/Fuses/Surge protectors/Ground fault interrupters ✓
(Accept any one.) (1)
[14]

QUESTION 6: CURRENT ELECTRICITY

6.1 6.1.1 Voltmeter ✓ (1)

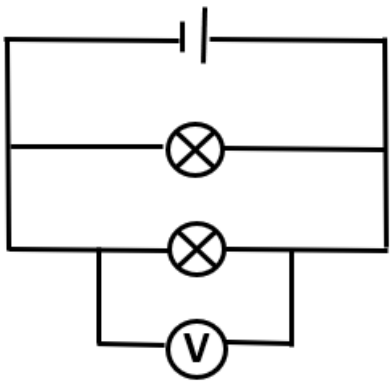
6.1.2 Equal to ✓ (1)

6.1.3 $V = V_x + V_y$ ✓
$3 = 2 + V_y$ ✓
$V_y = 1V$ ✓ (3)

6.1.4 Light bulb Y will go out/off. ✓ If it blows, because bulb X is connected in series, there will be a gap in the circuit. ✓ (2)

6.2 6.2.1 **Marking guidelines for the sketch of circuit diagram drawn.**

Description	Marks
One cell	1 ✓
2 bulbs	2 ✓✓
Connected in parallel	1✓
Voltmeter in parallel	1 ✓



(4)

6.2.2 Remains the same. ✓ (1)

6.2.3 Voltmeter has high resistance, ✓connecting it in parallel will lower the total resistance in a circuit. ✓

OR

Voltmeter has high resistance, ✓ if it is not connected in parallel it will take up the most energy in a circuit ✓ (2)

[14]

QUESTION 7: COST OF POWER CONSUMPTION

7.1 7.1.1 11,90 ✓ kWh **OR** 11,90 Units (1)

7.1.2 Price per unit = 30,00 ÷ 11,90 ✓ = R2,52 ✓ (2)

7.1.3 Cost = Power X Time X Unit price **OR** Cost = Energy X Unit price
= (0,06 X 24) ✓ X 2,52 ✓ = 1,44 ✓ X 2,52 ✓
= R 3,63 ✓ = R3,63 ✓ (3)

7.1.4 Switch off electrical appliances not in use. ✓
Boil only the required amount of water at a time.
Use energy saving bulbs, e.g., LED bulbs.
Install a solar geyser/timers for geysers.
(Any relevant answer for 1 mark.) (1)

7.2 7.2.1 They both use steam to rotate the turbines. ✓ (1)

7.2.2 In a nuclear power station, the heat source is from the nuclear reaction✓ whereas in a coal power station it is from the combustion of coal. ✓

OR

A nuclear power station uses nuclear fuel such as uranium, thorium, plutonium etc. as the source of energy ✓ but a coal power station uses coal as the energy source.✓ (2)
[10]

QUESTION 8: INTERACTION OF THE EARTH'S SPHERES

8.1 8.1.1 Lithosphere and Atmosphere ✓ (Volcanoes erupt, shooting gases and dust into the atmosphere.) (1)

8.1.2 Atmosphere and Hydrosphere ✓ (Water evaporates from oceans, becoming vapour in the atmosphere.) (1)

8.1.3 Lithosphere and Hydrosphere ✓ (Water erodes soil.) (1)

8.2 A Igneous rock ✓
B Sedimentary ✓
C Weathering of igneous rock, compaction and cementation ✓
D High pressure and extreme heat of igneous and sedimentary rocks ✓
E Sandstone **OR** Shale **OR** Limestone ✓ (5)

8.3 Heat ✓
Cold ✓
Water ✓
Wind ✓
(Mark any three.) (3)

8.4 8.4.1 Greenhouse ✓ (1)

8.4.2 Radiant energy/Heat ✓ (1)

8.4.3 The troposphere ✓ (1)

8.4.4 Greenhouse effect ✓ (1)

8.4.5 The Earth becomes warm (temperature is increased) and becomes habitable for life. ✓ (1)
[16]

QUESTION 9: IMPACT OF MINING ON THE ENVIRONMENT

9.1 9.1.1 Coal (1)

9.1.2 % of possible new gold mines = 41 ÷ 192 x 100
= 21,4% ✓ (2)

9.1.3 On the surface ✓ (1)

9.1.4 A mixture ✓ that consists of a variety of minerals✓

OR

It is an impure ✓ substance ✓
(1 mark for mixture and 1 mark for reason.) (2)

9.1.5 Removal of plants causes habitat loss for animals.

OR

Removal of soil or ground, air or water, pollution from chemicals used. ✓
(Any one.) (2)
[8]

QUESTION 10: BIRTH, LIFE AND DEATH OF STARS

10.1 Nuclear fusion reactions:
Changes light elements into heavier elements, ✓ releasing a lot of energy in the process. ✓ (2)

10.2 The gravitational pull is too strong. ✓ (1)
[3]

TOTAL SECTION B: 80

TOTAL: 100