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GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

**GAUTENG DEPARTMENT OF EDUCATION
PROVINCIAL EXAMINATION
NOVEMBER 2016
GRADE 9**

NATURAL SCIENCES

MEMORANDUM

10 pages

MEMORANDUM**NATURAL SCIENCES GRADE 9****GAUTENG DEPARTMENT OF EDUCATION
PROVINCIAL EXAMINATION****NATURAL SCIENCES****MEMORANDUM**

PRINCIPLES RELATED TO MARKING NATURAL SCIENCES

1. **If more information than marks allocated is given**
Stop marking when maximum mark is reached and put a wavy line and 'max' in the right-hand margin (~ max).
2. **If, for example, three reasons are required and five are given**
Mark the first three irrespective of whether all or some are correct/incorrect.
3. **Incorrect numbering**
If the answer fits into the correct sequence of questions but the incorrect numbering is given, it is acceptable.
4. **If language used changes the intended meaning**
Do not accept.
5. **Spelling errors**
If recognizable, accept, provided it does not mean something else in Natural Sciences or if it is out of context.
6. **No changes** may be made to the approved marking memorandum.

MEMORANDUM**NATURAL SCIENCES GRADE 9****SECTION A****QUESTION 1****MULTIPLE-CHOICE QUESTIONS**

- 1.1 C✓
- 1.2 B✓
- 1.3 D✓
- 1.4 D✓
- 1.5 B✓
- 1.6 C✓
- 1.7 B✓
- 1.8 B✓

(8)

QUESTION 2**TERMINOLOGY**

- 2.1 Atmosphere✓
- 2.2 Fuse✓
- 2.3 Mining✓
- 2.4 Lightning ✓
- 2.5 Nebula✓
- 2.6 Cell ✓

(6)

QUESTION 3**MATCHING ITEMS**

- 3.1 C✓
- 3.2 A✓
- 3.3 B✓
- 3.4 H✓
- 3.5 F✓
- 3.6 E✓

(6)

TOTAL SECTION A: 20

MEMORANDUM**NATURAL SCIENCES GRADE 9****SECTION B****ENERGY AND CHANGE****QUESTION 4****FORCE**

- 4.1 A. Electrostatic force ✓
 B. Electromagnetic force or Magnetic force ✓
 C. Tension ✓
 D. Gravitational force ✓ (4)
- 4.2 Force can cause an object to:
- Start moving / stop moving ✓
 - Speed up / slow down ✓
 - Change direction ✓
 - Rotate ✓
 - Change shape ✓ (Mark any two.) (2)
- (6)**

QUESTION 5**SERIES AND PARALLEL CIRCUITS**5.1 Circuit diagram

Marks allocated for:

- Three cells connected in series ✓
 - A bulb ✓
 - A volt meter in parallel ✓
- (3)
- 5.2 It tells us about the potential difference across the light bulb. ✓ (1)
- 5.3 The voltage over a parallel connection remains the same, irrespective of the amount of resistors in parallel. ✓✓ (2)
- 5.4 Decrease ✓ (1)
- 5.5 In a series connection, the bulbs / resistors share the voltage of the battery OR Each bulb / resistor will have its own voltage OR There will be a voltmeter reading over each bulb in series. ✓✓ (Mark any one for 2 marks.) (2)

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5.6

- Type of material ✓
- Thickness of the conductor ✓
- Length of the conductor ✓
- Temperature of the conductor ✓

(Mark any two) (2)

(11)**QUESTION 6****SAFETY WITH ELECTRICITY**

6.1 They occupied privately owned land where the city could not provide the services in terms of National legislation / they felt neglected by the municipality ✓✓ (2)

6.2 Illegal connections can cause:

- Fire✓
- Electrical shock (electrocuted)✓
- Death

(Mark any two) (2)

6.3 Because illegal connections are regarded as energy theft (stealing electricity is an offence). ✓✓ (2)

(6)

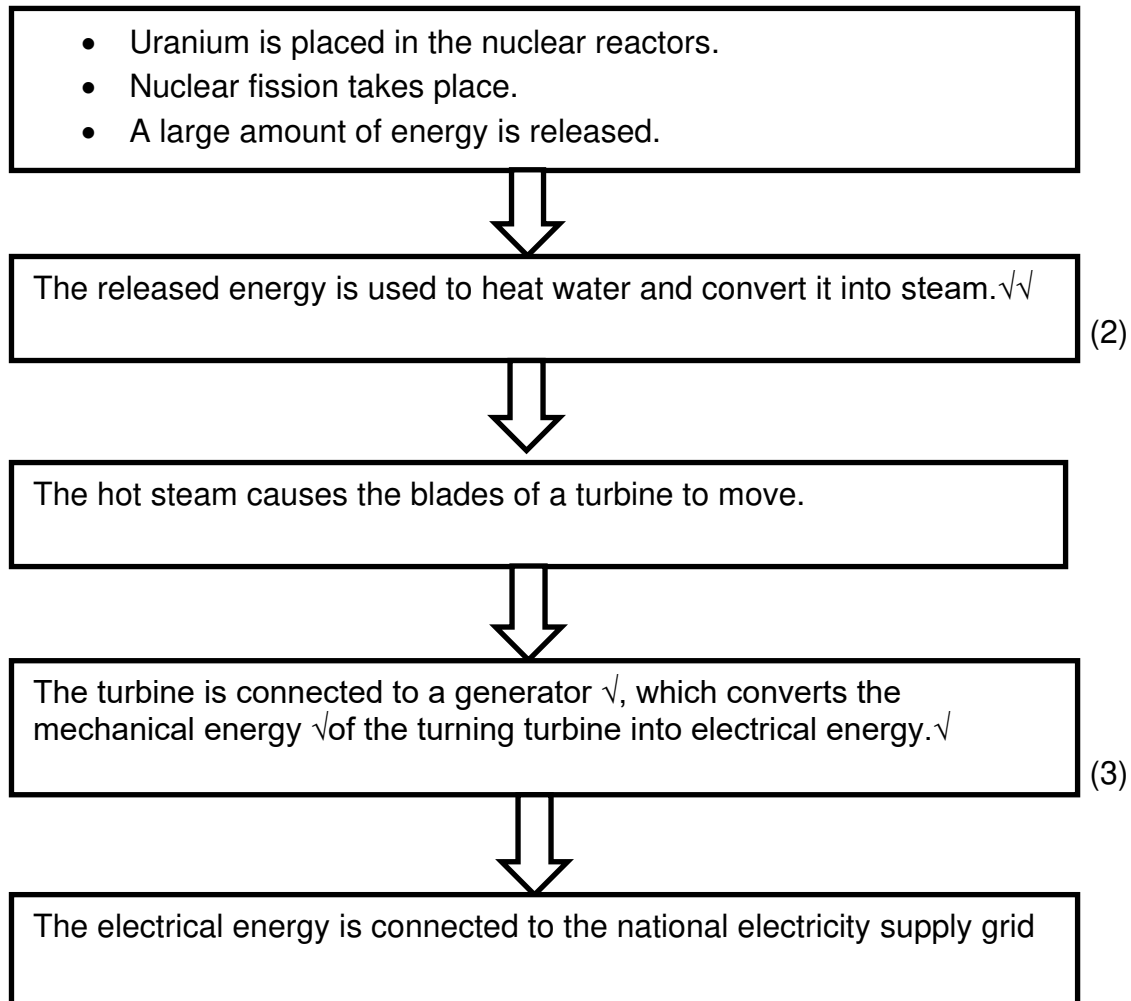
MEMORANDUM

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QUESTION 7

POWER STATIONS AND THE NATIONAL ELECTRICITY GRID

7.1 FLOW CHART



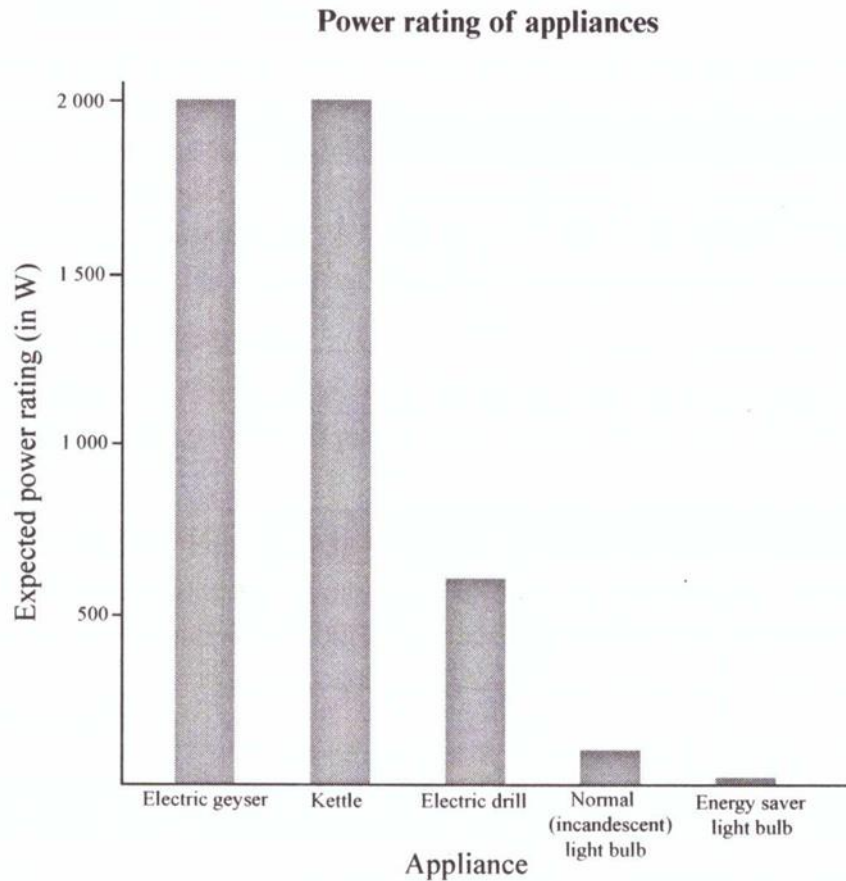
7.2 They can cause:

- Burns ✓
- Cancer ✓
- Genetic mutations ✓
- Radiation sickness
- Death

(Mark any two.)

(2)

(7)

MEMORANDUM**NATURAL SCIENCES GRADE 9****QUESTION 8****COST OF ELECTRICAL POWER****8.1** Power rating of different appliancesRubric for marking the graph

CRITERIA	MARK
1. Heading (include both variables)	2 marks
2. Correct labeling of both axes	2 marks
3. Correct scales	1 mark
4. Plotting bars	1 – 3 bars correct 1 mark 4 – 6 bars correct 2 marks
TOTAL	7 MARKS

8.2 Appliances with higher power rating use more energy and it will cost more. ✓✓ (2)

8.3 Cost = Power (kW) x Time (h) x Unit Price

$$= 2 \text{ kW} \times 2 \text{ h} \times 90 \text{c} \checkmark$$

$$= \text{R}3,60 \checkmark \quad (1 \text{ mark for correct answer, 1 mark for correct unit}) \quad (3)$$

(12)

TOTAL SECTION B: 42

MEMORANDUM**NATURAL SCIENCES GRADE 9****SECTION C****EARTH AND BEYOND****QUESTION 9****THE EARTH AS A SYSTEM**

9.1 Because the parts of the earth-system are not independent ✓, but interlinked. ✓
(2)

9.2

9.2.1 Biosphere ✓ (1)

9.2.2 Hydrosphere ✓ (1)

9.3 The system will no longer work ✓ (Accept any other relevant answer.) (1)

9.4

9.4.1 Difference in altitude: $2\,400\text{ m} - 1\,700\text{ m}$ ✓
 $= 700\text{ m}$ ✓

Difference in temperature: $700\text{ m} / 100\text{ m}/^{\circ}\text{C}$ ✓
 $= 7^{\circ}\text{C}$ ✓

Temperature at $2\,400\text{ m} = 26^{\circ}\text{C} - 7^{\circ}\text{C}$ ✓
 $= 19^{\circ}\text{C}$ ✓

(6)

9.4.2 Lower ✓ (1)

(12)

QUESTION 10**MINING IN SOUTH AFRICA**

10.1 An open cast mine is an open pit mine where a pit or hole is formed on the surface. ✓ ✓
(2)

10.2 Element ✓ (1)

10.3 The earth's crust ✓ (1)

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10.4

- Air and water polluted with hazardous chemicals from mine dumps would cause diseases to people. ✓✓
- A polluted environment would prevent cattle rearing. ✓✓
- A polluted environment would prevent the growing of crops. ✓✓
- The wildlife environment at Kruger National Park would be damaged.
- Income generated through tourists would decrease.
- Changing of environmental temperature / climate change
- Disturbing the ecosystem (6)

(Accept any other relevant reason. Mark any three.)

10.5

- It will create job opportunities for people in the area. ✓✓
- It will improve the economic wealth of the country. ✓✓
- It will develop the villages in the area. (4)

(Accept any other relevant reason. Mark any two.)

10.6 Similarity

Metal ore is heated with carbon ✓ in the form of charcoal or coke in the presence of oxygen. ✓ (2)

Difference

The bloomery used in ancient days is replaced with a blast furnace. ✓✓ (2)

(18)

MEMORANDUM**NATURAL SCIENCES GRADE 9****QUESTION 11****BIRTH, LIFE AND DEATH OF STARS**

- 11.1 C. Red Giant star ✓
 E. White Dwarf star ✓ (2)
- 11.2 Hydrogen in the centre of a star is depleted (used up) ✓. The star's core
 shrinks and heats up ✓. The outer part expands ✓ and the star becomes larger
 and glows red. ✓ (4)
- 11.3 Red Giant stage ✓ (1)
- 11.4 Supernova ✓ (1)
- (8)

TOTAL SECTION C: 38**TOTAL: 100**