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SASTRI COLLEGE

FINAL EXAMINATION

NOVEMBER 2018

NATURAL SCIENCES

GRADE 9

Time : 1 Hour 30 minutes

Examiner : G Pillay

Marks: 100

Moderator : K Chetty

Instructions and Information

- This paper consists of 9 pages and 12 questions.
- SECTION A: Multiple Choice Questions
Terminology
- SECTION B: Energy and Change
- SECTION C: Planet Earth and Beyond
- Questions cover **TWO** strands of the Natural Sciences.
- You must answer **all the questions**.
- Read the instructions carefully and answer questions as instructed.
- Number your answers exactly as the questions are numbered.
- Write neatly and legibly.

SECTION A:
QUESTION 1

MULTIPLE CHOICE QUESTIONS

- 1.1 An object becomes charged by ...
- A. Friction
 - B. Electrification
 - C. Attraction and repulsion
 - D. An electroscope
- 1.2 The weight of a body is the:
- A. Energy transferred by the earth to the body.
 - B. Force by which the body is attracted by the earth.
 - C. Pressure exerted by the earth on the body.
 - D. Force by which the body attracts the earth.
- 1.3 Which statement is not applicable to force?
- A. A force is a pull or a push.
 - B. Force is measured in Newton.
 - C. A force can be exerted by contact or non-contact.
 - D. A force always causes motion of a body.
- 1.4 Which of the following ~~wing~~ substances protects living organisms from harmful ultraviolet radiations?
- A. Oxygen
 - B. Carbon dioxide
 - C. Ozone layer
 - D. Nitrogen
- 1.5 Which of the following is not a greenhouse gas?
- A. methane
 - B. carbon dioxide
 - C. nitrous oxide
 - D. helium

[5]

QUESTION 2
TERMINOLOGY

Give the correct term for each of the following descriptions. Write only the term next to the question number (2.1 – 2.5) on your answer sheet.

- 2.1 Negative particles in an atom.
- 2.2 A rock that contains valuable mineral for mining.

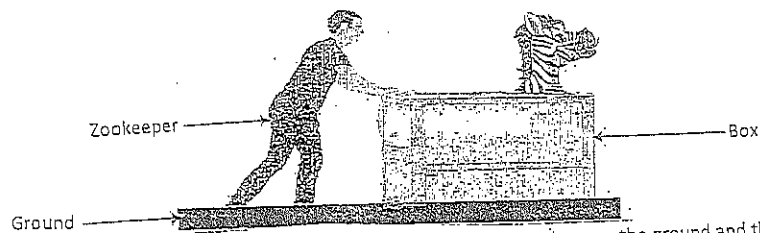
- 2.3 A mixture of gases that make up the air around us.
- 2.4 A rock formed due to chemical changes.
- 2.5 Electricity generated from falling water.

[5]

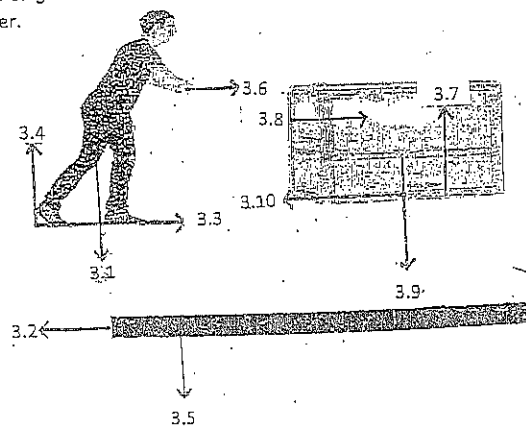
SECTION B
QUESTION 3

- 3.1 Study the diagram below and answer the questions that follow.

The zookeeper is trying to move the box with the zebra in it.



The force-diagrams below show all the forces exerted by the zookeeper, the ground and the box, on each other.

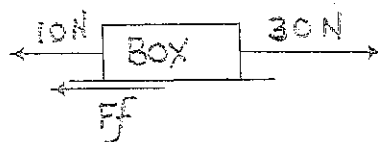


A list of forces, labelled A – D, which correctly describes the forces exerted by the zookeeper, ground and box on each other, are given below:

- A. Frictional force of feet (of zookeeper) on ground
- B. Weight of zookeeper
- C. Push of zookeeper on box
- D. Frictional force of box

Choose from the numbers 3.1 – 3.10 which correctly matches each force stated above. Write **ONLY** the answer in your answer book. (4)

- 3.2 A force of 30 N is applied to the right on a box. At the same time a force of 10 N is applied to the left on the box. The ground has a frictional force of 5 N. This is represented in the diagram below.



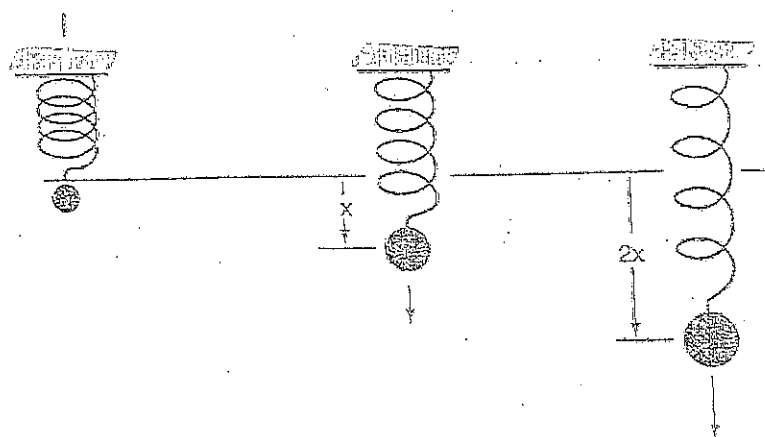
Find the resultant force by:

- 3.2.1 Construction (4)
3.2.2 Calculation (4)

[12]

QUESTION 4

Learners from Sastri College wanted to build a bridge. They had to make sure that the cables that support the bridge are strong enough. Therefore they had to test the cables. They investigated how forces change the length of a spring from a stand when mass pieces on the spring are changed as shown in the diagram below.



They measured the extension of the spring and the results were as follows:

- The first mass piece of 1 Kg caused an extension of 1,0 mm.
- The second mass piece of 2 Kg caused an extension of 2,0 mm.
- The third mass piece of 3 Kg caused an extension of 3,0 mm.

4.1 In the investigation identify the ...

- 4.1.1 independent variable (1)
4.1.2 dependent variable (1)

4.2 Mention the variable that the learners should have controlled during this investigation.

(1)

- 4.3 Tabulate the results as recorded above. Redraw the table provided in the answer book and fill in the results.

	MASS	EXTENSION
1		
2		
3		

- 4.4 Predict what would happen to the extension of the spring if the mass was increased to 5 Kg and provide a suitable reason for your answer. (3)
- 4.5 Draw a line graph that shows the relationship represented in the table in 4.3 above. (2)
- 4.6 Write a conclusion for this investigation. (2)
- [15]

QUESTION 5

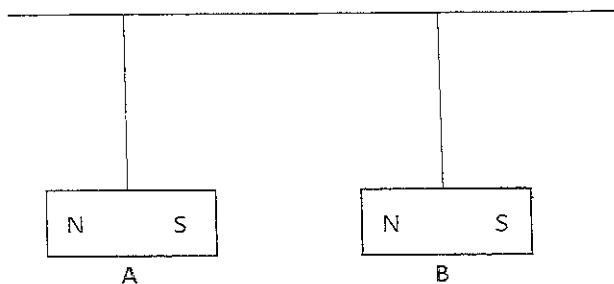
Use the information provided to answer the questions that follow.

Planet	Mass (Kg)	$g \text{ (m.s}^{-2}\text{)}$
Earth	$5,98 \times 10^{24}$	9,8
Moon	$7,36 \times 10^{22}$	1,62
Mars	$6,42 \times 10^{23}$	3,77
Venus	$4,87 \times 10^{24}$	9,04
Saturn	$5,68 \times 10^{26}$	8,87

- 5.1 Name a factor which will determine the strength of the gravitational pull exerted by the planets on earth? (1)
- 5.2 An astronaut has a mass of 50 Kg on earth. What is her mass on Saturn? (1)
- 5.3 Calculate her weight on the moon. (3)
- 5.4 If the same astronaut has a weight of 188,5 N, on which planet is she? (3)
- 5.5 Differentiate between mass and weight. (2)
- [10]

QUESTION 6

6. Magnet A and Magnet B are hanging from a light thread. This is represented below.

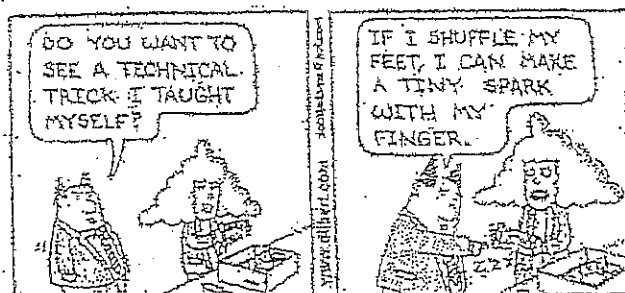


- 6.1 What would be observed? Give a reason. (2)
- 6.2 Magnet B is now moved further to the right.
- 6.2.1 What effect does this have on the force mentioned in 6.1. (1)
- 6.2.2 Give a reason for this. (2)
- [5]

QUESTION 7

7. Read the comic strip and answer the following questions:

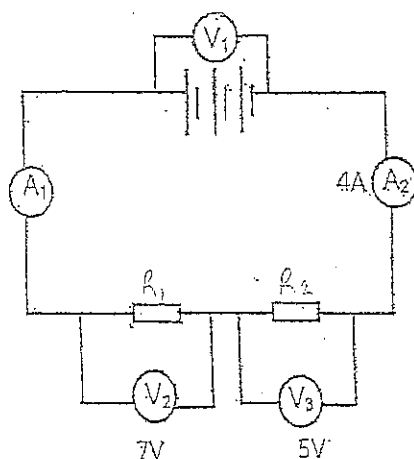
DILBERT



- 7.1 What process is the man demonstrating to his wife? (1)
- 7.2 How did the man become charged? (1)
- 7.3 What caused the tiny spark? (1)
- 7.4 Name three safety precautions that can be taken during a thunder and lightning storm. (3)
- [6]

QUESTION 8

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



8.1 Give the readings on:

8.1.1 A_1

(1)

8.1.2 V_1

(1)

8.2 Calculate the voltage of one of the cells.

(1)

8.3 If the cells were connected in parallel, what would the total voltage be?

(1)

8.4 Calculate the value of R_2 .

(3)

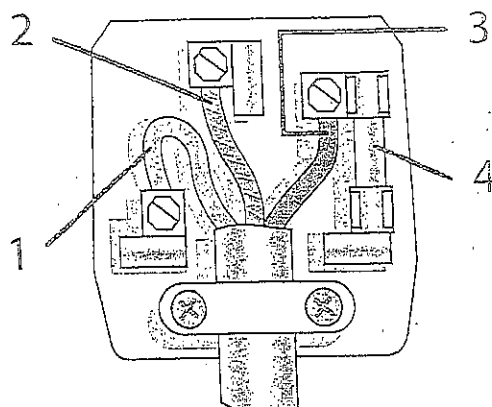
8.5 R_2 is removed from the circuit. What effect does this have on the ammeter reading?
Give a reason for your answer.

(3)

[10]

QUESTION 9

9. Study the figure below and answer the questions:



9.1 Explain the purpose of part labelled 2.

(2)

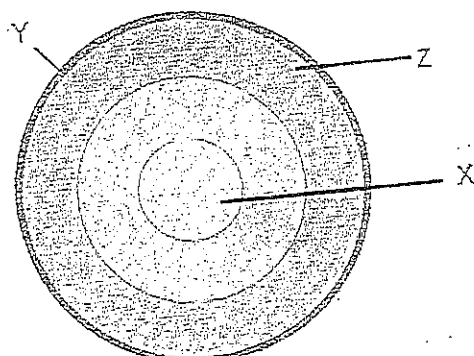
9.2 Two light bulbs are marked 11 kW and 15 kW respectively and connected to the mains supply. Calculate the cost in Rand if electricity used by the 15 kW bulb for 30 days non-stop at R0,97 per unit.

(4)

[6]

QUESTION 10

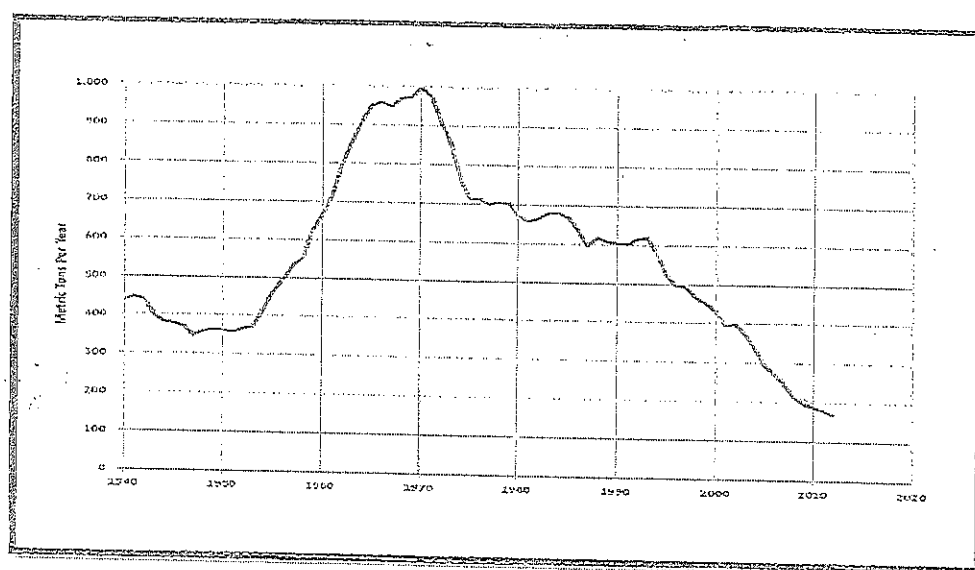
The diagram below represents the structure of earth. Use this diagram to answer the following questions based on the earth's structure.



- 10.1.1 Provide labels for sections marked X, Y and Z. (3)
- 10.1.2 State the approximate temperature that you would expect in 'X'. (1)
- 10.2 Earth can be understood as a complex system where all the parts called spheres interact with each other. Describe any TWO spheres of the earth by giving a short description of each. (4)
- 10.3 The rock cycle is a natural continuous process in which rocks are formed, broken down and reformed over a period of time. Due to this process different types of rocks are formed. Describe the formation of the sedimentary rocks. (3)
- [11]

QUESTION 11

Study the following graph and then answer the questions that follow.



PRODUCTION OF GOLD IN SOUTH AFRICA

The graph shown above demonstrates the production of gold in South Africa between the years 1940 and 2010.

- 11.1 From the graph, which year had the highest production? (1)
- 11.2 Calculate the difference between the number of tons produced in 1970 and 2010. (2)
- 11.3 Mining can impact on the country in various ways. Bearing that in mind, name TWO positive impacts of mining. (2)

11.4 Over the past two years there have been major challenges facing mining industries in this country. This has led to many debates and confusion about the state of South Africa's economy. With this view, describe TWO negative impacts of mining on the environment. (2)

11.5 State the function of limestone in the extraction of iron ore. (1)
[8]

QUESTION 12

12.1 Name the layer of the atmosphere in which the following are found:

12.1.1 Satellites

12.1.2 Shooting stars / meteorites

(2)

12.2 Global warming can lead to climate change and rising sea levels.

a) Explain what is meant by global warming. (2)

b) What changes in the composition of the atmosphere do scientists think might be the cause of global warming? (1)

c) State TWO effects of 'global warming'. (2)

[7]

TOTAL - 100

