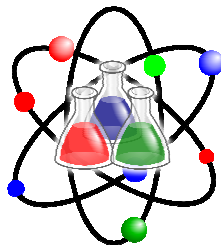




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SCIENCE-IN-ACTION

GRADE 6 AND 7

TUESDAY 13 JUNE 2017 – 14:00-15:00

ALLOWED TIME: 60 MINUTES

Examiner: Prof. Kobus van der Walt, Faculty of Natural Sciences, NWU, Potchefstroom
Moderator: Mrs Anita Lubbe, Faculty of Education, NWU, Potchefstroom

INSTRUCTIONS

Requirements: HB-pencil, eraser and sharpener

1. The answer sheet must be completed in HB-pencil only. **Pens are not allowed.**
2. Learners should make sure that their question paper consists of all the pages (11 pages and 43 questions).
3. Before you start writing – learners should immediately fill in their personal details on the answer sheet. **School and learner code MUST be clearly written on the answer sheet.**
4. Questions must be answered on the **answer sheet** provided. All multiple choice questions (questions 1 to 40) are answered on the **front page** and questions 41, 42 and 43 are answered on the **back** of the answer sheet.
5. **Answer sheet for multiple choice questions:** Choose only one of the options (a, b, c, d or e) and use the answer sheet provided to indicate, **clearly shaded**, the answer you choose. Only **one** answer per question is allowed. No marks will be allocated if more than one answer is given in a question.
6. A maximum of **60 minutes** are allowed to complete the question paper.
7. Your answer sheet (multiple choice answers on the front page and at the back the answer sheet for questions 41, 42 and 43) must be handed in after 60 minutes.

SECTION A: MULTIPLE CHOICE QUESTIONS**[40 x 1 = 40]**

1. A dead horse forms part of the

- a. *Lithosphere*
- b. *Atmosphere*
- c. *Biosphere*
- d. *Hydrosphere*
- e. *None of the above*

2. Which option does not fit? "Life is impossible in the absence of ____"

- a. *Gases*
- b. *Water*
- c. *Solar energy*
- d. *Soil*
- e. *Suitable temperature conditions*

3. The five "kingdoms" of living organisms are

- a. *Bacteria, Protista, Fungi, Plants, Animals*
- b. *Bacteria, Algae, Eukaryotic, Plants, Animals*
- c. *Protista, Fungi, Plants, Animals, Amoebas*
- d. *Bacteria, Plants, Animals, Snails, Algae*
- e. *Plants, Animals, Viruses, Bacteria, Single-celled organisms*

4. Into how many classes are vertebrates subdivided?

- a. *2*
- b. *3*
- c. *4*
- d. *5*
- e. *6*

5. A garden snail

- a. *Is a vertebrate organism*
- b. *Has an exoskeleton*
- c. *Forms part of the phylum Mollusca*
- d. *Is amphibious*
- e. *Forms part of the phylum Arthropods*

6. Which factor is NOT necessary for reproduction in Dicotyledons?

- a. *Flowers*
- b. *Seeds*
- c. *Leaves*
- d. *Gymnosperms*
- e. *Plant stems*

7. What is the best description of insects, water, wind, birds and animals with respect to plants?

- a. *Plants cannot do without them*
- b. *They are all pollinators*
- c. *They assist in the spreading of seeds*
- d. *They all play a role in the life cycle of all plants*
- e. *They are all essential for asexual reproduction in plants*

8. Which situation regarding matter is best illustrated by the following picture of H₂O molecules?

- a. *A boiling kettle*
- b. *A snowman melting on a hot day*
- c. *Frost that forms on a cold winter morning*
- d. *Dew forming on grass early on a summer morning*
- e. *Ice cubes melting in a glass of soda*

9. Which answer is the best description of a liquid?

- a. *It expands to fill its container*
- b. *It has mass, volume and shape*
- c. *It has a definite volume and mass but no definite shape*
- d. *It can only flow if it is warmed*
- e. *A liquid undergoes a phase change when its temperature changes*

10. Chemical properties can be used to identify materials during chemical reactions. This means that the materials' _____ undergo a change?

- a. *Volume*
- b. *Shape*
- c. *Hardness*
- d. *Temperature*
- e. *Composition*

11. Hardness, temperature, colour, size and smoothness are all different

- a. *Phases of materials*
- b. *Physical properties of materials*
- c. *Chemical properties of materials*
- d. *Properties of elements but not of compounds*
- e. *Properties of compounds and mixtures but not of elements*

12. A white powder is added to a cup of water and stirred until it disappears. The beaker is then heated over a flame until the water has evaporated and the white powder is visible again. What characteristic of the powder is demonstrated?

- a. *Thermal conductivity*
- b. *Density*
- c. *Freezing point*
- d. *Boiling point*
- e. *Solubility*

- 13. What term describes the average kinetic energy of the atoms or molecules of a material?**
- a. *Density*
 - b. *Mass*
 - c. *Colour*
 - d. *Temperature*
 - e. *Phase*
- 14. Water in a kettle is boiled on a gas stove. Which of the following best describes what happens to the water?**
- a. *The energy that is added to the water is lost because the temperature of the water doesn't rise beyond the boiling point*
 - b. *No further energy is added to the water because it is already at boiling point*
 - c. *The temperature of the water keeps on rising the longer the kettle is left on the stove*
 - d. *The energy of the gas stove causes a phase change in the water while the water temperature remains constant*
 - e. *The energy of the gas stove causes a phase change in the water while the water's temperature continues to rise*
- 15. What material has a freezing point as well as a boiling point?**
- a. *Petrol*
 - b. *Granite*
 - c. *Table salt*
 - d. *Gold*
 - e. *All of the above*
- 16. If you mix sand, iron filings, ethanol, water and table salt in a cup, which separation techniques in what order will you have to apply to separate each of the materials from the rest?**
- a. *Manual sorting, magnetism, filtration, distillation*
 - b. *Filtration, magnetism, evaporation, distillation*
 - c. *Chromatography, manual sorting, filtration, magnetism*
 - d. *Distillation, chromatography, filtration, magnetism*
 - e. *Filtration, distillation, chromatography, manual sorting*

17. Which method will probably be used by companies as a first step to recycle household waste?

- a. *Filtration*
- b. *Magnetism*
- c. *Manual sorting*
- d. *Dense media flotation*
- e. *Distillation*

18. What will a base (alkaline substance) taste like?

- a. *Bitter*
- b. *Sweet*
- c. *Salt*
- d. *Sour*
- e. *No taste*

19. The darker areas visible when you look at the full moon, represent ____?

- a. *Mountains*
- b. *Plains*
- c. *Craters*
- d. *Shadows*
- e. *Rock layers with a dark colour*

20. Red litmus paper

- a. *Turns blue in an acid as well as in a neutral solution*
- b. *Stays red in an acid as well as in a neutral solution*
- c. *Turns blue in an acid but remains red in a neutral solution*
- d. *Stays red in an acid but is blue in a neutral solution*
- e. *Cannot be used together with blue litmus paper to test the acidity of a substance*

21. Which of the following substances is NOT an element?

- a. *Helium*
- b. *Neon*
- c. *Beryllium*
- d. *Water*
- e. *Nitrogen*

22. The Periodic Table was published in 1869 by

- a. *Niels Bohr*
- b. *Dmitri Mendeleev*
- c. *Albert Einstein*
- d. *Pavel Sherenkov*
- e. *Werner Heisenberg*

23. Elements are arranged in the Periodic Table according to increasing

- a. *Number of protons*
- b. *Number of protons and neutrons*
- c. *Number of electrons*
- d. *Number of valence electrons*
- e. *Number of isotopes*

24. You do excavations in Egypt and find a beautiful, shiny medal that is made of an unknown substance. You try to identify the substance, but when you bend the medal, it breaks in half. The medal does not conduct electricity at room temperature (25° C), but if you cool it down to well below freezing point, it conducts electricity. To which group of elements does the medal probably belong?

- a. *Metals*
- b. *Non-metals*
- c. *Semi-metals*
- d. *Halogens*
- e. *Noble bases*

25. Which one of the following is the best example of you increasing an object's potential energy?

- a. *You hit a tennis ball with a racket in the direction of an opponent*
- b. *You stretch an elastic rubber band*
- c. *You drop a pencil*
- d. *You switch on a light*
- e. *You drive around a corner with your bicycle*

26. Any object that has kinetic energy, has to be

- a. *Above the surface of the earth*
- b. *Moving*
- c. *Motionless*
- d. *Warmer than the environment*
- e. *Without any potential energy*

- 27. According to the Law of Conservation of Energy, a bouncing ball should theoretically keep on bouncing forever. Which one of the following statements is correct?**
- a. *A portion of the kinetic energy of the ball will be destroyed with each bounce so that the ball will eventually be motionless*
 - b. *A portion of the kinetic energy of the ball will be converted to sound and heat and distributed to the environment, so that the ball will eventually be motionless*
 - c. *If you can make a perfectly elastic ball, the ball will keep on bouncing on earth forever*
 - d. *In space, the ball keeps on bouncing forever*
 - e. *In a vacuum, the ball keeps on bouncing forever*
- 28. Which option is NOT an example of Potential energy?**
- a. *A wound up watch spring*
 - b. *A pool of water*
 - c. *An inflated bicycle tire*
 - d. *A container filled with petrol*
 - e. *A very heavy object*
- 29. How long is one day on the moon?**
- a. *365¼ earth-days*
 - b. *Approximately 24 hours*
 - c. *1 earth-day*
 - d. *Approximately 28 days*
 - e. *There are no days and nights on the moon since the same side of the moon always faces the earth*
- 30. When energy is transferred from one form to another**
- a. *A small portion of the energy will always be destroyed*
 - b. *A little bit of energy is always created*
 - c. *A small portion of the energy will always be lost*
 - d. *No energy is ever lost*
 - e. *Heat is always generated*
- 31. What type of energy does a fast-rotating turbine in a power station have?**
- a. *Electrical energy*
 - b. *Potential energy*
 - c. *Mechanical energy*
 - d. *Kinetic energy*
 - e. *Nuclear energy*

- 32. In extreme cold conditions a layer of ice forms on the surface of ponds, while the water beneath the ice does not freeze. What is the reason for this?**
- a. *Convection*
 - b. *Conduction*
 - c. *Radiation*
 - d. *The air is colder than the soil at the bottom of the pond. Cold flows from the atmosphere to the upper layer of water and freezes it.*
 - e. *Water is a good insulator against the cold and the deeper water is thus protected.*
- 33. The sun and the earth are both moving through space. How does the sun heat up the earth?**
- a. *Conduction*
 - b. *Radiation*
 - c. *Convection*
 - d. *Chemical reactions*
 - e. *Kinetic energy*
- 34. You live in the Kalahari and want to buy a new 4x4 vehicle. The car is available in all colours. You will often have to drive in the middle of the day to a neighbouring town. What colour would be the logical choice?**
- a. *Green, white and yellow camouflage paint*
 - b. *Black with tinted windows*
 - c. *Bright red*
 - d. *White*
 - e. *Brown*
- 35. Which answer is NOT an example of "lost" energy?**
- a. *A hair dryer's sound as you dry your hair*
 - b. *A car's humming as you drive*
 - c. *The sound of a tennis racket when it hits a tennis ball perfectly*
 - d. *A car's shock absorbers*
 - e. *The pressure of a car seat against your back as you accelerate*

- 36. How many seasons will an observer who lives right on the equator experience in one (1) year?**
- a. 2
 - b. 4
 - c. 6
 - d. 8
 - e. *No seasons*
- 37. The main cause of seasons is**
- a. *The earth's revolution around the sun*
 - b. *The earth's rotation around its own axis*
 - c. *The orbit of the moon around the earth*
 - d. *The perpetual inclination of the earth's axis*
 - e. *The elliptical orbit of the earth around the sun*
- 38. Which answer doesn't match the rest?**
- a. *Hurricanes in the Pacific Ocean*
 - b. *Hot tar streets on a summer day*
 - c. *Photosynthesis in plants in a city*
 - d. *Tube worms around volcanic sources on the bottom of the sea*
 - e. *Gasoline and diesel*
- 39. Which answer doesn't have any connection with the other four possibilities?**
- a. *Gravitation*
 - b. *Sun*
 - c. *Moon*
 - d. *Tides*
 - e. *Revolution*
- 40. Choose the option that doesn't match the other answers**
- a. *Newton*
 - b. *Kepler*
 - c. *Mendeleev*
 - d. *Copernicus*
 - e. *Galileo Galilei*

SECTION B: PLEASE ANSWER ON THE BACK
OF THE ANSWER SHEET

41. Provide reasons why recycling of waste is important. (6 x 1 = 6)
42. What are the two (2) main current environmental problems? (2)
43. Look at the picture below. It shows a battery that powers an electric motor. The electric motor, in turn, drives an electrical generator that will charge the battery. Will the electric motor keep on working indefinitely? Provide a reason for your answer. (2)



[SECTION B: 10]

[TOTAL: 50]