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Science-in-Action 2019

Grade 6 and 7

DATE: TUESDAY, 6 AUGUST 2019
DURATION: 75 minutes
TIME: 14:00 – 15:15

INSTRUCTIONS

Requirements: HB pencil, eraser and sharpener

1. Answer all questions.
2. Use a **pencil** to complete the answer sheet. **Pens may not be used.**
3. This question paper has 43 questions.
4. Write your personal details on the answer sheet.
5. The school and learner code must also be filled in clearly on the answer sheet.
6. All answers must be filled in on the answer sheet. The answers to the multiple-choice questions (questions 1 to 40) must be filled in on the **front** of the answer sheet. The answers to questions 41 to 43 must be filled in on the **back** of the answer sheet.
7. Multiple-choice questions: Select ONE answer only (a, b, c, d or e).
No marks will be awarded for questions if more than one answer was filled in.
8. Shade/colour the block of the answer clearly.
9. A maximum of 75 minutes will be allowed for completing the paper.
10. The answer sheet must be handed in at the end of the 75 minutes.

SECTION A: MULTIPLE-CHOICE QUESTIONS

Answer the following questions on the front of the answer sheet. Shade/colour the block of the answer clearly. Do not shade the block only lightly or indicate the answer in any other way.

[40 x 1 = 40]

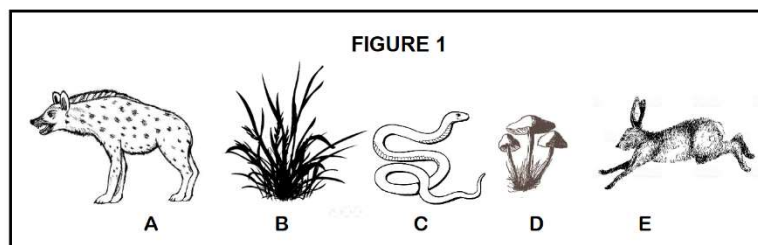
1. You apply a few drops of iodine to a slice of fruit. The iodine turns a dark blue, which indicates that the fruit contains _____.
 - a. protein
 - b. starch
 - c. vitamins
 - d. fats
 - e. minerals

2. Which type of food provides the most energy per gram?
 - a. fats
 - b. carbohydrates
 - c. proteins
 - d. minerals
 - e. vitamins

3. An illness caused by a lack of vitamin D:
 - a. diabetes
 - b. constipation
 - c. kwashiorkor
 - d. beriberi
 - e. rickets

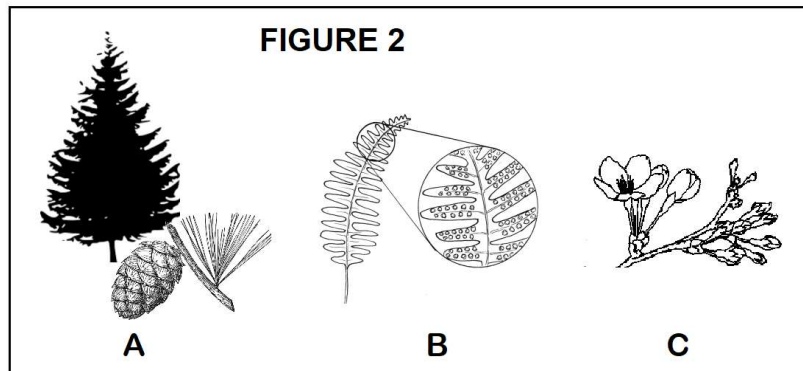
4. Which food processing method is used to make yoghurt?
 - a. pasteurisation
 - b. pickling
 - c. salting
 - d. fermenting
 - e. drying

5. Figure 1 shows the organisms in a food chain. Identify the primary consumer.
 - a. A
 - b. B
 - c. C
 - d. D
 - e. E



6. The walls of plant cells are primarily made of ...
- fats
 - glucose
 - proteins
 - cellulose
 - membranes
7. Jane Goodall, a natural scientist, became known for her study of animals that use simple tools. Which animals did she study?
- sharks
 - insects
 - dogs
 - chimpanzees
 - birds

Use Figure 2 to answer questions 8 to 10.



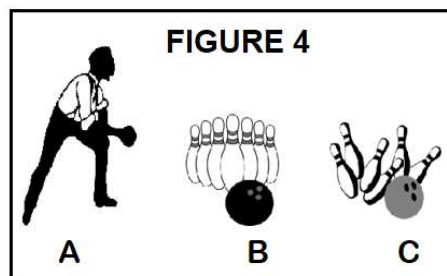
8. Which plants reproduce using seeds?
- A and C
 - B and C
 - A and B
 - None of the above
 - All of the above
9. Which plant(s) bear(s) fruit?
- A and C
 - B
 - C
 - A and B
 - None of the above
10. Name the angiosperm(s).
- A
 - B
 - C
 - All of the above
 - None of the above

Use Figure 3 to answer questions 11 and 12.

FIGURE 3		
Substance	Melting point (°C)	Boiling point (°C)
1	-101.5	-34.04
2	37	370
3	-30	357
4	801	1 413

11. Name the substance(s) with the lowest melting point(s).
- 1
 - 2
 - 3
 - 4
 - 2 and 3
12. Which substance(s) would be fluid at room temperature?
- 1
 - 2
 - 3
 - 4
 - 1 and 3
13. Which separation method is used to separate the different components of crude oil?
- evaporation
 - decanting
 - chromatography
 - filtration
 - fractional distillation
14. Which separation method is used to separate an insoluble substance from a solvent?
- chromatography
 - filtration
 - evaporation
 - distillation
 - boiling
15. Which is the first step used by the municipal water treatment plant to purify water?
- Pollutants/sludge sink(s) to the bottom.
 - Sieving removes large objects from the water.
 - Sand filters remove various impurities.
 - Minerals are added to the water.
 - Chlorine gas is pumped through the water.

16. Which of the following substances can conduct electricity?
- phosphorus
 - carbon
 - nitrogen
 - calcium
 - chlorine
17. You dip a strip of blue litmus paper in an unknown solution and the litmus does not change colour. The solution ...
- will neutralise a base.
 - has a pH of less than 7.
 - will turn red when a universal indicator is added.
 - is either a basic or a neutral solution.
 - cannot be tested with red litmus.
18. How many elements does one molecule of $C_6H_{12}O_6$ (glucose) contain?
- 12
 - 24
 - 6
 - 3
 - The number cannot be calculated.
19. Which of the following substances are mainly gases or solids at room temperature?
- metals
 - earth metals
 - noble gases
 - semimetals
 - non-metals
20. In Figure 4, the ten-pin bowler is ready to release the ball (A). The ball rolls towards the pins (B) and hits them (C). Which statement about the conversion of energy in Figure 4 is true?



- At A, the ball has more potential energy than at C.
- The ball creates energy in the form of heat.
- All the energy in the system is a form of light energy.
- There is no wasted energy in the system.
- The ball will keep moving until all the energy is destroyed.

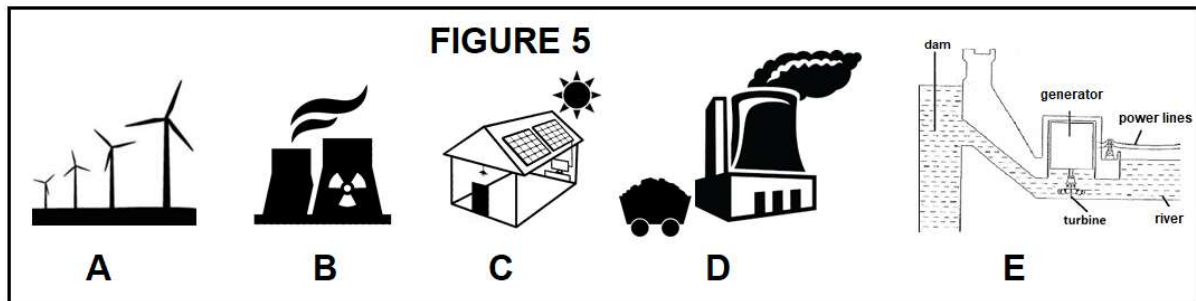
21. Which of the following is a unit of volume?

- a. m^2
- b. ml
- c. mm^2
- d. cg
- e. ms

22. Which energy source is used to generate most of South Africa's electricity?

- a. gas
- b. coal
- c. nuclear power
- d. wind
- e. hydroelectricity

Use Figure 5 to answer questions 23 to 25.



23. Examples of non-renewable energy sources:

- a. A and E
- b. A, C and E
- c. B, D and E
- d. B and D
- e. All are non-renewable.

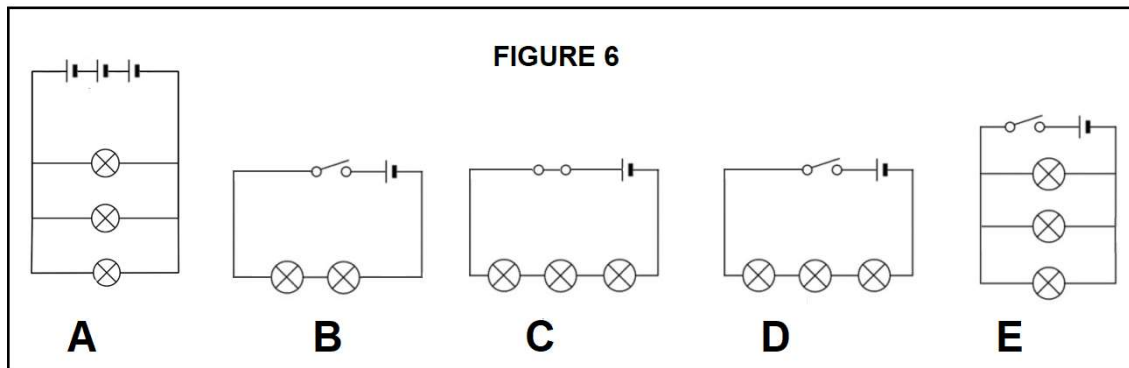
24. Which diagram shows the use of photovoltaic cells to generate electricity?

- a. A
- b. B
- c. C
- d. D
- e. E

25. At Cookhouse in the Eastern Cape, electricity is generated on a large scale using this method:

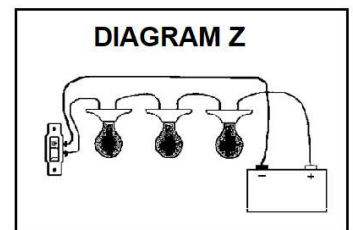
- a. A
- b. B
- c. C
- d. D
- e. E

Use Figure 6 to answer questions 26 to 28. All globes and cells are identical.



26. Name the circuit in Figure 6 that best represents the electrical circuit as set up in Diagram Z. The globes in Diagram Z are on.

- a. A
- b. B
- c. C
- d. D
- e. E



27. In which one of the circuits will the globes burn the brightest?

- a. A
- b. B
- c. C
- d. D
- e. E

28. In which one of the circuits will the globes burn the longest?

- a. A
- b. B
- c. C
- d. D
- e. E

29. By which process is heat transferred/distributed in a liquid?

- a. reflection
- b. conduction
- c. convection
- d. radiation
- e. None of the above

30. Which world-famous physicist and author of *A Brief History of Time* died in 2018 and was buried in London's Westminster Abbey?
- Albert Einstein
 - Stephen Hawking
 - Charles Darwin
 - Bill Gates
 - David Attenborough
31. Name the NASA probe that landed on Mars in 2018.
- Huygens
 - New Horizons
 - Rover
 - Discovery
 - InSight
32. You are at the North Pole. Which star is directly overhead?
- Southern Cross
 - Sun
 - Venus
 - Polaris
 - Moon
33. Approximately how many times a day does the International Space Station orbit the earth?
- 103
 - 24
 - 1
 - 15
 - 165
34. How many years ago did humankind first land on the moon?
- 10
 - 50
 - 75
 - 80
 - 101
35. It was high tide in Cape Town at 03:30 on 3 July 2019. When was the following high tide?
- 4 July 2019 at approximately 03:30
 - 3 August 2019 at approximately 03:30
 - 3 July 2019 at approximately 16:00
 - 10 July 2019 at approximately 12:00
 - 3 July 2019 at approximately 09:30

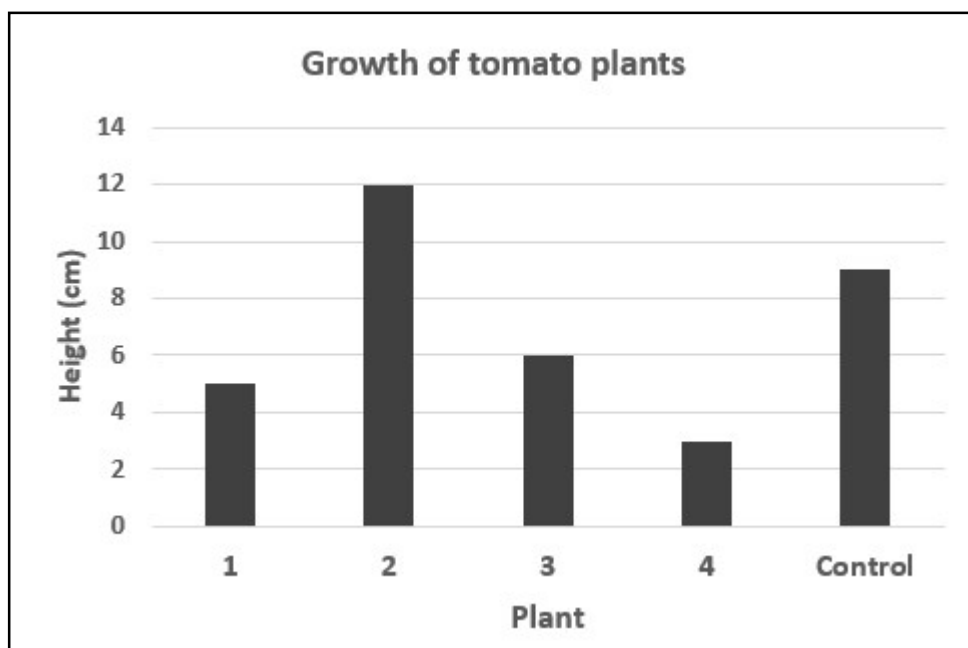
36. The name of the space telescope which will be launched in 2021 as the successor to the Hubble Space Telescope is:
- South African Large Telescope
 - Hartebeeshoek Radio Telescope
 - Very Large Telescope
 - MeerKAT
 - James Webb
37. Name the scientist who discovered the following:
Planets orbit the sun in elliptical orbits and move faster as they approach the sun.
- Johannes Kepler
 - Vasco da Gama
 - Nicolaus Copernicus
 - Neil Armstrong
 - Dmitri Mendeleev
38. Which statement about the seasons is true?
- In summer, the earth is closer to the sun than in winter.
 - In March, it is autumn in the Northern and Southern Hemisphere.
 - The longest night in the Southern Hemisphere occurs in June.
 - The duration of night and day is equal in summer and winter.
 - Seasons are caused by the earth's rotation around its axis.
39. During which phase is the moon not visible from the earth?
- full moon
 - gibbous moon
 - first quarter
 - crescent moon
 - new moon
40. In which century is the year 2019?
- 19th
 - 20th
 - 21st
 - 22nd
 - 30th

[TOTAL SECTION A: 40]

SECTION B

Answer the following questions on the back of the answer sheet.

41. South Africa has a shortage of fresh water. Desalination of sea water is a possible solution. Name and briefly discuss three disadvantages that the desalination of sea water could have for South Africa. **(3)**
42. You did an investigation to determine the growth of tomato plants over 14 days. On day 14, you measured the height of the plants and showed the results on a graph. Use the following graph to answer the questions.



- 42.1 Which axis (x or y) shows the result? **(1)**
- 42.2 Which plant showed the second least growth? **(1)**
- 42.3 At the start of the investigation, plant 3 was 3 cm high. With what percentage did plant 3 grow? **(1)**
43. You did the following investigation to determine the rate of water evaporation: Two similar tins were each filled with 300 ml of tap water. One tin was placed outside in the sun and the other was placed outside in the shade at the same time. After 8 hours, you measured the amount of water left in each tin.
- 43.1 Name one independent variable. **(1)**
- 43.2 Name one dependent variable. **(1)**
- 43.3 Name two constants. **(2)**

**[TOTAL SECTION B: 10]
[GRAND TOTAL: 50]**