E-mail: Info@saolympiads.co.za website : www.saolympiads.co.za

Natural Science Olympiad
GRADE 7

DATE: 20-21 AUGUST 2024

TIME: 90 MINUTES

INSTRUCTIONS:

1. This booklet has 50 multiple-choice questions.
2. Each question is followed by answers marked A, B, C, and D. Only one answer is correct. Choose the correct answer and shade the corresponding circle on the answer sheet.
3. All working details must be done in the space provided.
4. Calculators are permitted.
5. Diagrams are not necessarily drawn to scale.
6. Each question carries one mark.
7. You have 90 minutes for the paper, which works out to an average of 1.8 minutes per question.
8. Read the questions carefully before answering.
9. Visit the website: www.saolympiads.co.za.

ENJOY THE OLYMPIAD.

Grade 7 NS Olympiad 2024

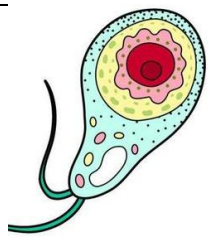
Various options are provided to answer the following questions. Choose the correct answer and Indicate the correct answer by circling the correct letter on the answer sheet provided.
E.g., 1.1.1 – A. (see guide)

1. The Emperor penguin cannot fly but its body is adapted to live in cold.
Which of the following is an example of the Emperor penguin's adaption?

A Thick belly to float on ice
B Webbed feet to walk on thin ice
C Streamline body to move easily through water
D Nostrils that cool down cold air (1)

https://www.freepik.com/free-vector/emperor-penguin-white-background_44860150.htm

2. Which ONE of the following organisms belongs to the fungi Kingdom?

A	B	C	**D**
			

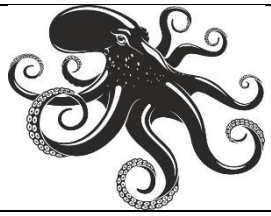
3. Which of the following is INCORRECT with regards to naming a lion (using the five Kingdom classifications)?

A Phylum: Chordata
B Class: Mammal
C Order: Herbivora
D Genus: Felidae (1)

4. Vertebrate means ….

A an animal with cephalothorax
B an animal without a backbone
C an animal with a backbone
D an animal with a soft scull (1)

5. Which ONE of the following is an example of an arthropod? (1)

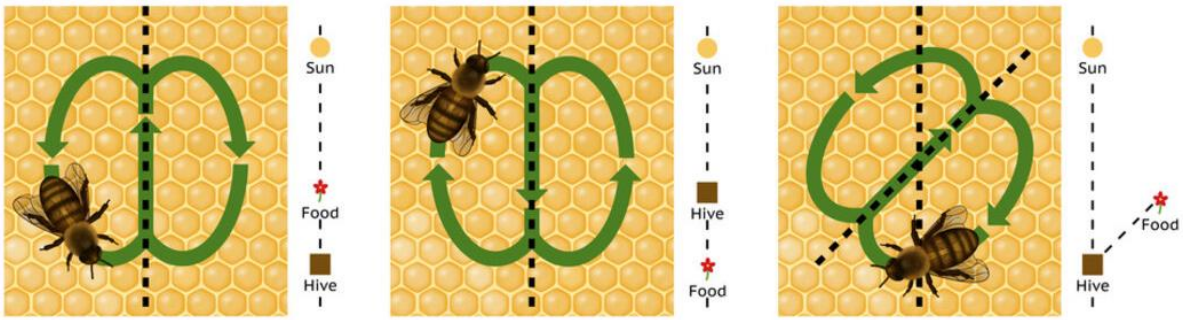
A	B	C	D
			

6. Which of the following characteristics is typical of monocotyledonous flowers?

A Presence of petals in multiples of three
B Vascular bundles arranged in a ring
C Seeds with two cotyledons
D Taproot system

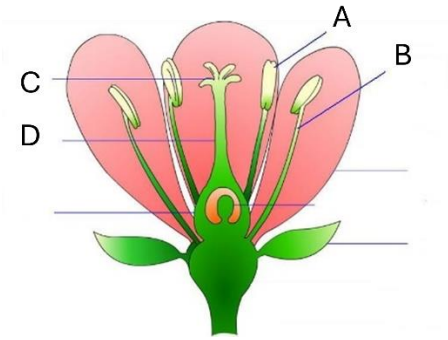
(1)

7. Honeybee's do a type of dance known as the "waggle dance". What is the primary purpose of this type of dance?

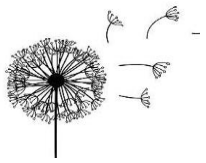


A To attract a mate
B To communicate the location of a food source
C To intimidate predators
D To signal the arrival of a new queen (1)

8. Which structure in the diagram facilitates the fusion of the male and female gametes during plant fertilization? (1)



9. Which of the following fruit/seed structure is to enhance animal dispersion? (1)

A	B	C	D
			

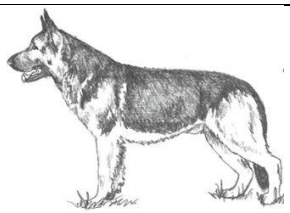
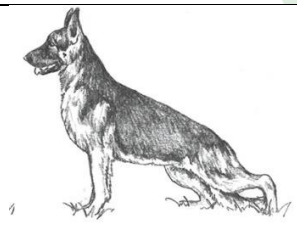
10. Ovulation is …

A the release of ripe egg cell from the ovary
B passing of unfertilised egg cell and uterus lining through the vagina
C having a baby developing inside a mother's body
D act of fitting the penis into the vagina (1)

11. Which of the following contraceptives will also protect the male and female from sexual transmitted diseases/infections?

A Male condom
B Contraceptive pills
C Contraceptive injections
D A shower after intercourse (1)

12. Which factor has primarily contributed to the variation observed in German Shepherds over time?

	
1890	2000s

https://gsd-living.com/breed-history/

A Environmental adaptation
B Genetic mutations
C Selective breeding.
D Geographic isolation (1)

13. You are travelling by bus to visit your family members in a different province. You need to choose a suitcase for all your belongings. This suitcase will be stored in a small trailer with the other passengers. Which property should your suitcase have?

A durable
B large capacity
C heat resistant
D lightweight (1)

14. Plastic is designed so that it lasts long. What environmental impact may this have?

A Increases carbon footprint
B Improve recycling efficiency
C Waste accumulation
D Improves soil fertility (1)

15. Read the headline of an article published by The Guardian on the 20th of May 2024.

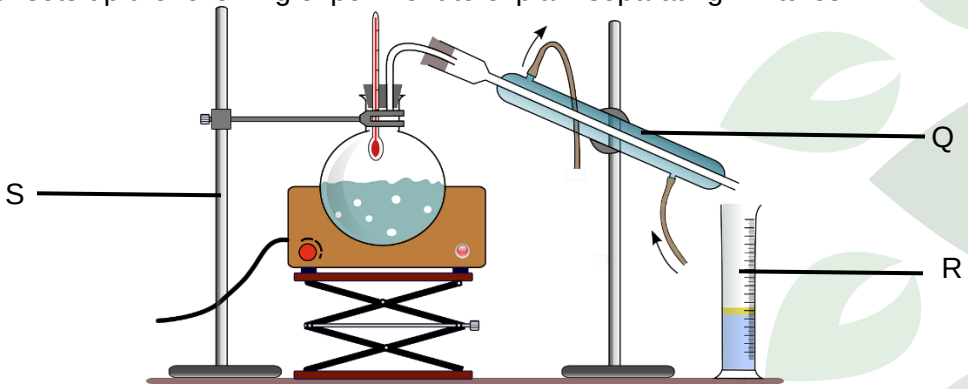
Microplastics found in every human testicle in study

Scientists say discovery may be linked to decades-long decline in sperm counts in men around the world

What preventative measures can be taken to reduce the presence of microplastics in the environment?

A Implementing stricter recycling regulations
B Reducing the use of renewable materials
C Using more disposable plastics
D Increase the use of plastic products (1)

Used the following for question 16 and 17.
Your teacher sets up the following experiment to explain separating mixtures.



16. The diagram illustrate _____ separation.

A Distillation
B Evaporation
C Chromatography
D Filtration (1)

17. Identify the correct names of the equipment used in the experiment. (1)

	Q	R	S
A	Erlenmeyer flask	Measuring cylinder	Retort Stand
B	Water tube	Measuring cylinder	Test tube
C	Water bath	Liebig condenser	Test tube
D	Liebig condenser	Measuring cylinder	Retort Stand

18. What does the PET symbol on the bottom of a plastic bottle indicate?

A The bottle may only be microwaved once
B The bottle is biodegradable
C The bottle can be reused only once
D The bottle is made of polyethylene terephthalate (1)

19. Your little cousin gives you an unknown liquid and asks if it is an acid or a base.
You do not know if it is a dangerous substance or not.
What would you use to test if it is an acid or a base?

A Taste it
B Rub a little bit between your fingers
C Use an indicator
D Add vinegar and see if it makes bubbles (1)

20. Which ONE of the following is NOT a property of a base?
A Taste bitter
B Feels slippery or soapy on the skin
C Produce hydrogen ions in solution
D Reacts with acids to make salt and water (1)

21. During the summertime, a wasp stings your arm.

Because the sting is very painful, your mom puts vinegar on your arm. She did this because ….

A The vinegar is an acid and neutralises the sting
B The vinegar is cold, and it will freeze the stinger
C The vinegar is a base and it neutralise the sting
D The vinegar has a liquid and it will be absorbed in your arm (1)

22. What is Dmitri Mendeleev best known for?

A Discovering the electron
B Formulating the law of motion
C Developing the modern periodic table of elements
D Proposing the theory of relativity (1)

23. The term metalloid means …

A a substance is a semi-metal
B a substance is a non-metal
C a substance is a metal
D a combination of metal and non-metals (1)

24. You have various household objects and want to test which objects conduct electricity. You connect them to a simple circuit. Which substance does not conduct electricity?

A rubber eraser
B copper wire
C aluminium foil
D graphite pencil lead (1)

25. Which of the following activities contributes most significantly to deforestation?

A Planting new trees
B Clearing land for agriculture
C Harvesting timber sustainable
D Establishing protected forest reserves (1)

26. Which ONE of the following is an example of potential energy?

A	B	C	D

27. Sometimes energy must be transferred from one system to another. An electric fan transfers it as follows:

A electrical energy in electric circuits→ kinetic energy in fan motor → kinetic energy in fan shaft → electrical energy in fan blades
B kinetic energy in fan motor →electrical energy in electric circuits→ kinetic energy in fan shaft → electrical energy in fan blades
C electrical energy in fan blades → electrical energy in electric circuits → kinetic energy in fan motor → kinetic energy in fan shaft
D kinetic energy in fan motor → electrical energy in electric circuits→ kinetic energy in fan shaft → electrical energy in fan blades (1)

28. Energy is measured in ….

A Food
B Watt
C Kilograms
D Joule (1)

29. Which of the following objects is colder?

Book	Metallic hard drive	Winter jersey

A Book
B Metallic hard drive
C Winter jersey
D Neither, all of these objects have the same temperature (1)

30. How does a thermometer work?

A With the increase in temperature, mercury/liquid alcohol expands and rises within the thermometer.
B The temperature attracts the mercury/liquid alcohol, making it rise
C The glass of the thermometer gets hot and boils the mercury/liquid alcohol
D The sensor within the mercury/liquid alcohol measures the temperature (1)

31. In an investigation, you test how a bowl's colour influences the water's temperature. Which ONE of the following coloured bowls will have the coldest water?

A Purple
B Black
C White
D Blue (1)

32. Homes in the Southern Hemisphere face _____ to get the most Sun during the day.

A South
B North
C East
D West (1)

33. Insulating materials slow heat losses and gains through conduction, convection and radiation. People use insulating materials to reduce heat losses in winter and heat gains in summer this is known as …

A Energy conduction
B Energy conservation
C Energy loss
D Energy radiation (1)

34. How are Zulu beehive houses well insulated for summer and winter?

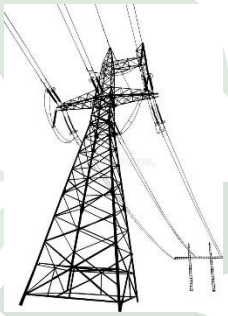
A Due to their tall and narrow structure, allowing for efficient airflow.
B Because they are constructed with bricks made of clay and straw.
C Thanks to the use of buffalo hides as an additional layer of insulation.
D As a result of their conical thatched roofs, which trap heat in winter and provide shade in summer (1)

https://za.pinterest.com/pin/zulu-huts--826973550346311304/

35. Much energy is wasted when driving a car. With the output at 35 J and 65 J is wasted as heat, what is the % efficiency if the car?

A 30 %
B 65 %
C 35 %
D 100 % (1)

36. Electricity is transported to homes, hospitals and factories by big structures called …



A Pylons
B solar panels
C Water towers
D Turbines (1)

37. The angle between the plane of the equator of the Earth and the plane of the Earth's orbit around the Sun is:

A 180 ˚
B 90 ˚
C 66,5 ˚
D 23,5 ˚ (1)

38. The season called spring in English is called *Intloko hlaza* by the:

A North Sotho people
B amaXhosa people
C Batswana people
D San people (1)

39. If it is summer in the Northen Hemisphere, what season is it in the Southern Hemisphere?

A Spring
B Winter
C Summer
D Autum (1)

40. How do solar panels convert sunlight into electricity?

A Solar panels use mirrors to concentrate sunlight onto water pipes, generating steam that turns a turbine.
B Solar panels absorb sunlight and use the heat to create chemical reactions that generate electricity.
C Solar panels contain photovoltaic cells that convert sunlight directly into electricity through the photovoltaic effect.
D Solar panels store sunlight in batteries, which then release electricity when needed. (1)

41. Drilling for oil and natural gas in the sea has increased over the last few decades. What is one of the main environmental concerns associated with offshore oil and gas drilling?

A Risk of oil spills, which can harm marine life and ecosystems.
B Increased fish population due to artificial structures.
C Reduction in ocean temperatures.
D Decreased levels of sunlight reaching the ocean floor. (1)

42. Which dates is correct with regards to the equinox and solstice? (1)

	Equinox		Solstice	
A	21 March	21 December	21 December	23 September
B	21 December	21 March	23 September	21 December
C	21 December	21 June	21 March	23 September
D	21 March	23 September	21 December	21 June

43. How long does it take for the Moon to complete one orbit around the Earth?

A 24 hours
B 7 days
C 29.5 days
D 365 days (1)

44. No human has ever seen the “dark side” of the Moon. Why do we always see the same side of the Moon from Earth?

A The Moon's rotation period matches its orbit period
B The Moon does not rotate
C The Earth's gravity locks the Moon in place
D The Moon's orbit is elliptical (1)

45. If it is a full moon tonight, what phase will the Moon be in about one week?

A New Moon
B First quarter
C Last quarter
D Waning Gibbous (1)

46. Which ancient civilization is credited with the earliest known records of astronomical observations?

A South Africans
B Greeks
C Babylonians
D Romans (1)

47. Which of the following tools would you use to observe planets in our solar system?

A Microscope
B Telescope
C Electroscope
D Thermometer (1)

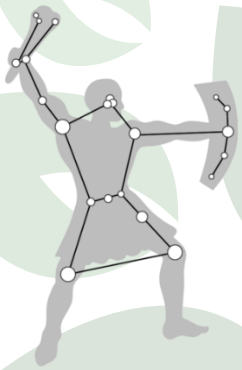
48. There are many cultural and regional calendars in use today. Which calendar is most commonly used worldwide in modern Western societies?

A Julian calendar
B Gregorian **calendar**
C Victorian calendar
D Roman calendar (1)

49. What is one of the main astronomical purposes believed to be associated with Stonehenge?

A To align with the sunrise on the summer solstice.
B To serve as a calendar by marking the positions of the planets.
C To predict solar and lunar eclipses accurately.
D To observe the movements of distant galaxies**.** (1)

50. Which star is a prominent part of the Orion constellation and has been observed to vary in brightness, sometimes becoming one of the brightest stars in the night sky?



A Sirius
B Procyon
C Betelgeuse
D Rigel (1)

https://www.siyavula.com/read/za/natural-sciences/grade-7/historical-development-of-astronomy/20-historical development-of-astronomy

TOTAL MARKS = 50