

SECTION A [40 MARKS]
ANSWER ALL QUESTIONS
Use OMR sheet for Question I ONLY

Question I

1. The drop centre of the cell that aids in recycling, removing and reusing the materials of the cell.

A Cell wall
B Nucleus
C Lysosomes
D Mitochondria

2. A person experienced a leg sprain while running a marathon. As a result, the person has difficulty walking and swollen feet. Identify the connective tissue damaged.

A Bones
B Muscles
C Tendons
D Ligaments

3. A farmer grafted a branch of apple on to another root stock, which later produces flowers and fruits. Which characteristics will flower and fruits show?

A Only of the scion
B Only of the stock
C Forms a new species
D Mixture of scion and stock

4. Which statement explains how the pupil adjusts in response to different lighting conditions?

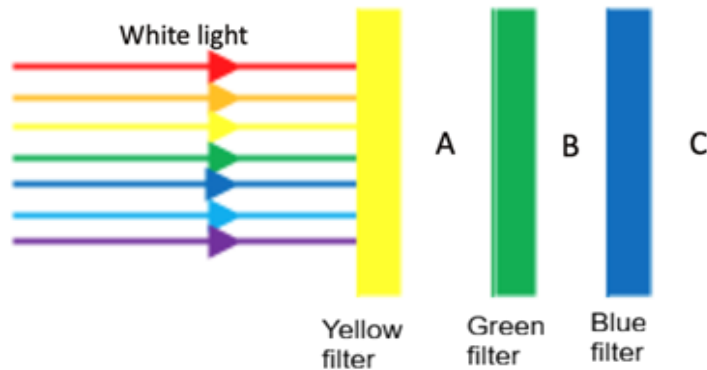
A It changes shape to improve the visual activity
B It eliminates the need for the lens in focusing light
C It enhances colour perception by altering the wavelength of light entering
D It expands and contracts to regulate the amount of light entering the eye

5. If 'X' is the symbol of an element, identify the isotopes of the element.

A ${}_8\text{X}^{15}$ and ${}_9\text{X}^{17}$
B ${}_8\text{X}^{15}$ and ${}_9\text{X}^{14}$
C ${}_8\text{X}^{15}$ and ${}_8\text{X}^{17}$
D ${}_8\text{X}^{15}$ and ${}_9\text{X}^{15}$

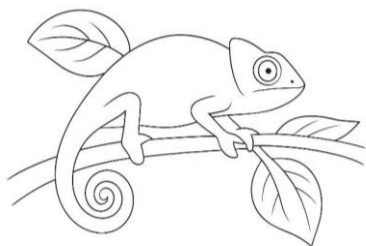
6. When limestone (CaCO_3) is strongly heated in industries, it breaks down into quick lime (CaO) and carbon dioxide (CO_2). Which type of reaction does this represent?
- A Synthesis reaction
 - B Chemical reaction
 - C Decomposition reaction
 - D Displacement reaction
7. A student takes a spatula each of four bases W, X, Y, and Z in four separate test tubes and adds water to each test tube. She observes that W and Z dissolve in water, while X and Y do not. Based on these observations, which bases can be classified as alkalis?
- A W and X
 - B W and Z
 - C X and Z
 - D X and Y
8. Which mixtures is separated by using chromatography?
- A Salt dissolved in water
 - B Oil and water mixture
 - C Sand and water
 - D Inks in water
9. If Mr X weighs 140 N on the Moon, then calculate his weight on the Earth.
- A 700 kg
 - B 840 Kg
 - C 700 N
 - D 840 N
10. Two paths lead to the top of a hill. The first path is steep and short while second path is twice the length of first path but not steep. How much of potential energy would you gain if you take the second path?
- A Twice as much
 - B Four times as much
 - C Gain in potential energy is same
 - D No gain in potential energy in either case
11. Which device is used to break a circuit during the excess flow of current and that can be reset?
- A Fuse
 - B Switch
 - C Earthing
 - D Miniature circuit breaker

12. White light is passed through a yellow filter. Light coming out of yellow filter is again passed through green filter which is further passed through blue filter. Which colour is obtained at 'C'?



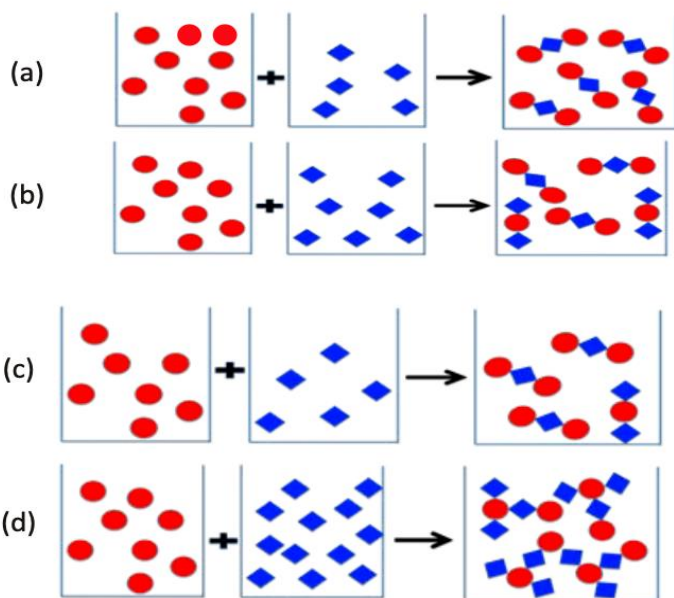
- A Blue
B Black
C White
D Green
13. Which set contains only objects that shine by reflecting light?
- A Moons, comets and stars
B Planets, stars and comets
C Planets, stars and moons
D Moons, planets and asteroids
14. A cell has mitochondria, centrosome with centrioles, nucleus and other cell organelles. Based on this information, this cell could be a cell of?
- A Cat
B Yeast
C An apple
D Sunflower
15. We wave our hands at our friends to show excitement. Which joint involve in above wrist movement?
- A Pivot joints
B Hinge joints
C Gliding joints
D Ball and socket joints
16. A piece of cactus breaks off the plant, falls on the ground, and begins to grow without seed. Which type of reproduction is shown?
- A Micropropagation
B Artificial propagation
C Natural and artificial
D Natural propagation

17. The figure below shows a chameleon sitting on a branch. Its body colour changes to match its surroundings.



How this ability enables the chameleon to survive?

- A Find water easily
 - B Hide from predators
 - C Produce its own food
 - D Compete with another animals
18. Which isotope is used to determine the age of a piece of wood?
- A ${}^6_6\text{C}^{12}$
 - B ${}^6_6\text{C}^{13}$
 - C ${}^6_6\text{C}^{14}$
 - D ${}^6_6\text{C}^{11}$
19. The figure given below shows chemical reaction taking place when paper burns in oxygen to form carbon dioxide. The oxygen atoms are represented by dots and the carbon by rhombus. Which of the models correctly represents the chemical reaction taking place?



- A (a)
- B (b)
- C (c)
- D (d)

20. Study the section of a periodic table given and answer the following questions. The letters shown in the table are not symbols of the elements

[illegible]

Which element will have the highest ionisation potential?

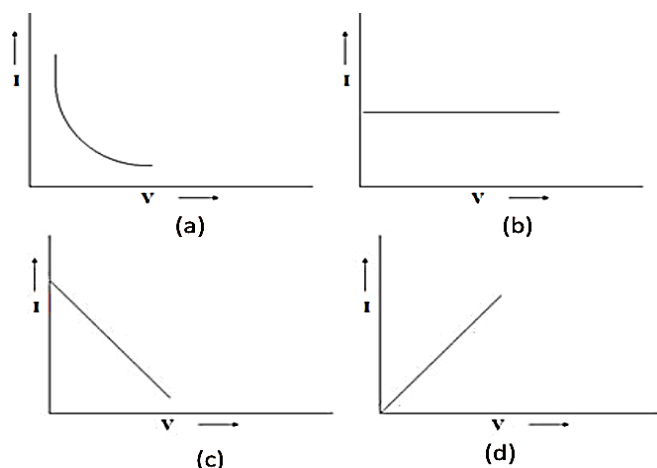
21. You have a chemical in a sealed glass container filled with air. This set-up is placed on a balance as shown in figure below. Next, the chemical is ignited by focusing sunlight on it with the help of a magnifying glass.



After the chemical has completely burned, which of the following is true?

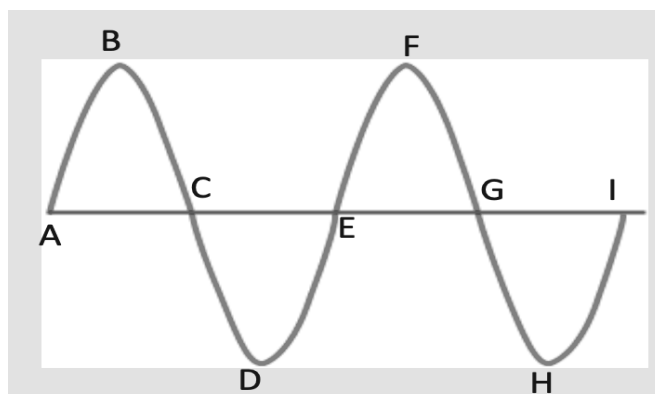
- A The balance will read greater than 36.50 g
B The balance will read less than 36.50 g
C The balance will read equal to 36.50 g
D The balance will read 365.0 g
22. A camel can walk easily on desert while a horse cannot. What is the probable reason?
- A Horse is small
B Horse has stiff hoof
C Camel has broad padded feet
D Camel has hump to store water
23. What is the potential energy of an object with a mass of 10 kg, when kept at a height of 100 m above the surface of the Earth? [Take $g = 10 \text{ m/s}^2$]
- A 100 joules
B 1000 joules
C 10,000 joules
D 100,000 joules

24. Which of the following graphs best describes Ohm's law?



- A (a)
- B (b)
- C (c)
- D (d)

25. Indicate the interval that represents one full wavelength.

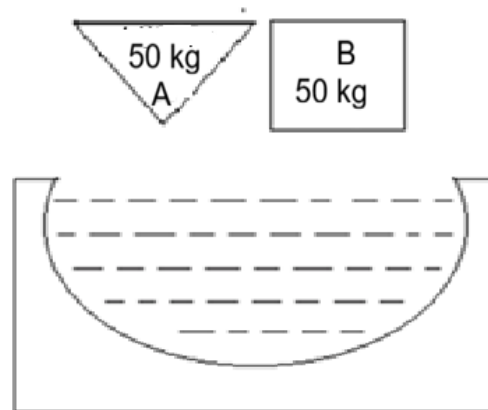


- A C to G
- B B to D
- C A to G
- D A to C

26. What determines the polarity of an electromagnet?

- A Length of the iron core
- B Strength of the battery
- C Thickness of the iron core
- D Direction of the current flow

27. Calcium ion is formed when it loses its valence electron. What are the valence electrons in its valence shell?
- A 2
 - B 4
 - C 6
 - D 8
28. Rice tastes sweet after chewing it for a while. Which digestive activity is responsible for this change?
- A Breakdown of vitamins
 - B Fat emulsification by bile
 - C Protein breaks down by pepsin
 - D Carbohydrate breakdown by saliva
29. When an object reflects red light and absorbs all the other colours. What will be the colour of the object?
- A White
 - B Black
 - C Red
 - D Orange
30. Two shapes A and B are made from the same material having equal mass as shown in the figure. An object A reaches the base of the pool faster than an object B, when they are dropped from the same height at the same time. What is the suitable reason?



- A Object A experience less fluid friction
- B Object B experience less fluid friction
- C Gravitational pull-on Object B is more
- D Gravitational pull-on Object A is more

31. When a person suffers from a high fever, doctors recommend to put a cloth soaked in cold water on the forehead. What is the role of soaked cloth?
- A Release heat and reduce fever
 - B Absorb heat and reduce fever
 - C Hydrate the person and reduce fever
 - D Dehydrate the person and reduce fever
32. A farmer often grows maize and beans in a field to overcome space limitation. Which types of competition occurs between maize and beans?
- A Intra-specific competition
 - B Inter-specific competition
 - C Migration
 - D Predation
33. The steps for writing the chemical formula of simple radicals are:
- I. Write the valencies above the symbols of each radical
 - II. Interchange the valencies of the radical
 - III. Find out the valencies of the radical
 - IV. Write the final formula of the compound
 - V. Write symbol of the radical

What is the correct order of writing a chemical formula?

- A I, II, III, IV
 - B I, III, IV, II
 - C III, II, I, IV
 - D V, III, I, II, IV
34. While observing a friend, Sonam notices that the head can move **forward and backward (like nodding “yes”)** but cannot rotate fully in all directions like the shoulder. Based on this observation, which type of joint is present where the head joins the neck?
- A Pivot joint
 - B Hinge joint
 - C Ball and socket joint
 - D Immovable joint
35. A farmer observes that cows grazing in his field easily pull out some plants, damaging the roots. These plants mostly have **fibrous roots**. Based on this situation, which explanation best justifies why these plants are more easily damaged?
- A Fibrous roots grow deep into the soil and hold the plant firmly
 - B Fibrous roots are shallow and spread near the surface, and easy to pull out
 - C Fibrous roots store large amounts of food, attracting herbivores
 - D Fibrous roots are immovable and fixed strongly in the soil

36. A student makes an electromagnet using an iron nail, copper wire, and a battery. He finds that the magnet is not strong enough to pick up many paper clips. Which of the following actions will increase the strength of the electromagnet?
- A Decrease the number of turns of wire around the nail
 - B Use a plastic rod instead of an iron nail
 - C Increase the number of turns of wire and use more batteries
 - D Disconnect the battery after winding the wire
37. "Aluminium reacts with sulphuric acid to form aluminium sulphate." Write the chemical formula of aluminium sulphate formed.
- A $\text{Al}_3(\text{SO}_4)_2$
 - B $\text{Al}_2(\text{SO}_4)_2$
 - C $\text{Al}_4(\text{SO}_2)_3$
 - D $\text{Al}_2(\text{SO}_4)_3$
38. If the speed of a planet orbiting the Sun increases significantly, what is the most likely effect?
- A It will fall into the Sun
 - B It may escape from its orbit
 - C It will stop moving
 - D Its mass will increase
39. A girl lifts a 160 N load at a height of 1 m in a time of 0.5 s. What power does the girl produce?
- A 350 Watt
 - B 320 Watt
 - C 300 Watt
 - D 250 Watt
40. Which process is used by roots to absorb the water from the soil?
- A Osmosis
 - B Diffusion
 - C Root pressure.
 - D Active transport

SECTION B [40 MARKS]
ATTEMPT ALL QUESTIONS

Question II

1. Farmers use different methods to grow crops, and their choice between organic and inorganic farming depends on soil conditions and production goals. Based on the statement, answer the following questions: **[1]**

a. State ONE advantage of organic farming.

- b. Inorganic farming helps to increase the yield and generate income, yet we are discouraged to practice. Give TWO reasons. **[2]**

2. Study the Fig. 2.1 and answer the questions that follows.

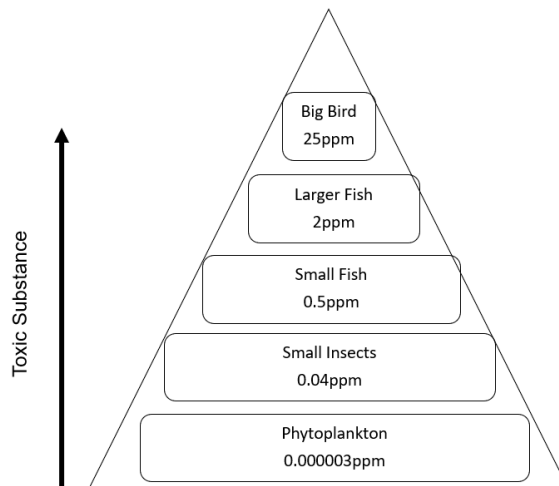


Fig. 2.1

- a. Name the process observed. **[1]**

- b. Analyse TWO impacts of the process identified in question a. [2]

Question III

1. How does climate change affect the farming practices? Justify with TWO reasons. [2]

2. Study the Fig. 3.1 and answer the question.

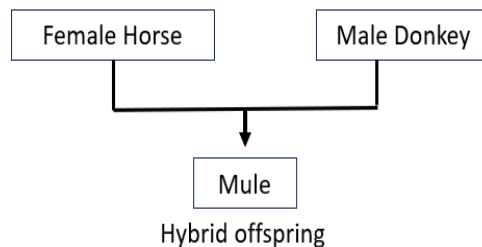


Fig. 3.1

- a. Name the process of producing hybrid offspring. [1]

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- b. State TWO advantages of the process identified. [2]

Question IV

1. State TWO adaptive features of snow leopard. [2]

2. Climate change reduces the availability of prey in snow leopard habitat. Snow leopard starts to compete for the food within their species. What type of competition arise amongst them? [1]

Question V

1. An unknown element has atomic number 12.
a. What is the valency of the unknown element? [1]

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- b. What kind of ion does it forms? [1]

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2. Complete the following equation: [2]

$\text{H}_2\text{SO}_4 + \text{Fe} \rightarrow \underline{\hspace{2cm}} + \underline{\hspace{2cm}}$	
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3. State ONE strategy to reduce acid rain? [1]

4. A student adds hydrochloric acid into test-tube containing zinc to demonstrate exothermic reaction.

- a. State TWO safety measure while conducting the experiment. [2]

- b. State TWO application of endothermic reaction in day-to-day activities. [2]

Question VI

1. Ohm's law shows a relationship between resistance, current and voltage.
a. Which variable should be kept constant to follow Ohm's law? [1]

- b. Calculate the potential difference required for the flow of a current of 8 A through a conductor of resistance 14 Ω . [3]

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- c. If the resistance is increased, how will it affect the potential difference? [1]

2.

- a. Alternating current is preferred over direct current in domestic wiring. Give TWO reasons. [2]

- b. Outline TWO consequences of not using earthing at home? [2]

3. A rice cooker of 300W is operated on an average of 6 hours a day. If the cost of energy is Nu. 2 per KWh, calculate electric bill for the day. [3]

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Question VII

1. Study the ray diagram to answer the question.

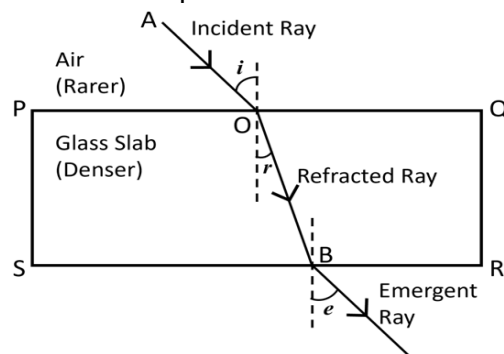


Fig. 7.1

- a. What can be concluded about light ray when it passes from dense to rare medium? [1]

- b. A swimming pool appears shallower than actually it is. Give reason. [1]

2. When an object is placed at $2F_1$, what kind of image is formed by convex lens? [2]

3. If a red ball is placed under blue light, what colour will be reflected? [1]

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