Grade 10 Science Telangana Board 2017

Time : 2 hours 45 min **Maximum Marks : 40**

Part A

Instructions:

(i) Read the whole question paper and understand every question thoroughly without writing anything and 15 minutes of time is allotted for this.

(ii) Answer all questions from the given three sections I, II and III of Part-A.

(iii) In Section III, every question has internal choice, answer any one alternative.

SECTION-I

Note:

(i) Answer all questions.

(ii) Each question carries one mark.

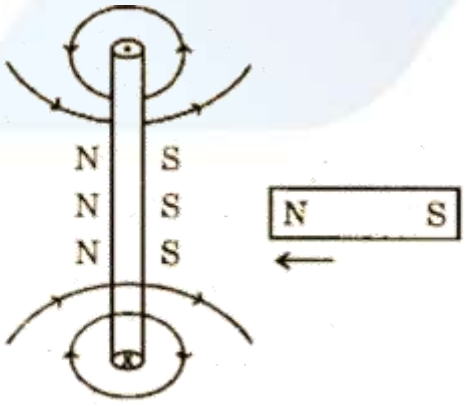
(iii) Write the answers in 1 to 2 sentences.

Q1. Arrange the metals Fe, Na, Ag and Zn in increasing order of their chemical reactivity.

Solution:

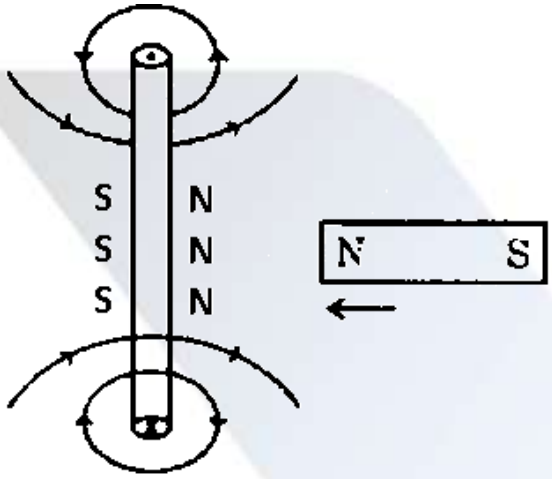
The increasing order of their chemical reactivity is Ag > Fe > Zn > Na.

Q2. Correct the diagram according of Lenz law and draw it again.



Solution:

The correct diagram according of Lenz law is



Q3. The four quantum number values of the 21st electrons or scandium (Sc) are given in the following table.

n	l	m_1	m_2
3	2	-2	$+\frac{1}{2}$

Write the values of the four quantum numbers for the 20^{th} electron of scandium (Sc) in the form of the table.

Solution:

Scandium's electronic configuration is $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^2\ 3d^1$.

The four quantum numbers for scandium's twentieth electron are:

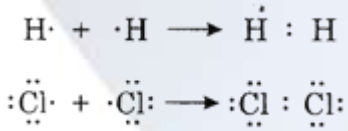
n	l	m_1	m_2
4	0	0	$-\frac{1}{2}$

Q4. What happens if the eye lens of a person cannot accommodate its focal length more than 2.4 cm?

Solution:

Myopia is a condition in which a person's eye lens is unable to accommodate a focal length greater than 2.4 cm. Myopia is an eye condition that causes you to see only nearby objects clearly and not distant objects. This eye condition is also known as nearsightedness.

Q5. Show the formation of HCl molecule with Lewis dot structures using the information given below.



Solution:

Lewis Dot Structures of H and Cl

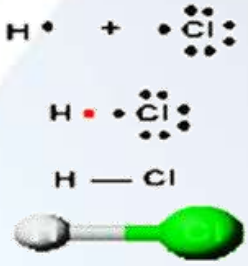
Hydrogen (H)

Hydrogen has one electron.

Chlorine (Cl)

Chlorine has seven valence electrons.

Formation of HCl Molecule



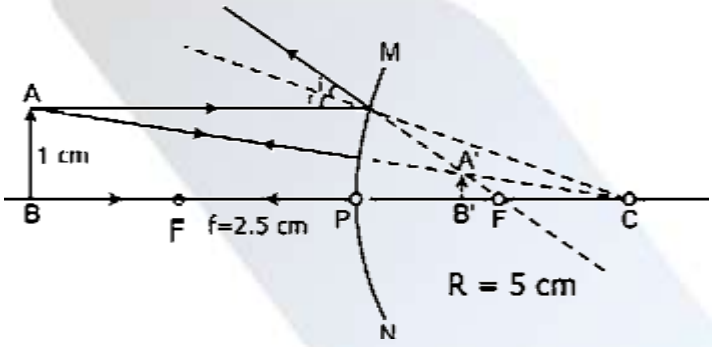
Q6. What happens if we use a fuse made up of same wire which is used to make the electric circuit?

Solution:

If we utilize the same wire that is used in an electric circuit, when the current load exceeds acceptable levels, the fuse wire will not melt and the circuit will not fail. This could ruin your home appliances.

Q7. Draw the ray diagram to show the formation of image for the object of height 1cm. placed at 5 cm. distance, in front of a convex mirror having the radius of curvature = 5 cm.

Solution:



SECTION-II

Note:

(i) Answer all questions.

(ii) Each question carries TWO marks.

(iii) Write the answers in 4 to 5 sentences.

Q8. Give an example with the chemical equation for the reduction of ores using more reactive metals.

Solution:

$6Na + Al_2O_3 = 2AI + 3Na_2O$

In this reaction:

Aluminum oxide (Al_2O_3) is the ore being reduced.

Sodium (Na) is the more reactive metal.

Aluminum (Al) and sodium oxide (Na_2O) are the products.

Q9. Write the electronic configuration of the atom of an element having atomic number 11. Write the names of the rules and the laws followed by you in writing this electronic configuration.

Solution:

The electronic configuration of Sodium is as follows:

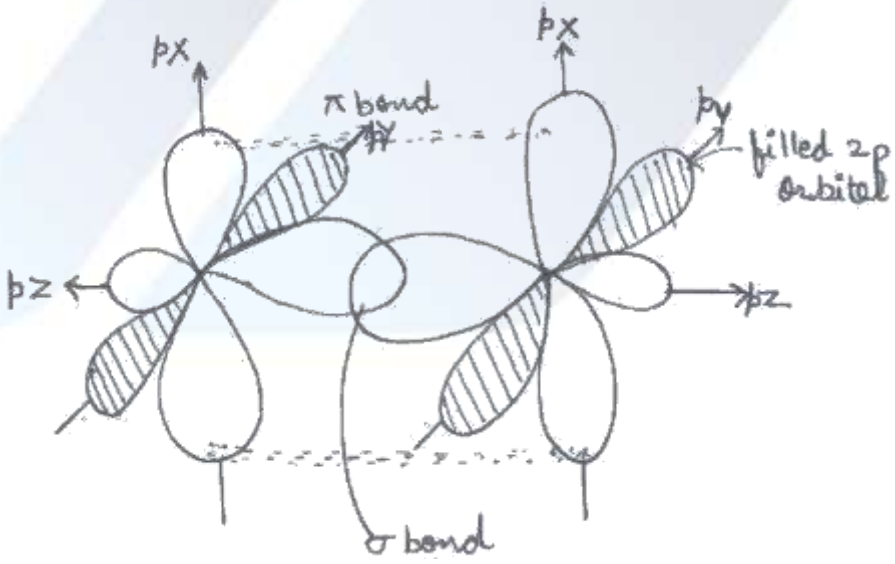
Na:$1s^2 2s^2 2p^6 3s^1$

This electronic arrangement adheres to the following criteria and principles:

- The Aufbau Principle asserts that electrons inhabit the orbitals with the lowest energy first. This is why we fill the first orbital before the second, and so on.
- The Pauli Exclusion Principle asserts that no two electrons in an atom can have the same set of four quantum numbers. Simply said, an orbital can hold up to two electrons with opposing spins.
- Hund's Rule asserts that electrons will fill degenerate orbitals (orbitals with the same energy) singly to the greatest extent possible. For example, in the 2p subshell, each of the three p orbitals will get one electron before receiving another.

Q10. Draw the diagram to show the formation of Oxygen molecule by Valence bond theory.

Solution:



Q11. Observe the information given in the table and answer the questions given below the table.

Substance (in aqueous solution)	Colour change with blue Litmus	Colour change with Red Litmus
A	Red	No change
B	No change	Blue
C	No change	No change

(i) Which one of them may be the neutral salt among A, B, C ?

(ii) What may happen when some drops of phenolphthalein is added to the substance B?

Solution:

(i) Substance C should be a neutral salt because it does not alter the color of blue or red litmus.

(ii) Substance B is observed to convert red litmus to blue. As a result, it identifies as base. We know that when phenolphthalein is put to a basic solution, it becomes pink.

Q12. How can you find out the focal length of concave mirror experimentally when there is no sunlight?

Solution:

Place the object or candle in front of the mirror and adjust the screen to display the image. Measure the object and image distances. Substitute the values (per sign connection) into the mirror formula $(1/f) = (1/u) + (1/v)$. We obtain the focal length of the mirror.

OR

Place the object/candle and screen in the same position in front of the mirror. Adjust this combination of materials to produce a sharp image on the screen.

Measure the distance between the mirror and the object/screen. This distance is the radius of curvature, and dividing it in half yields the focal length of the mirror.

Q13. Two convex lenses of same focal length are fixed in a PVC pipe at a distance double to their focal length. What happens if a boy sees the moon with that arrangement?

Solution:

When two convex lenses of the same focal length are placed in a PVC pipe at a distance double their focal length, the boy will see an enlarged and inverted image of the moon that goes beyond his eyepiece.

SECTION: III

Note:

(i) Answer all questions.

(ii) Each question carries FOUR marks.

(iii) There is internal choice for each question, only one option from each question is to be attempted.

Q14. Write the equation for the reaction of zinc with hydrochloric acid and balance the equation. Find out the number of molecules of hydrogen gas produced in this reaction, when 1 mole of HCl completely reacts at S.T.P

[Gram molar volume is 22.4 liters at S.T.P.; Avogadro's number is 6.023×10^{23}]

Solution:

The reaction of zinc (Zn) with hydrochloric acid (HCl) produces zinc chloride ($ZnCl_2$) and hydrogen gas (H_2). The balanced equation for this reaction is:

$$Zn + 2HCl \rightarrow ZnCl_2 + H_2$$

Number of molecules of hydrogen gas produced:

1. Determine the mole ratio: From the balanced equation, 2 moles of HCl produce 1 mole of H_2 gas.

2. Given data:

- 1 mole of HCl reacts.
- Therefore, the moles of H_2 gas produced = ½ mole.

3. Find the number of molecules:

Using Avogadro's number (6.023×10^{23}), the number of molecules in ½ mole of H_2 gas is:

$$\text{Number of molecules } = \frac{1}{2} \times 6.023 \times 10^{23} = 3.0115 \times 10^{23}$$

The number of molecules of hydrogen gas produced is:

3.0115×10^{23} Molecules.

OR

Explain any four factors which influence the electron affinity (Electron Gain Enthalpy).

Solution:

Factors which influence the electron affinity (Electron Gain Enthalpy) are:

1. Atomic Size: Larger atoms have lower electron affinity because the nucleus has a weaker attraction for added electrons.
2. Nuclear Charge: Higher nuclear charge increases electron affinity as the nucleus pulls electrons more strongly.
3. Electronic Configuration: Atoms with stable configurations (like noble gases) have low or no electron affinity to maintain stability.
4. Shielding Effect: More inner electron shielding reduces the nucleus' attraction, leading to lower electron affinity.

Q15. How will you calculate the focal length of a biconvex lens that is used to correct the defect of Hypermetropia? Explain it mathematically.

Solution:

Considering the above image

Object is placed at L.

Due to the defect of Hypermetropia the image has to be formed on H by using a convex lens.

object distance $= u = -25$ cm

Image distance $=$ V $=$ distance of near point $= -$d

Let f be the focal length of biconvex lens by using Lens Formula:

$$1/\text{f} = 1/v - 1/\text{u}$$
$$1/\text{f} = 1/(-\text{d}) - 1/(-25)$$
$$1/\text{f} = -1/\text{d} + 1/25$$
$$1/\text{f} = (\text{d} - 25)/25\ \text{d}$$

Therefore

$$f = 25d/(d - 25)$$

OR

Why the current carrying straight wire which is kept in a uniform magnetic field, perpendicularly to the direction of the field bends aside? Explain this process with a diagram showing the direction of forces acting on the wire.

Solution:

When a current-carrying wire is placed in a uniform magnetic field perpendicular to the field, it experiences a force due to the interaction between the magnetic field and the moving charges in the wire. This phenomenon can be explained using Fleming's Left-Hand Rule and the formula for magnetic force.

The force acting on a current-carrying conductor in a magnetic field is given by:

$$F = I \cdot L \cdot B \cdot \sin(\theta)$$

Where:

F : Force on the conductor (in Newtons,)

I: Current flowing through the wire (in Amperes,)

L : Length of the wire in the magnetic field (in meters,)

B : Magnetic field strength (in Tesla,)

θ : Angle between the wire and the magnetic field

In this case, since the wire is placed perpendicular to the magnetic field, $\sin(\theta) = \sin(90°) = 1$. Thus, the force becomes:

$$F = I \cdot L \cdot B$$

Fleming's Left-Hand Rule:

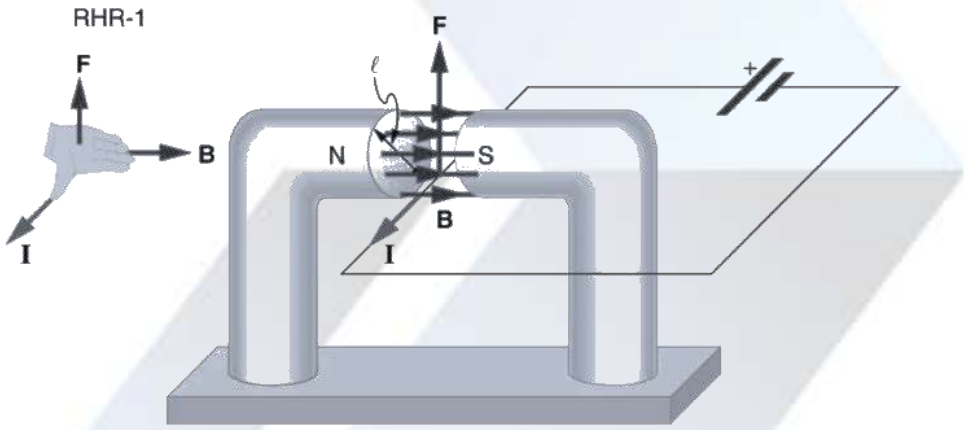
This rule provides the direction of the force acting on the wire. It states:

If the thumb, forefinger, and middle finger of the left hand are stretched perpendicularly to each other:

The forefinger points in the direction of the magnetic field (BB),

The middle finger points in the direction of the current (II),

The thumb points in the direction of the force (FF).



Q16. List out the materials required to test whether the solutions of given acids and bases contain ions or not. Explain the procedure of the experiment.

Solution:

Aim: Show whether the solution contains ions or not.

Needed Materials: Glucose, Alcohol, HCl, NaOH, Sulphuric Acid, electrical wires, two graphite rods, beaker, 230 volt AC plug, bulb

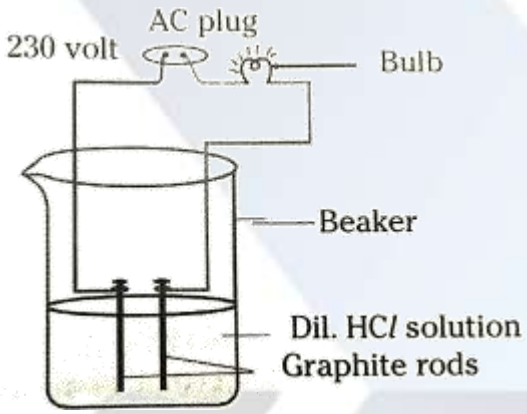
Procedure:

1. Prepare solutions of glucose, NaOH, Alcohol, HCl and H2SO4.

2. Then, connect some electrical wires to graphite rods, separately in a 100 ml beaker.

3. Now, connect the free ends of these wires to 230 volt AC plug and complete the circuit by connecting a bulb to one of the wires.

4. Then test the solutions prepared with circuit. The bulb will glow in the solution that contains ions. The bulb glows only in acid and basic solutions and it does not glow in alcohol and glucose solutions. Acid and basic solution will have ions and the moment of these ions in the solution helps the flow of current through the solution.



OR

List out the materials required to conduct the experiment to understand the esterification reaction. Explain the procedure of the experiment. How can you identify that an ester is formed in this reaction?

Solution:

Needed Materials: Ethanol, Glacial Acetic acid, Conc. Sulphuric acid, test tube, water-bath, beaker, tripod burner, wire guage.

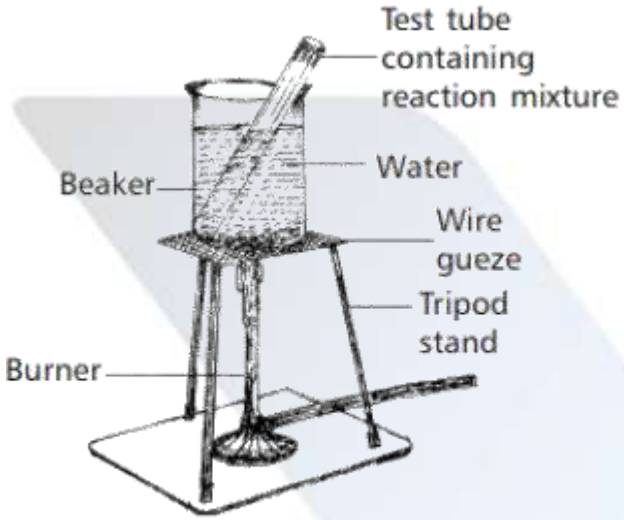
Procedure:

In a test tube, mix 1 ml of ethanol (absolute alcohol), 1 ml of glacial acetic acid, and a few drops of strong sulphuric acid.

The solution should then be warmed in a water bath or beaker for at least five minutes.

After that, pour the warm contents into a beaker with 20-50 ml of water and smell the resulting mixture.

Observation: The final liquid smells sweet and is nothing more than ethyl acetate, an ester is formed.



Formation of ester

The reaction in activity -2 is known as esterification.

Q17. A double concave lens with the refractive index $(n) = 1.5$ is kept in the air. Its two spherical surfaces have radii $R_1 = 20$ cm and $R_2 = 60$ cm. Find the focal length of the lens. Write the characteristics of the lens.

Solution:

First apply the lens maker formula, which is $1/f = (u - 1)\{1/R_1 - 1/R_2\}$.

Here, The lens's focal length is denoted by f, and its refractive index with respect to the medium is represented by u.

R_1 and R_2 represent the radius of curvature of the lens's two curve surfaces.

Here, refractive index $(n) = 1.5$

So, $u = n$ relative to vacuum or air

Therefore, $\mathrm{u} = \frac{\mathrm{n}}{1} = \frac{1.5}{1} = 1.5$

$\mathrm{R}_1 = -20$ cm and $\mathrm{R}_2 = 60$ cm

$\frac{1}{f} = (n - 1)(\frac{1}{R_1} - \frac{1}{R_2})$

Hence, replacing the value to the formula you get

$$\frac{1}{f} = (1.5 - 1)(\frac{1}{-20} - \frac{1}{60})$$

$$\frac{1}{f} = (0.5)(3 + \frac{1}{-60})$$

$$\frac{1}{f} = (0.5)(\frac{1}{-15})$$

$$\frac{1}{f} = \frac{1}{-30}$$

Thus, f $= -30$ cm.

Now for the characteristics of concave lens:-

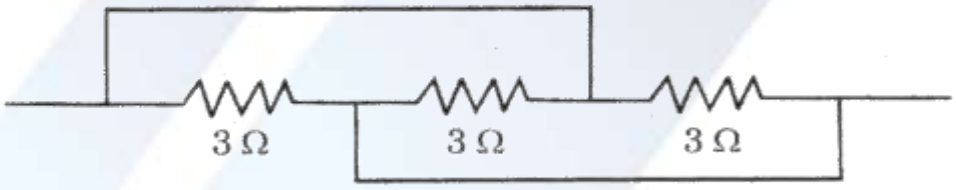
The focal length of concave lens is negative

Virtual, erect and diminished image is formed

Concave lens are diverging lens so that when the light rays come from infinite in the lens, they are diverged by the lens

OR

Find the resultant resistance for the following given arrangement. Find the current, when this arrangement is connected with 9 V battery.



Solution:

We know that two wires link to form two resistances.

Here, we employ an equipotential wire with no resistance.

As a result, the potential of each connecting point is the same.

So we joined the connecting points at one location.

If we do this, we'll witness resistance paired with parallel series.

We know, the equivalent resistance (Req) of parallel series.

$$\frac{1}{Req} = \frac{1}{R1} + \frac{1}{R2} + \frac{1}{R3}$$

Then,

$$\frac{1}{Req} = \frac{1}{3} + \frac{1}{3} + \frac{1}{3}$$

$$\frac{1}{Req} = \frac{3}{3} = 1$$

Req = 1ohm

Use ohm's law, V=IR

I= V/R = 9/1 =9A

Hence, current passing through it is 9A.

Part B

Instructions:

(i) Answer all questions from the given three sections I, II and III of Part-A.

(ii) In Section III, every question has internal choice, answer any one alternative.

SECTION-I

Note:

(i) Answer all questions.

(ii) Each question carries one mark.

(iii) Write the answers in 1 to 2 sentences.

Q18. Which chromosomes determine the sex in human beings?

Solution:

Humans have 46 chromosomes (23 pairs), half of which are inherited from the mother and the remainder from the father. Of these 23 pairs, 22 are autosomes and two are allosome pairs (also known as sex chromosomes). Allosomes are not

always a perfect match. Females have 22 pair autosomes and two X chromosomes, whereas men have 22 pair autosomes and one X and one Y chromosome.

Q19. Which part of the small intestine absorbs digested food?

Solution:

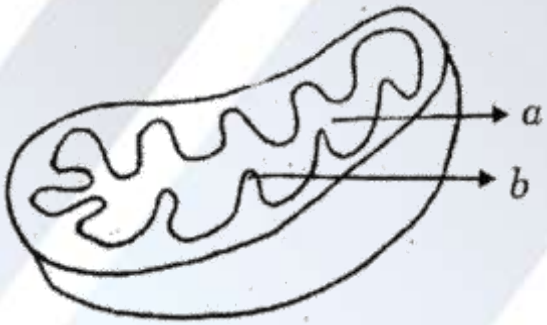
The Duodenum of the small intestine absorbs the partially digested food along with the digestive juices from the liver, pancreas and its walls. The jejunum absorbs most nutrition, while the ileum absorbs bile acids, moisture, and vitamin B12, completing the final stages of intestinal absorption.

Q20. Why do we use the KOH solution in Mohl's Half leaf experiment?

Solution:

The KOH or the potassium hydroxide solution is used to absorb the carbon dioxide in the bottle. This experiment proves that carbon dioxide is essential in the process of photosynthesis.

Q21. Label *a* and *b* in the given diagram.



Solution:

In the image of mitochondria, *A* is the matrix and *B* is the cristae.

Q22. Name the chemical that is used to test the action of saliva on flour.

Solution:

Diluted tincture iodine is the chemical used to test the action of saliva on flour. Iodine is used to test for starch; saliva breaks starch into maltose, resulting in a negative starch test (no blue-black color).

Q23. Write two healthy habits which you practise to protect your kidneys from diseases.

Solution:

Here are some healthy habits that you have to practise to protect your kidneys from diseases:

- Eat a healthy diet and keep fit
- Drink lots of water
- Control your blood pressure and blood sugar levels

Q24. Prepare two slogans on protecting non-renewable resources.

Solution:

Some slogans on protecting non-renewable resources are given below:

- "Save What's Finite, Protect the Future!"
- "Use Less, Save More: Protect Non-Renewables!"
- "Preserve Earth's Gifts, Limit Waste!"
- "Conserve Today, Secure Tomorrow!"
- "Non-Renewables Are Finite, Act to Protect!"
- "Save Energy, Save Resources, Save the Earth!"
- "Whether half full or half empty resources are limited, don't misuse it."
- "Too much usage of petrol and diesel causes too much pollution."
- "The future is green energy, sustainability, renewable energy."

Section-II

Note:

(i) Answer all questions.

(ii) Each question carries TWO marks.

(iii) Write the answers in 4 to 5 sentences.

Q25. Explain in brief the alternate methods to be followed to prevent the harmful effects of overusing pesticides.

Solution:

We have given some alternative approaches to prevent the adverse effects of excessive pesticide use:

• Use organic fruits and veggies to avoid pesticides.

• To avoid chemical residue, properly wash fruits and vegetables before consumption.

• Use non-toxic pest control options for your house and yard.

• Predator insects like ladybugs and praying mantises can naturally manage garden pests.

Q26. What happens if there are no valves in veins?

Solution:

Valves are the flaps inside the vein that controls the blood flow. It helps the blood flow in the right direction and prevents the backflow of de-oxygenation of blood from the ventricles to the auricles. Thus, it makes the flow of the blood unidirectional. However, if there are no valves in veins, blood can flow in any direction. The blood flow becomes bi-directional, and consequently, blood will never reach the heart for it to get oxygenated.

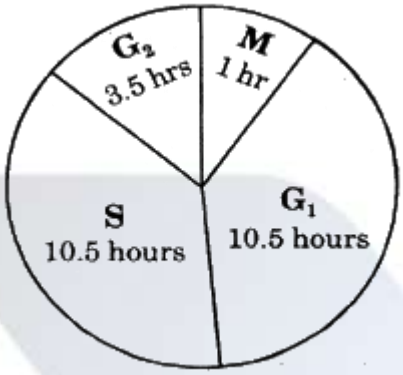
Q27. What questions will you ask a neurologist on the function of a brain?

Solution:

Given here are some questions to ask a neurologist on the function of a brain:

- What does it mean to be brain-dead?
- Is there any alternative procedures or treatment?
- What are the steps or precautions that should be taken to keep the brain active?
- How do we reduce the stress on the brain?

Q28. Observe the diagram and answer the following questions:



(i) Which phases take the same time duration?

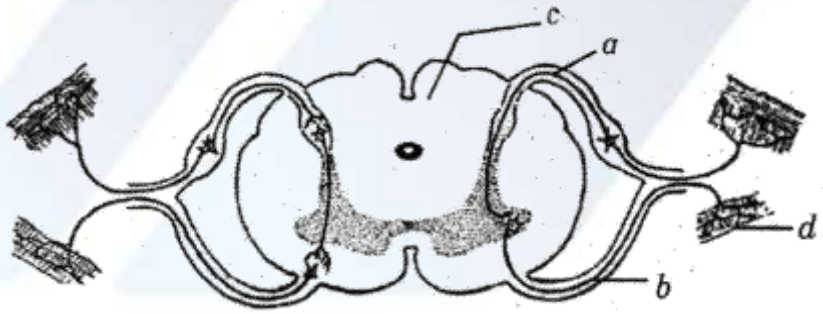
(ii) In which phase, DNA synthesis takes place?

Solution:

(i) The phases S and G_1 take the same time duration

(ii) DNA synthesis takes place during the S phase (Synthesis phase) of the cell cycle.During this phase, the DNA is replicated, ensuring that each daughter cell will have an identical copy of the genetic material after cell division. The S phase occurs between the G1 phase (Gap 1) and the G2 phase (Gap 2).

Q29. Label a, b, c, d in the diagram given below and write their functions.



Solution:

a) Part a is Motor neuron. It directly or indirectly controls the effector organs, mainly muscles and glands

b) Part b is Sensory neuron. They carry the signals from the outer parts of your body into the central nervous system.

c) Part c is White matter. It is the tissue through which messages pass between different areas of grey matter within the central nervous system.

d) Part d is Spinal nerve . It transfers the motor, sensory and autonomic signals between the spinal cord and the body.

Q30. Name the secondary metabolites which are useful in the leather and rubber industry. From which plants do we obtain them?

Solution:

The secondary metabolites that are used in the leather industry is Tannis, obtained from Cassia and Acasia plants. Meanwhile, the secondary metabolites used in the rubber industry is Latex, obtained from Jatropha and rubber plants.

Section-III

Note:

(i) Answer all questions.

(ii) Each question carries FOUR marks.

(iii) There is internal choice for each question, only one option from each question is to be attempted.

(iv) Write the answers in 8 to 10 sentences.

Q31. Write about the accessory excretory organs and their excretory substances in human beings.

Solution:

Apart from the urinary system, the skin, liver and the lungs of the vertebrates are the accessory excretory organs. Now, take a look at the excretory substances:

(1) Human skin contains glands that secrete the two fluids, namely sweat from the sweat glands and sebum from sebaceous glands. Sweat, a watery fluid primarily consists of sodium-chloride, lactic acid, urea, amino acids and glucose. It also helps in excreting mainly water and sodium chloride, as well as few quantities of urea and lactic acid. Meanwhile, Sebum is a wax-like secretion that helps to excrete some lipids such as waxes, sterols, other hydrocarbons and fatty acids on the skin.

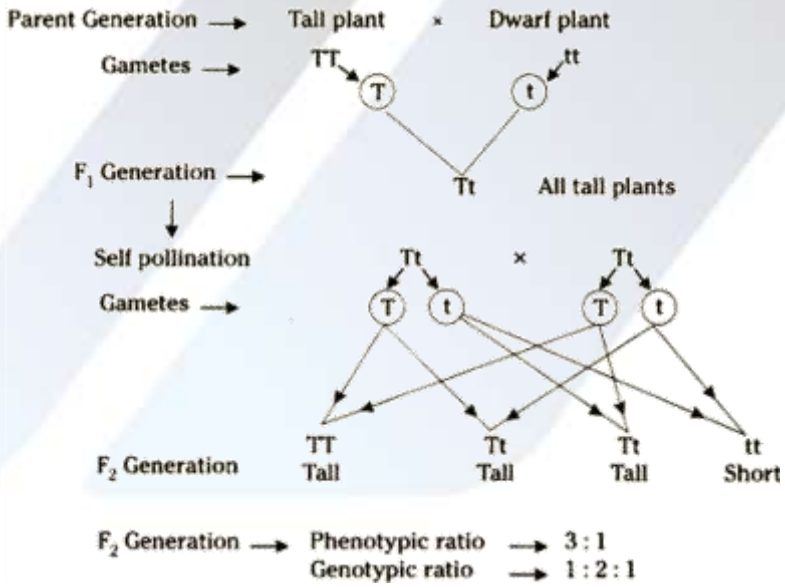
(2) Lungs are the main respiratory organs of vertebrates, which helps to eliminate the entire volume of carbon dioxide produced in the body, as well as some moisture, during expiration. The lungs maintain the blood-gas homeostasis through elimination of carbon dioxide. If the lungs fail to eliminate enough carbon dioxide, then the kidneys attempt to compensate. They change some carbon dioxide into sodium bicarbonate, which becomes part of the blood buffer system.

OR

What is Phenotype and Genotype? Explain them with the help of Mendel's Monohybrid cross.

Solution:

The genotype is a set of genes in which the DNA is responsible for the unique trait or characteristics while the phenotype is the physical appearance or characteristic of an organism. Here, we have tried to explain them with the help of Mendel's Monohybrid cross.



Q32. Write the mechanism of light dependent reactions in Photosynthesis.

Solution:

Photosynthesis is a process by which phototrophs convert light energy into chemical energy, which is later used to fuel cellular activities. The chemical energy

is stored in the form of sugars, which are created from water and carbon dioxide.

The process of photosynthesis occurs in two stages:

- Light-dependent reaction or light reaction
- Light independent reaction or dark reaction

Light-dependent reactions, also known as the photochemical phase of photosynthesis, occur in the thylakoid membranes of chloroplasts. These reactions convert light energy into chemical energy in the form of ATP and NADPH, which are then used in the light-independent reactions to synthesize glucose.

The detailed mechanism is as follows:

Photon Absorption: Chlorophyll in photosystem II absorbs light, exciting electrons.

Water Splitting: Water is split into oxygen, protons, and electrons.

Electron Transport Chain: Electrons move through the ETC, creating a proton gradient.

ATP Synthesis: Proton gradient drives ATP production via ATP synthase.

Photosystem I Activation: Electrons are re-energized by light in photosystem I.

NADPH Formation: Electrons reduce NADP+ to form NADPH.

Products: ATP, NADPH, and O_2.

OR

Which system of our body is called the second brain? Why?

Solution:

The enteric nervous system (ENS) or the intrinsic nervous system of the gastrointestinal tract, which controls all the gut functions and nervous regulation independently is called the second brain. Neurons are part of the enteric nervous system. This is different from the central nervous system that makes up the brain and the spinal cord. Its functions appear very co-ordinated and it has its own reflexes. The enteric nervous system (ENS) is called the "second brain" or the brain in the gut, as it can function independently of the brain and spinal cord.

Q33. Write the procedure which you follow to observe bread mould Sporangium in your laboratory. What precautions do you take during the activity?

Solution:

Apparatus needed: Mold sample or Spoiled Bread, Plain glass slide, Cover slip, Water, Disposable gloves, Microscope.

Procedure: Place a drop of water at the centre of the slide. Then, using a toothpick, scrape very little of the mold and place it on the drop of water. Now, place the cover slip on the mold sample without any air bubbles. Also, use the tissue paper to blot up the excess water present at the edges of the cover slip. Finally, view the slide with a compound microscope.

Precautions: The coverslip should be placed on the sample without any air bubbles and also tissue paper should be used to blot up the excess water.

OR

Write the materials required and the procedure to prove that light is essential for photosynthesis.

Solution:

The materials required to prove that light is essential for photosynthesis is a potted plant, the black paper strips or Ganongs light screen, clips or cello tape, alcohol, iodine solution, water bath, beaker, burner, water, petri dish and dropper.

Now, see the procedure to prove that light is essential for photosynthesis.

First, choose a healthy potted plant and then destarch the plant by placing it in complete darkness for a minimum of 48 hours.

After 48 hours, use a clip or cello tape and cover a part of the leaf of the plant from both upper and lower sides with black paper strips.

Then, keep the potted plant in sunlight for about 3 to 4 hours. After 3 to 4 hours, pluck the leaf and remove the black paper strips.

Now, boil the leaf in water for two minutes. After this, transfer the leaf from the boiling water to a beaker containing ethanol and then boil the leaf in a water bath. This helps to decolourise the leaf.

Now, remove the leaf from the beaker and then wash it in water at room temperature.

Now, place this leaf in a petri dish and add a few drops of iodine solution over the decolourised leaf.

The area of the leaf that was uncovered has undergone photosynthesis and so it will have starch (which has turned blue-black with iodine solution).

Meanwhile, the covered portion of the leaf remains yellow as it has not performed any photosynthesis.

Q34. Read the table and answer the following questions:

S. No	Name of Phylum	Type of Transport System
1.	Cnidarians	Gastrovascular Cavity
2.	Platyhelminthes	Digestive System
3.	Nemathelminthes	Pseudo-Coelom
4.	Annelida	Blood Vessels
5.	Arthropoda	Open Circulatory System

(i) In which phylum, blood vessels are first formed?

(ii) In which phylum, organisms have haemoglobin in their blood?

(iii) In which phylum, digestive system helps in transportation?

(iv) Why do Arthropods have an open circulatory system?

Solution:

(i) In Annelida, the blood vessels are first formed.

(ii) In Annelida phylum, organisms have haemoglobin in their blood.

(iii) In Cnidarians, the digestive system helps in transportation.

(iv) Arthropods have open circulatory system because they have air sacs to supply blood to the heart so that oxygen is also supplied to all over the body. Their

circulatory system helps to supply oxygen to the body and to dispose of carbon dioxide.

OR

Observe the following diagram and answer the following questions:

(i) Name the primary producers in the given food web.

(ii) Prepare any food-chain from the diagram.

(iii) What are the tertiary customers?

(iv) Write the name of any two herbivores.

Solution:

(i) Primary producers are organisms that can synthesise their own food. For example, some plants or algae.

(ii)Any food chain given from the diagram is plants - grasshoppers - mice- snake- eagles Or Plants- goat- lion

(iii) They are the ones who feed on secondary consumers. They are thus called the top predators. They are also termed as apex predators and have no natural enemies. Will be the example for a tertiary customer in this food chain.

(iv) Examples for herbivores are grass hopper and goat.