

WORKSHEET

Question 1.

Which one of the following statements is correct about the human circulatory system?

- (a) Blood transports only oxygen and not carbon dioxide.
- (b) Human heart has five chambers.
- (c) Valves ensure that the blood does not flow backwards.
- (d) Both oxygen – rich and oxygen – deficient blood gets mixed in the heart.

Answer:

- (c) Valves ensure that the blood does not flow backwards.

Question 2.

Name the vein which brings blood to left atrium from lungs.

Answer:

Pulmonary vein.

Question 3.

Define translocation in reference to plants.

Answer:

The transport of food prepared in the leaves, to various parts (roots, stem, branches, etc.) of the plant is called translocation.

Question 4

Give reasons:

- (a) Ventricles have thicker muscular walls than atria.
- (b) Transport system in plants is slow.
- (c) Circulation of blood in aquatic vertebrates differs from that in terrestrial vertebrates.
- (d) During the daytime, water and minerals travel faster through xylem as compared to the night.
- (e) Veins have valves whereas arteries do not.

Answer:

- (a) Since ventricles have to pump blood into various organs with high pressure, they have thicker walls than atria.
- (b) Transport system in plants is less elaborate than in animals, as plants are less active, so their cells do not need to be supplied with materials so quickly.
- (c) The aquatic vertebrates like fish have gills to oxygenate blood. The flow of blood in a fish is single circulation because the blood passes through the heart only once in one complete cycle of body. The terrestrial vertebrates like birds and humans have double circulation as the blood travels heart twice in one complete cycle of blood and they have lungs for oxygenation of blood.

- (d) It is because during daytime rate of transpiration is higher.
- (e) The lumen of veins have valves, which allow the blood in them to flow in only one direction. Thus prevent back flow of blood.

Question 5.

- (a) Name four types of metabolic wastes produced by humans.
- (b) Name any two human excretory organs other than kidney.

Answer:

(a) Four types of metabolic wastes produced by human are urea, carbon dioxide, water and salts.

(b) Two human excretory organs other than kidneys are:

- (i) Lungs : They help to eliminate carbon dioxide.
- (ii) Liver : It is an excretory organ as it converts haemoglobin of worn out RBCs to bilirubin and biliverdin that can be excreted out of the body.

Question 6.

- (a) Name the organs that form the excretory system in human beings.
- (b) Mention the steps of Urine formation.

Answer:

(a) Excretory system (Urinary system) in human beings consists of a pair of kidneys, a pair of ureters, urinary bladder and urethra.

(b) Steps of urine formation are

- (i) Ultrafiltration (ii) Selective reabsorption (iii) Tubular secretion

Question 7.

Name gustatory receptor and olfactory receptor in human beings.

Answer:

Gustatory receptors are receptors for taste present in taste buds on tongue and olfactory receptors are the receptors for smell present in nasal chambers.

Question 8.

(a) Define reflex arc.

(b) Trace the sequence of events which occur in our body when a bright light is focussed on your eyes. Answer:

(a) The pathway taken by the nerve impulses in a reflex action, from receptor organ to spinal cord and back to effector organ of reflex action is called reflex arc. Receptor organ could be a sense organ such as eyes, skin, etc., and effector organ could be muscles, glands, etc.

(b) When a bright light is focussed on eye, receptor cell receives the stimulus and an impulse is generated. This impulse is passed on to sensory neuron, then it goes to

brain, brain sends the impulse to the motor neuron which contracts the pupil. Sequence of events can be summarised as : Photoreceptors in eye → Sensory (Receptor) neuron → Brain → Motor (Effector) neuron → Eye muscle → Constriction of pupils.

Question 9.

(a) Draw a neat diagram of a neuron and label (i) dendrite and (ii) axon.

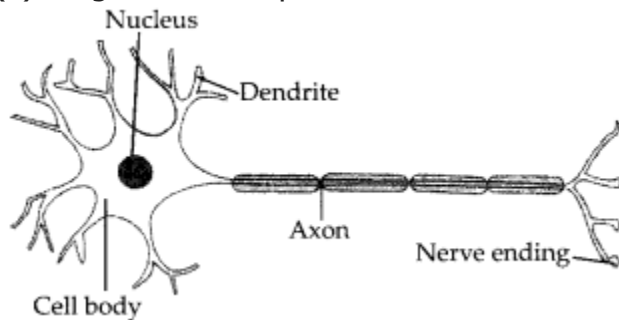
(b) Which part of the human brain is:

(i) the main thinking part of the brain?

(ii) responsible for maintaining the posture and balance of the body?

Answer:

(a) Diagrammatic representation of a neuron is as follows:



(b) (i) Forebrain which includes cerebrum, olfactory lobes and diencephalon, is the main thinking part of the brain.

(ii) Cerebellum, part of hindbrain is responsible for maintaining the posture and balance of the body.

Question 10.

State the two types of movements seen in plants. Give one example of each type.

Answer:

Two types of movements seen in plants are:

(i) Nastic movements are movements independent of growth that are non-directional and occur due to turgor changes, e.g., closing of leaves in response to touch stimulus in 'touch me not' plant.

(ii) Tropic movements or tropism are movements due to growth, that are directional and very slow, e.g., movement of a part of the plant in response to light.

Question 11.

What are plant hormones? Name the plant hormones responsible for the following :

(i) Growth of stem

(ii) Promotion of cell division

(iii) Inhibition of growth

(iv) Elongation of cells

Answer:

Plant hormones or phytohormones are chemical substances produced naturally in plants

and capable of translocation and regulating one or more physiological processes when present in low concentration. These are also known as plant growth substances or plant growth regulators.

The plant hormones responsible for different functions are as follows:

- (i) Growth of stem : Gibberellins (Gibberellic acid) promote growth in stems.
- (ii) Promotion of cell division : Cytokinins promote cell division in plants.
- (iii) Inhibition of growth : ABA (Absciscic acid) promotes dormancy in seeds as well as in buds and thus inhibits growth.
- (iv) Elongation of cells : Auxin and cytokinin both cause cell elongation.

Question 12.

Name the hormones secreted by the following endocrine glands and specify one function of each: (a) Thyroid (b) Pituitary (c) Pancreas.

Answer:

(a) Thyroid gland :- Thyroxine , maintain the basal metabolic rate (BMR) of the body
They promote growth of body tissues and development of mental faculties.

(b) Pituitary secretes :Growth hormone (GH) or somatotrophic hormone controls the overall development of body, muscles, bones and tissues.

(c) Pancreas secretes following hormones :

- (i) Insulin regulates the conversion of glucose to glycogen, i.e., it lowers the blood glucose level.
- (ii) Glucagon is responsible for regulation of glycogen to glucose, i.e., increase blood glucose level.

Question 13

Why is it advised to use iodised salt in our diet ?

Answer. Iodine stimulates the thyroid gland to produce thyroxin hormone. Deficiency of this hormone results in the enlargement of the thyroid gland. This can lead to goitre.

Question 14

Write one example each of the following tropic movements :

- (i) Positive phototropism (ii) Negative phototropism
- (iii) Positive geotropism (iv) Negative geotropism
- (v) Hydrotropism (vi) Chemotropism

Answer.

- (i) Positive phototropism: shoots growing towards light.
- (ii) Negative phototropism: roots growing away from light towards ground.
- (iii) Positive geotropism: growth of roots towards earth due to the pull of the earth.
- (iv) Negative geotropism: shoots growing away from the earth.
- (v) Hydrotropism: roots growing towards the source of water.
- (vi) Chemotropism: growth of pollen tubes towards the ovules.

Question 15

Mention the various types of phytohormones with their function.

Answer :

Plant hormone	Function
(i) Auxin	Cell elongation
(ii) Gibberellin	Breaks seed dormacy
(iii) Cytokinin	Cell division
(iv) Ethylene	Ripening of fruits
(v) Absciscic acid	Wilting of leaves

Class X Science Worksheet

Chapter 2: Acids, Bases and Salts

Instructions: Answer all questions. Write balanced chemical equations wherever required.

1. Multiple Choice Question: Which of the following is an acidic substance?

(a) Soap solution (b) Lemon juice (c) Baking soda solution (d) Lime water

2. Multiple Choice Question: What colour does blue litmus paper turn in an acidic solution?

(a) Red (b) Blue (c) Green (d) Yellow

3. Very Short Answer: What is an indicator? Name one natural indicator.

4. Short Answer: Why does dry hydrogen chloride gas not change the colour of dry blue litmus paper?

5. Short Answer: What happens when an acid reacts with a metal? Write one balanced chemical equation.

6. Short Answer: What happens when an acid reacts with a metal carbonate? Write one balanced chemical equation.

7. Short Answer: Define neutralisation reaction with one example.

8. Short Answer: What is the pH scale? What is the pH of a neutral solution at 25°C?

9. Short Answer: Why is the pH of tooth decay important? What should be done to prevent tooth decay?

10. Short Answer: What is common salt? Write its chemical formula.

11. Short Answer: Name the products obtained during the electrolysis of brine.

12. Short Answer: What is baking soda? Give its chemical formula and one use.

13. Short Answer: What is washing soda? Give its chemical formula and one use.

14. Short Answer: What is bleaching powder? Write its chemical formula and one use.

15. Short Answer: What is plaster of Paris? Write its chemical formula and one use.

16. Assertion-Reason: Assertion (A): Toothpaste is generally basic in nature.

Reason (R): A basic substance can help neutralise acids present in the mouth.

Choose:

(a) Both A and R are true and R is the correct explanation of A.

(b) Both are true but R is not the correct explanation.

(c) A is true but R is false

. (d) A is false but R is true.

17. Case-Based Question: A student adds a few drops of universal indicator to three solutions P, Q and R. Their pH values are found to be 3, 7 and 11 respectively.

(a) Identify the acidic, neutral and basic solutions.

(b) Which solution has the highest concentration of H^+ ions?

(c) Which solution can turn red litmus blue

Class X Science – Worksheet

Refraction of Light & Human Eye and the Colourful World

Section A – MCQs

Q1. A ray of light passes from air into glass obliquely. Which statement is correct?

- A. It bends away from the normal and its speed increases.**
- B. It bends towards the normal and its speed decreases.**
- C. It does not bend and its speed remains unchanged.**
- D. It bends towards the normal and its speed increases.**

Q2. An object is placed at the principal focus of a convex lens. The image formed is:

- A. Real, inverted and highly diminished**
- B. Virtual and magnified**
- C. At infinity**
- D. Real and of the same size**

Q3. Which part of the human eye controls the amount of light entering the eye?

- A. Retina**
- B. Iris**
- C. Cornea**
- D. Ciliary muscles**

Q4. The blue colour of the sky is mainly due to:

- A. Reflection of sunlight**
- B. Refraction of sunlight**
- C. Dispersion of sunlight**
- D. Scattering of light**

Section B – Assertion–Reason

For each question, choose:

- A. Both A and R are true, and R is the correct explanation of A.**
- B. Both A and R are true, but R is not the correct explanation of A.**
- C. A is true, but R is false.**
- D. A is false, but R is true.**

Q5. Assertion (A): A coin placed at the bottom of a water-filled vessel appears to be raised when viewed from above.

Reason (R): Light rays bend away from the normal when they travel from water to air.

Q6. Assertion (A): The sky appears reddish-orange during sunrise and sunset.

Reason (R): Blue and violet light are scattered more strongly than red light while passing through the atmosphere.

Section C – Very Short Answer Questions

Q7. Define the refractive index of a medium. Write its relation with the speed of light.

Q8. What is meant by the power of accommodation of the human eye? Why is it necessary?

Q9. A convex lens has a focal length of 20 cm. Calculate its power. State whether the power is positive or negative.

Q10. Why does a pencil partially immersed in water appear to be bent at the water surface? Explain using the phenomenon of refraction.

Section D – Short Answer Question

Q11. Draw a well labelled diagram to show refraction of light through Prism.

Q12. Explain the following:

- a) Why stars appear higher than they actually are**
- b) Planets generally do not appear to twinkle.**

Q13. What is myopia? State its cause and explain how it is corrected using a suitable lens. Draw the required ray diagram.

Q14. Explain why the Sun appears reddish at sunrise and sunset but nearly white at noon.

Section E – Long Answer Question

Q 15. A real, inverted, and same-sized image of a needle is formed by a convex lens at a distance of 80 cm from it. Now, the needle is moved to a new position such that the new image formed is virtual, erect, and two times the size of the needle.

- Determine the focal length and power of the convex lens based on the initial configuration.

Q16.

a) A concave lens of focal length 20 cm forms an image at a distance of 10 cm from the lens. What is the distance of the object from the lens? Also draw ray diagram.

b) What is accommodation.

c) What happens to the focal length of the eye lens when an object is brought closer to the eye?

d) Why is the image formed on the retina inverted, yet we perceive objects erect?

Q17.

a) What is hypermetropia?

b) State two causes of hypermetropia.

c) How is hypermetropia corrected?

d) Draw a labelled ray diagram showing the correction of hypermetropia using a suitable lens.

e) A person has difficulty seeing nearby objects clearly. Identify the defect and name the lens used for its correction.

Q18.

Explain the phenomenon of dispersion of white light through a glass prism.

a) What is dispersion?

b) Name the seven colours obtained.

c) Which colour deviates the least and which deviates the most? Give reason.

d) Why does white light split into different colours?

e) Draw a labelled diagram showing dispersion of white light by a prism.