



विद्या सर्वार्थ साधिका

ANANDALAYA  
PERIODIC TEST - 2  
Class :X

Subject: Science  
Date :19-09-2022

MM :80  
Time: 3 hours

General Instructions:

1. The question paper comprises of four sections A, B, C & D. There are 36 questions in the question paper. All the questions are compulsory.
2. Section A – question numbers 1 to 16 – all the questions and parts thereof are of one mark. These questions contain multiple choice questions (MCQ), very short answer questions and assertion-reasoning. Answers to these questions should be given in one word or one sentence.
3. Section B – question numbers 17 to 22 are multiple choice questions (MCQ), competency based questions, and source based questions carrying 4 marks each.
4. Section – C – question numbers 23 to 30 are short answer questions carrying 2 marks. Answer to these questions should be in the range of 30 to 50 words.
5. Section – D – question numbers 31 to 33 are short answer questions carrying 3 marks. Answer to these questions should be in the range of 50 to 80 words.
6. Section – E – question numbers 34 to 36 are long answer questions carrying 5 marks. Answer to these questions should be in the range of 80 to 120 words.
7. There is no overall choice. However, internal choice is provided in certain questions. A student has to attempt only one of the alternatives in such questions.
8. Wherever necessary, neat and properly labelled diagrams should be drawn.

SECTION A

1. Which of the following statements about the given reaction are correct? (1)  
$$3\text{Fe(s)} + 4\text{H}_2\text{O(g)} \rightarrow \text{Fe}_3\text{O}_4\text{(s)} + 4\text{H}_2\text{(g)}$$

(i) Iron metal is getting oxidised  
(ii) Water is getting reduced  
(iii) Water is acting as reducing agent  
(iv) Water is acting as oxidising agent

(A) (i), (ii) and (iii) (B) (iii) and (iv)  
(C) (i), (ii) and (iv) (D) (ii) and (iv)
2. Which among the following statement(s) is (are) true? Exposure of silver chloride to sunlight for a long duration turns grey due to (1)  
(i) the formation of silver by decomposition of silver chloride  
(ii) sublimation of silver chloride  
(iii) decomposition of chlorine gas from silver chloride  
(iv) oxidation of silver chloride

(A) (i) only (B) (i) and (iii)  
(C) (ii) and (iii) (D) (iv) only
3. To an astronaut, sky looks (1)  
(A) blue (B) red  
(C) white (D) dark
4. Three students A, B & C were trying to obtain the image of a distant building on a screen (1) with the help of a concave mirror. To determine the focal length of the concave mirror, they measured the distances as given below:

Student A – From mirror to the screen.  
Student B – From the building to the screen.  
Student C – From building to the mirror.  
Who measured the focal length correctly?

- (A) Only A (B) Only B  
(C) A & B (D) B & C

5. Complete the following by choosing the right options given below. (1)  
The inner lining of stomach is protected from hydrochloric acid by \_\_\_\_\_  
(A) Pepsin (B) Mucus (C) Salivary amylase (D) Bile juice
6. The part of the nervous system that controls involuntary actions in the body is\_\_\_\_\_. (1)  
(A) Autonomous nervous system (B) Central nervous system  
(C) Parasympathetic nervous system (D) Sympathetic nervous system
7. Draw a diagram to show the path of light passing obliquely from a medium A whose refractive index is 1.5 to medium B whose refractive index is 1. (1)
8. Write the function of the pupil of the human eye. (1)
9. Define one diopetre. (1)

**OR**

What is the focal length of a convex lens?

10. Name the mirror, if the m value of a mirror is more than one and positive in nature. (1)
11. Compared to violet light, speed and refractive index of red light is \_\_\_\_\_ and \_\_\_\_\_ respectively. (1)

**OR**

There are four phenomena of light that take place inside a raindrop to form a rainbow. Two are given, complete the rest.  
Refract, \_\_\_\_\_, \_\_\_\_\_, Refract.

12. Abu stepped on a cockroach accidentally and it got crushed. He observed that there was no blood coming out of its body. He compared the situation where a small cut on his finger leads to bleeding. Analyze this situation and mention why he could not observe red blood from the body of cockroach. (1)

**OR**

In the Biology lab, Sudha volunteered to demonstrate the activity to prove that exhaled air contains carbon dioxide. In your opinion, what precaution should she take while blowing air into the glass tube?

13. On Anuj's birthday he was gifted with a potted plant. He kept it in his balcony. After one month, he observed that its stem started growing towards exterior of the balcony. Name the type of growth pattern observed by Anuj. (1)
14. Copper sulphate on treatment with potassium iodide precipitates cuprous iodide ( $\text{Cu}_2\text{I}_2$ ), liberates iodine gas and also forms potassium sulphate. Write the balanced chemical equation. (1)

In the following questions, two statements are given—one labelled Assertion and the other labelled Reason. Select the correct answer to these questions from the options given below:  
(A) Both Assertion and Reason are correct statements, and Reason is the correct explanation of the Assertion.

(B) Both Assertion and Reason are correct statements, but Reason is not the correct explanation of the Assertion.

(C) Assertion is correct, but Reason is incorrect statement.

(D) Assertion is incorrect, but Reason is correct statement.

15. Assertion: When a person is suffering from cough and cold he/she is not able to feel the taste properly. (1)

Reason: Taste is a combined sensation which involves olfactory tissues and taste buds.

**OR**

Assertion: Human are not able to digest the cellulose in the food they take.

Reason: Ruminants are able to digest the same as their digestive glands secrete cellulose.

16. Assertion: All reflex actions are processed in the spinal cord. (1)  
Reason: Brain controls all the voluntary actions in the body.

### SECTION B

Question 17 to 22 contains 5 sub-parts each. You are expected to answer any four sub-parts of these questions.

17. Read the following and answer any **four** questions from 17 (i) to 17 (v) (4)

Human body parts communicate through conduction of nerve impulses. Yet another mode of information transfer occurs through chemical substances called hormones. They are directly secreted into the blood stream. Hormones are able to make a desirable effect on the target organs.

(i) The hormone which is known as fight or flight hormone is \_\_\_\_\_

- (A) Nor adrenaline (B) Adrenaline  
(C) Thyroxin (D) Oxytocin

(ii) The hormone that is responsible for secondary sexual characters in male is \_\_\_\_\_

- (A) Vasopressin (B) Testosterone  
(C) Parathormone (D) Oestrogen

(iii) Which of the following is a plant hormone?

- (A) Insulin (B) Cytokinin  
(C) Progesterone (D) Insulin

(iv) The endocrine gland which is known as the master gland is \_\_\_\_\_ .

- (A) Hypothalamus (B) Pituitary  
(C) Thyroid (D) Adrenal

(v) \_\_\_\_\_ is required for the proper functioning of our thyroid gland.

- (A) Iodine (B) Sodium  
(C) Potassium (D) Calcium

18. Read the following and answer any **four** questions from 18 (i) to 18 (v) (4)

Heterotrophic multicellular organisms have special organs for procuring and digestion of food. Nutrition in human occurs in the alimentary canal. Its various parts are specialized for performing different functions.

(i) The largest gland in human being is \_\_\_\_\_

- (A) Pancreas (B) Liver  
(C) Salivary gland (D) Gastric gland

(ii) The complete digestion of protein occurs in the \_\_\_\_\_

- (A) Duodenum (B) Stomach  
(C) Small intestine (D) Large intestine

(iii) The protein digesting enzyme in the pancreatic juice is \_\_\_\_\_

- (A) Lipase (B) Amylase  
(C) Protease (D) Trypsin

(iv) Emulsification of fat globules is brought about by \_\_\_\_\_

- (A) Bile salts (B) Bile pigments  
(C) Bicarbonate ions (D) Hydrochloric acid

(v) The change of pH of food reaching the small intestine from the stomach is caused by \_\_\_\_

- (A) Hydrochloric acid (B) Bicarbonate ions  
(C) Gastric juice (D) Pepsin

19. Read the following and answer any **four** questions from 19 (i) to 19 (v) (4)

In the following questions, two statements are given—one labelled Assertion and the other labelled Reason. Select the correct answer to these questions from the options given below:

- (A) Both Assertion and Reason are correct statements, and Reason is the correct explanation of the Assertion.  
(B) Both Assertion and Reason are correct statements, but Reason is not the correct explanation of the Assertion.  
(C) Assertion is correct, but Reason is incorrect statement.  
(D) Assertion is incorrect, but Reason is correct statement.

(i) Assertion: Sodium hydrogen carbonate is used as an ingredient in antacids.

Reason: Sodium hydrogen carbonate is a mild non-corrosive basic salt.

(ii) Assertion: Carbonic acid is a weak acid.

Reason: It ionizes completely in aqueous solutions.

(iii) Assertion: Copper sulphate is an acidic salt.

Reason: It is the salt of weak acid  $\text{Cu}(\text{OH})_2$  and strong acid  $\text{H}_2\text{SO}_4$

(iv) Assertion: Ammonium hydroxide is a weak base.

Reason: Phenolphthalein becomes pink in ammonium hydroxide solution.

(v) Assertion: The aqueous solutions of glucose and alcohol do not show acidic character.

Reason: Aqueous solutions of glucose and alcohol do not give  $\text{H}^+$  ions in aqueous Solutions.

20. Read the following and answer any **four** questions from 20 (i) to 20 (v) (4)

Read the following passage and answer any of the four questions from 20 (i) to (v)

On the basis of reactivity of different metals with oxygen, water and acids as well as displacement reactions, the metals have been arranged in the decreasing order of their reactivities. This arrangement is known as the activity series or reactivity series of metals. The basis of reactivity is the tendency of metals to lose electrons. If a metal can lose electrons easily to form positive ions, it will react readily with other substances. Therefore, it will be a reactive metal. On the other hand, if a metal loses electrons less rapidly to form a positive ion, it will react slowly with other substances. Therefore, such a metal will be less reactive.

(i) Which of the following metals is less reactive than hydrogen?

- (A) Copper (B) Zinc (C) Magnesium (D) Lead

(ii) Which of the following metals is more reactive than hydrogen?

- (A) Mercury (B) Platinum (C) Iron (D) Gold

(iii) Which of the following metals reacts vigorously with oxygen?

- (A) Zinc (B) Magnesium (C) Sodium (D) Copper

(iv) Which of the following represents the correct order of reactivity for the given metals?

(A)  $\text{Na} > \text{Mg} > \text{Al} > \text{Cu}$

(B)  $\text{Mg} > \text{Na} > \text{Al} > \text{Cu}$

(C)  $\text{Na} > \text{Mg} > \text{Cu} > \text{Al}$

(D)  $\text{Mg} > \text{Al} > \text{Na} > \text{Cu}$

(v) Which of the following will react with steam only?

(A) Na

(B) Fe

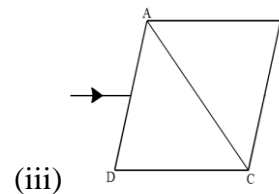
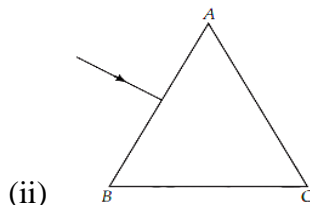
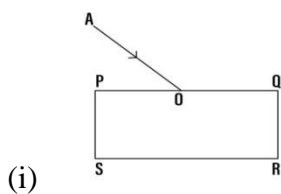
(C) Zn

(D) Mg

21. Read the following and answer any **four** questions from 21 (i) to 21 (v)

(4)

A very thin narrow beam of white light is made to incident on three glass objects shown below. Study the nature and behaviour of the emergent beam in all the three cases.



(i) Following are the possibility of two emergent beams being similar. Choose the correct answer:

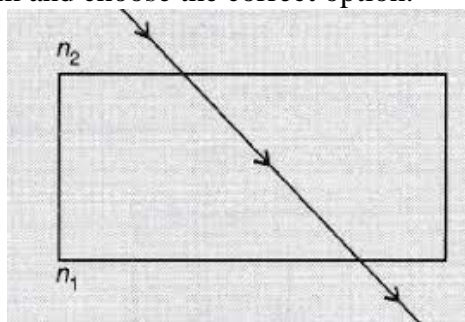
(A) (i) and (ii)

(B) (i) and (iii)

(C) (ii) and (iii)

(D) No similar emergent beams

(ii) A glass slab made of a material of refractive index  $n_1$  is kept in a medium of refractive index  $n_2$ . Look at the diagram and choose the correct option.



(A)  $n_2 > n_1$

(B)  $n_2 < n_1$

(C)  $n_2 = n_1$

(D) Not possible.

(iii) What do we call the change in path of light when it travels from one medium to another?

(A) Reflection

(B) Refraction

(C) Scattering

(D) Dispersion

(iv) What is the unit of refractive index?

(A)  $\mu\text{m}$

(B) m/s

(C) No unit.

(D)  $\eta\text{m}$

(v) In which of the following will the light waves travel faster?

(A) Air

(B) Vacuum

(C) Glass

(D) Diamond

22. Read the following and answer any **four** questions from 22 (i) to 22 (v)

(4)

Atman was travelling throughout India in The Maharajas' Express to experience the scenic beauty of India with his parents. He found that in the daytime, the sky appears blue, but the colour of the sun when it was overhead at noon was white. During a foggy night, he observed the signal lights near the railway track were red in colour. During a clear night, when he observed the night sky he found the intensity of light coming from the star changed continuously.

- (i) Blue colour of the sky is due to the  
 (A) scattering of light as the particle size is small.  
 (B) scattering of light as the particle size is big.  
 (C) refraction of light as the particle size is small.  
 (D) refraction of light as the particle size is big.
- (ii) The colour of the sun when it is overhead at noon is white as  
 (A) the rays of the sun travel relatively longer distances and more blue light is scattered.  
 (B) the rays of the sun travel relatively longer distances and less blue light is scattered.  
 (C) the rays of the sun travel relatively shorter distances and more blue light is scattered.  
 (D) the rays of the sun travel relatively shorter distances and less blue light is scattered
- (iii) The signal lights near the railway tracks are red in colour as  
 (A) it's wavelength is shorter and does not get scattered away.  
 (B) it's wavelength is longer and does not get scattered away.  
 (C) it's wavelength is shorter and gets scattered away.  
 (D) it's wavelength is longer and gets scattered away.
- (iv) When the atmosphere refracts less star-light towards us, then the star appears to be  
 (A) bright (B) dim  
 (C) no change (D) can't say
- (v) Planet does not appear to twinkle because  
 (A) they are small in size. (B) they are far away from earth.  
 (C) they are very close to the earth. (D) none of these.

#### SECTION C

23. You are given a Lilly leaf to prepare a temporary mount of the leaf peel. Sequence the steps till it is ready for observation. (2)
24. During a long trekking with her friends, Shabana suddenly felt muscle cramps and had to take rest for a while. What might have caused her muscle cramps? Without medical aid, how could she feel better after rest? (2)
25. Write the balanced equation for the following reaction and identify the type of reaction in each case. (2)  
 (i) Potassium bromide + Barium Iodide  $\rightarrow$  Potassium iodide + Barium bromide.  
 (ii) Hydrogen (g) + Chlorine(g)  $\rightarrow$  Hydrogen Chloride (g)
- OR**
- What happens when a few drops of silver nitrate solution are added to sodium chloride solution? Write a chemical equation for the reaction. Also name the type of reaction involved.
26. A magnesium ribbon is burnt in oxygen to give a white compound X accompanied by emission of light. If the burning ribbon is now placed in an atmosphere of nitrogen, it continues to burn and forms a compound Y.  
 (a) Write the chemical formulae of X and Y. (b) Write a balanced chemical equation, when X is dissolved in water. (2)
27. An object is placed at a distance of 60cm from a concave lens of focal length 30cm. Calculate the distance of the image from the lens and the size of the image. (2)

28. During an outdoor activity during Biology period, Tom was fascinated by the movement (2)  
showed by the Touch-me-not plant when he touched it and the twining of cucumber tendril,  
around a stick, in the school campus. Interpret his observation based in the knowledge on the  
topic “Plant Movements”.
29. The products obtained on electrolysis of concentrated aqueous solution of a substance ‘X’ (2)  
are NaOH, Cl<sub>2</sub> and H<sub>2</sub>. (a) Name the substance ‘X’. (b) What is the special name of this  
process? (c) Which gas is liberated at anode? (d) List one commercial use of NaOH.
30. During a demonstration on photosynthesis, the teacher demonstrated bell jar experiment to (2)  
the students. The bell jar A had a petridish containing KOH whereas the bell jar B did not  
have it. Compare reactions occurring in both bell jars and analyse the results.

#### SECTION D

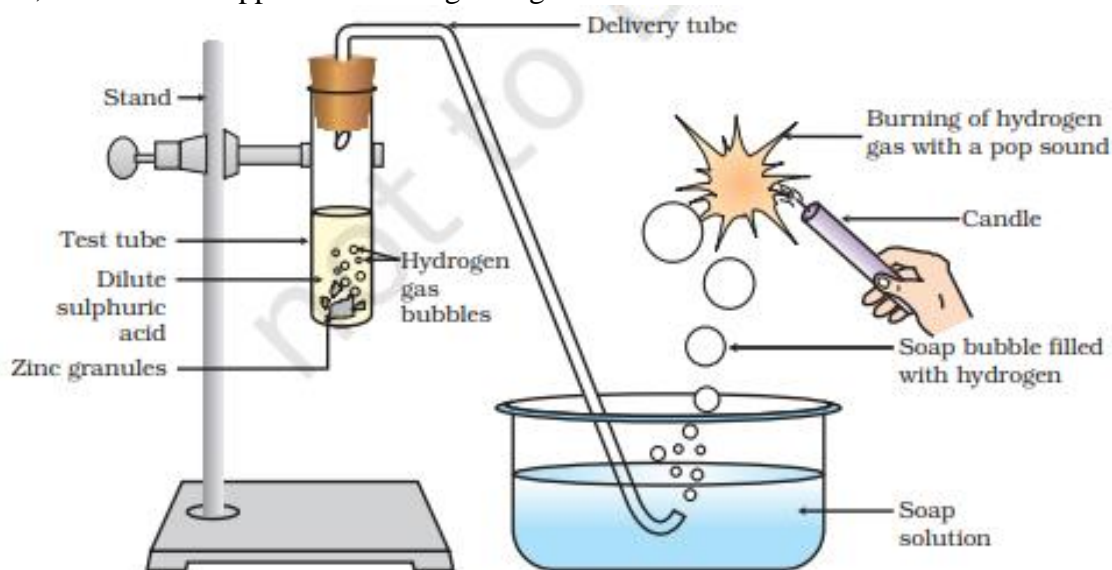
31. Describe the transportation of the following materials in the Plants: (3)  
(a) Water (b) Minerals (c) Product of photosynthesis

**OR**

- (a) How mammals are able to adjust the concentration of the urine they excrete?  
(b) Why are fishes called Ammonotelic organisms?  
(c) Which term is given to the birds based on the type of nitrogenous waste they excrete?
32. In the formation of a compound XY<sub>2</sub>, atom X donates one electron to each Y atom. Show (3)  
the electron dot structure of X and Y and the formation of XY<sub>2</sub>. What is the nature of bond in  
XY<sub>2</sub>? Write any three properties of XY<sub>2</sub>. The electronic configurations of the elements X  
and Y are as follows:  $x - 2, 8, 2$        $y - 2, 7$
33. A student wants to project the image of a candle flame on a screen 80cm in front of a mirror (3)  
by keeping the candle flame at a distance of 20cm from its pole.  
(a) Which type of mirror should the student use?  
(b) Find the magnification of the image produced.  
(c) Find the distance between the object and its image.  
(d) Draw a ray diagram to show the image formation in this case and mark the distance  
between the object and its image.

#### SECTION E

34. In the following schematic diagram for the preparation of hydrogen gas as shown in Figure (5)  
2.3, what would happen if following changes are made?



**Fig. 2.3**

- (a) In place of zinc granules, same amount of zinc dust is taken in the test tube.
- (b) Instead of dilute sulphuric acid, dilute hydrochloric acid is taken.
- (c) In place of zinc, copper turnings are taken.
- (d) Sodium hydroxide is taken in place of dilute sulphuric acid and the tube is heated.

35. (a) In the diagram showing one hemisphere of the human brain, label the following parts. (5)
- (i) cerebellum                      (ii) mid-brain                      (iii) pons
  - (b) Which are the parts of central and peripheral nervous system respectively?

36. A person is unable to distinctly see the words printed on a newspaper. (5)
- (a) Name the defect of vision he is suffering from.
  - (b) Draw ray diagram to illustrate this defect.
  - (c) List two possible causes.
  - (d) Draw a ray diagram to show how this defect may be corrected using a lens of appropriate focal length.

**OR**

- (a) With the help of a labelled ray diagram show the path followed by a narrow beam of monochromatic light when it passes through a glass prism.
- (b) Explain the term 'angle of deviation'.
- (c) What would happen if this beam is replaced by a narrow beam of white light? Why? Draw a labelled diagram to show the same.