



ANANDALAYA
PERIODIC TEST – 3
Class : X

Subject: Science
Date : 07/01/2020

M.M: 80
Time: 3 Hours

General Instructions:

1. The question paper comprises three sections – A, B and C. Attempt all the sections.
2. All questions are compulsory.
3. Internal choice is given in each section.
4. All questions in Section A are one-mark questions comprising MCQ, VSA type and assertion-reason type questions. They are to be answered in one word or in one sentence.
5. All questions in Section B are three-mark, short-answer type questions. These are to be answered in about 50 - 60 words each.
6. All questions in Section C are five-marks, long-answer type questions. These are to be answered in about 80 – 90 words each.
7. This question paper consists of a total of 30 questions.

SECTION A

1. Write the next homologue of propanol $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$ and butanal $\text{CH}_3\text{CH}_2\text{CH}_2\text{CHO}$. (1)
2. What is the valency of the element with atomic number 35? (1)
3. Answer question numbers 3(a) - 3(d) on the basis of your understanding of the following paragraph and the related studied concepts. (1)

Exploiting any source of energy disturbs the environment in some way or the other. In any given situation, the source we would choose depends on factors such as the ease of extracting energy from that source, the economics of extracting energy from the source, the efficiency of the technology available and the environmental damage that will be caused by using that source. Though we talk of 'clean' fuels like CNG, it would be more exact to say that a particular source is cleaner than the other. We have already seen that burning fossil fuels causes air pollution. In some cases, the actual operation of a device like the solar cell may be pollution-free, but the assembly of the device would have caused some environmental damage. Research continues in these areas to produce longer lasting devices that will cause less damage throughout their life.

- (a) What do you mean by energy crisis? (1)
 - (b) Write any one of the environmental damages due to air pollution. (1)
 - (c) Why is it not possible to make use of solar cells to meet all our energy needs? (1)
 - (d) CNG is a clean fuel. Justify the statement. (1)
4. Read the content given and answer the questions 4(a) - 4(d) that follow:

Plant hormones are not nutrients but chemicals in small amounts that promote and influence the growth, development and differentiation of cells and tissues. Plants lack glands to produce and store hormones, because unlike animals which have two circulatory systems with a heart that moves fluids around the body. Plants use more passive means to move water, nutrients and chemicals around their bodies.

- (a) Name the plant hormone that stimulates the cells to grow longer on the side of the shoot which is away from light. (1)
- (b) The circulatory systems found in human are blood circulatory system and lymphatic circulatory system. What does lymph carry from intestine to other body parts? (1)
- (c) During the day, the major driving force that moves water molecules in the xylem is _____. (1)
- i) Diffusion
ii) Transpiration pull
iii) Osmosis
iv) Facilitated diffusion
- (d) Which is not the effect of Abscisic acid in plants? (1)
- i) Seed dormancy
ii) Wilting of leaves
iii) Closing of stomata
iv) Cell elongation
5. Force experiences by the current carrying conductor placed parallel to uniform magnetic field (1)
- i) is maximum.
ii) is zero.
iii) is minimum.
iv) All of the above.

OR

After what interval of time, current changes its direction.



- i) 0 s.
ii) 0.01 s.
iii) 0.02 s.
iv) 0.03 s.
6. The phenomenon of light responsible for the working of the human eye is (1)
- i) reflection.
ii) refraction.
iii) persistence of vision.
iv) power of accommodation.
7. A student is using a convex lens of focal length 10cm to study the image formation by convex lens for the various positions of the object. In one of his observations, he may observe that when the object is placed at a distance of 20cm from the lens, its image is formed at (1)
- i) 20cm on the other side of the lens and is of the same size, real and erect.
ii) 40cm on the other side of the lens and is magnified, real and inverted.
iii) 20cm on the other side of the lens and is of the same size, real and inverted.
iv) 20cm on the other side of the lens and is of the same size, virtual and erect.
8. Name the type of receptors located in the fore-brain that would detect the smell of an incense stick. (1)
- i) Gustatory
ii) Photoreceptors
iii) Olfactory
iv) Mechanoreceptors
- OR
- Which part of the brain maintains posture and equilibrium of the body?
- i) Cerebrum
ii) Medulla Oblongata
iii) Cerebellum
iv) Hypothalamus
9. Spirogyra reproduces asexually by _____. (1)
- i) Binary Fission
ii) Fragmentation
iii) Regeneration
iv) Multiple Fission

10. When Hydrogen sulphide gas is passed through a blue solution of copper sulphate, a black precipitate of copper sulphide is formed and the sulphuric acid so formed remains in the solution. The reaction is an example of : (1)
- i) a combination reaction
 - ii) a displacement reaction
 - iii) a decomposition reaction
 - iv) a double decomposition reaction
11. Identify the acidic salt from the following salts: (1)
- i) Na_2CO_3
 - ii) NH_4Cl
 - iii) NaNO_3
 - iv) KCl
12. Arrange the following elements in the order of their decreasing metallic character Na, Si, Cl, Mg, Al (1)
- i) $\text{Cl} > \text{Si} > \text{Al} > \text{Mg} > \text{Na}$
 - ii) $\text{Na} > \text{Mg} > \text{Al} > \text{Si} > \text{Cl}$
 - iii) $\text{Na} > \text{Al} > \text{Mg} > \text{Cl} > \text{Si}$
 - iv) $\text{Al} > \text{Na} > \text{Si} > \text{Ca} > \text{Mg}$

OR

Which of the following are the characteristics of isotopes of an element?

- (a) Isotopes of an element have same atomic masses
 - (b) Isotopes of an element have same atomic number
 - (c) Isotopes of an element show same physical properties
 - (d) Isotopes of an element show same chemical properties
- i) (a), (c) and (d)
 - ii) (b), (c) and (d)
 - iii) (b) and (c)
 - iv) (b) and (d)

For question numbers 13 and 14, two statements are given- one labeled *Assertion* (A) and the other labeled *Reason* (R). Select the correct answer to these questions from the codes (i), (ii), (iii) and (iv) as given below

- i) Both A and R are true and R is correct explanation of the assertion.
 - ii) Both A and R are true but R is not the correct explanation of the assertion.
 - iii) A is true but R is false.
 - iv) A is false but R is true.
13. Assertion: Most of the carbon compounds are good conductors of electricity (1)
Reason: They do not dissociate into ions and remain as molecules.
14. Assertion: Blind spot is a small area of the retina which is insensitive to light. (1)
Reason: Real, inverted and small size image will form on the retina of normal human eye.

SECTION B

15. A student has mixed the solutions of lead (II) nitrate and potassium iodide. (3)
- (a) What was the colour of the precipitate formed? Can you name the compound precipitated?
 - (b) Write the balanced chemical equation for this reaction.
 - (c) What type of reaction is it?
16. When CO_2 gas pass through saturated solution of ammonical brine, two compound (X) and (Y) are formed. (Y) is used as antacid and decomposes to form another solid (Z). Identify (X), (Y), (Z) and write chemical equations (3)

OR

A reddish brown vessel developed a green colored solid X when left open in air for a long time. When reacted with dil H_2SO_4 , it forms a blue coloured solution along with brisk effervescence due to colourless & odourless gas Z. X decomposes to form black colored oxide Y of a reddish brown metal along with gas Z, Identify X, Y, & Z.

17. Two elements X and Y have atomic numbers 12 and 16 respectively. To which period of the modern periodic table do these two elements belong? What type of bond will be formed between them and why? Also give the chemical formula of the compound formed. (3)

18. Homologous and analogous organs enabled to trace the evolutionary relationship between different species. Explain the given statement with an example (3)

OR

‘Evolution should not be equated with progress’. Justify the statement by listing three scientific reasons.

19. Draw the diagram to show the neuromuscular junction and explain how chemical impulses are generated at synapse (3)

20. In some plants, parts like stem, root and leaf can develop into new plants. (3)

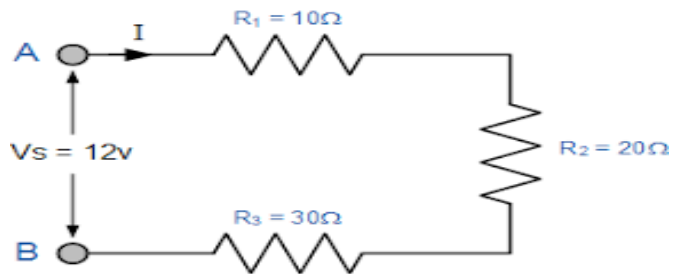
(a) Name the mode of reproduction exhibited by such parts.

(b) List two advantages of such mode of reproduction in plants with an example

21. A Mendelian experiment consists of breeding pea plants bearing violet flowers and producing yellow seeds with pea plants bearing white flowers and producing green seeds. The progeny all bore violet flowers but half of them produced green seeds. Schematically represent genotype of the parent and next generation. Illustrate your answer. (3)

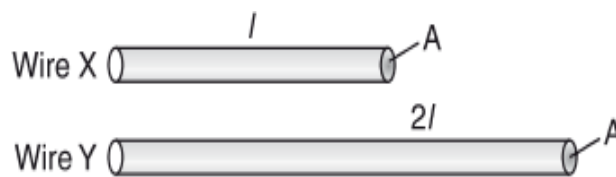
22. (a) Find the potential difference across 10Ω resistor in the adjacent circuit.. (3)

- (b) List two advantages of connecting electrical appliances in parallel with the source in domestic circuit.



23. (a) Define electrical resistivity and write its SI unit. (3)

- (b) Out of two wires X and Y, which one has greater resistance? Justify your answer.



24. A person is unable to see distinctly the words printed in the newspaper. (3)
- (a) Name the defect of vision he is suffering from.
- (b) Draw ray diagram to illustrate this defect.
- (c) List its two possible causes.

OR

(a) Why do the component colours of incident white light split into a spectrum while passing through a glass prism?

(b) Name the colour of light which bends (i) least (ii) the most, while passing through a glass prism.

SECTION C

25. A metal M which is one of the best conductor of heat and electricity is used in making electric wires is found in nature as sulphide ore M_2S . (5)

(a) Name the metal M.

(b) Which process will be suitable for extraction of this metal from its ore M_2S ?

(c) Write the balanced chemical reactions involved in the process of extraction.

(d) Draw a labelled diagram of electrolytic refining of the metal.

OR

A metal E is stored under kerosene. When a small piece of this metal is left open in the air it starts warming up and the product formed is dissolved in water which turns the red litmus blue:-

(a) Name the metal E. And write the chemical equations for the reaction when it is exposed to air and when the product is dissolved in water.

(b) Explain the process by which the metal is obtained from its molten chloride.

26. A compound A ($C_2H_4O_2$) reacts with Na metal to form a compound 'B' and evolves a gas which burns with a pop sound. Compound 'A' on treatment with an alcohol 'C' in presence of an acid forms a Sweet smelling compound 'D' ($C_4H_8O_2$). On addition of NaOH to 'D' gives back B and C. Identify A, B, C and D write the reactions involved. (5)

27. (a) Draw the diagram to show the pollen germination on stigma and label the parts.
 (b) Explain the process involved from the landing of pollen on stigma to fruit formation in flowering plants. (5)

28. (a) List the three events which occur during photosynthesis
 (b) What causes closing and opening of stomata?
 (c) State two sources from which plants obtain nitrogen for the synthesis of protein. (5)

OR

(a) "The breathing cycle is rhythmic whereas exchange of gases is a continuous process". Justify this statement.
 (b) What happens if blood vessels of human circulatory system gets ruptured and start bleeding?
 (c) How is bleeding stopped in our body? (5)

29. A student wants to project the image of a candle flame on a screen 60 cm in front of a mirror by keeping the flame at a distance of 15 cm from its pole. (5)

- Write the type of mirror he should use.
- Is it converging or diverging mirror?
- Find the linear magnification of the image produced.
- What is the distance between the object and its image
- Draw a ray diagram to show the image formation in this case.

OR

- On entering in a medium from air, the speed of light becomes half of its value in air. Find the refractive index of that medium with respect to air.
- A glass slab made of a material of refractive index n_1 is kept in a medium of refractive index n_2 . A light ray is incident on the slab. Draw the path of the rays of light emerging from the glass slab (i) $n_1 > n_2$ (ii) $n_1 = n_2$ (iii) $n_1 < n_2$.

30. Two coils C_1 and C_2 are wrapped around a non conducting cylinder. Coil C_1 is connected to a battery and key and C_2 with galvanometer G. On pressing the key (K), current starts flowing in the coil C_1 . (5)

State your observation in the galvanometer:

- (i) When key K is pressed on.
 (ii) When current in the coil C_1 is switched off.
- When the current is passed continuously through coil C_1 .
- Name and state the phenomenon responsible for the above observation.
- Write the name of the rule that is used to determine the direction of current produced in the phenomenon.

