Sample Paper 9

Class X 2022-23

Science (086)

Time: 3 Hours **Max. Marks: 80**

General Instructions:

1. This question paper consists of 39 questions in 5 sections.
2. All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
3. Section A consists of 20 Objective Type questions carrying 1 mark each.
4. Section B consists of 6 Very Short questions carrying 02 marks each. Answers to these questions should in the range of 30 to 50 words.
5. Section C consists of 7 Short Answer type questions carrying 03 marks each. Answers to these questions should in the range of 50 to 80 words.
6. Section D consists of 3 Long Answer type questions carrying 05 marks each. Answer to these questions should be in the range of 80 to 120 words.
7. Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.

SECTION-A

Select and write one most appropriate option out of the four options given for each of the questions 1 – 20.

1. Match the chemical substances given in column (A) with their appropriate application given in column (B)

View Solution

	Column (A)		**Column (B)**
A.	Bleaching powder	(i)	Preparation of glass
B.	Baking soda	(ii)	Production of H_2 and Cl_2
C.	Washing soda	(iii)	Decolorization
D.	Sodium chloride	(iv)	Antacid

(a) A- (ii), B- (i), C- (iv), D- (iii)
(b) A- (iii), B- (ii), C- (iv), D- (i)
(c) A- (iii), B- (iv), C- (i), D- (ii)
(d) A- (ii), B- (iv), C- (i), D- (iii)

2. Which one reaction shows the property of double displacement reaction?

View Solution

(a) $CuSO_4 + Zn \longrightarrow ZnSO_4 + Cu$
(b) $Cu + 2AgNO_3 \longrightarrow Cu(NO_3)_2 + 2Ag$
(c) $NaOH + HCl \longrightarrow NaCl + H_2O$
(d) None of these

3. Which of the following are combination reaction?

View Solution

1. $2KClO \xrightarrow{Heat} 2KCl + 3O$
2. $MgO + H_2O \xrightarrow{3} Mg(OH)_2$ (2)
3. $4Al + 3O_2 \longrightarrow 2Al_2O_3$
4. $Zn + FeSO_4 \longrightarrow ZnSO_4 + Fe$

(a) 1 and 3
(b) 3 and 4
(c) 2 and 4
(d) 2 and 3

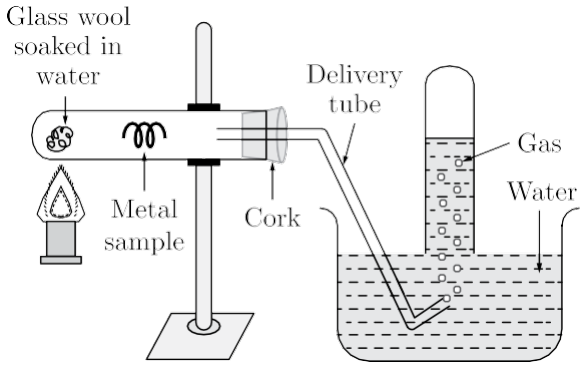
4. Which of the following statement is correct regarding to physical changes?

View Solution

(a) In physical change, new substance is formed.
(b) In physical change, no new substance is formed.
(c) In physical change, chemical composition of substance is changed.
(d) None of these

5. In the following practical set which of the following gas is emitted?

View Solution



(a) Hydrogen
(b) Carbon monoxide
(c) Carbon dioxide
(d) Nitrogen

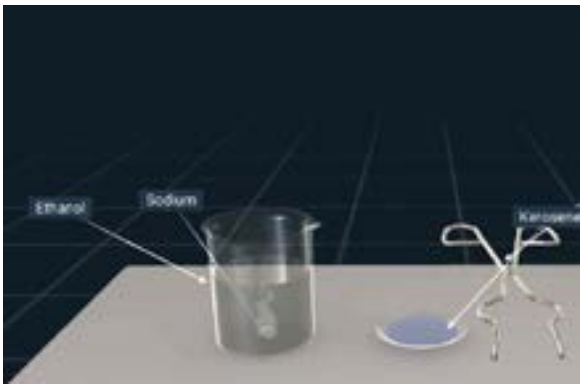
6. To protect tooth decay we are advised to brush our teeth regularly. The nature of the toothpaste commonly used is

View Solution

(a) acidic
(b) neutral
(c) basic
(d) corrosive

7. Ethanol reacts with sodium and forms two products. These are

View Solution



(a) sodium ethanoate and hydrogen
(b) sodium ethanoate and oxygen
(c) sodium ethoxide and hydrogen
(d) sodium ethoxide and oxygen

8. Tricuspid valve is present in ?

View Solution

(a) Right atrium and right ventricle
(b) Left atria and left ventricle
(c) Wall of atrium
(d) Wall of ventricle

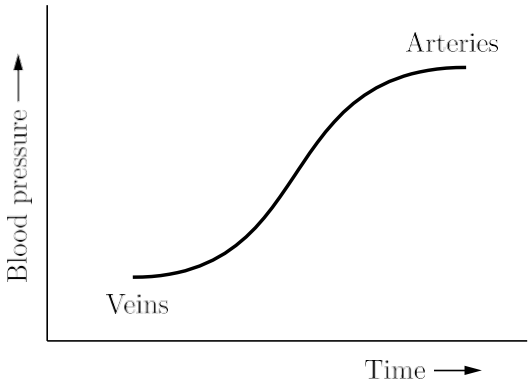
9. Massive amounts of gaseous exchange takes place in the leaves through stomata for the purpose of

View Solution

(a) Photosynthesis
(b) Carrying carbon dioxide
(c) Reduction of carbon dioxide
(d) Generation of carbohydrates

10. Which blood vessels have high blood pressure and what they have to withstand this high pressure?

View Solution



(a) Both arteries and veins have same pressure of blood and they are thick walled vessels.
(b) Arteries have high blood pressure and they have elastic and thick walls to withstand this high pressure.
(c) Veins have high blood pressure and they have to valves to withstand this high pressure.
(d) None of the above.

11. Which of the following statements are true about the brain ?

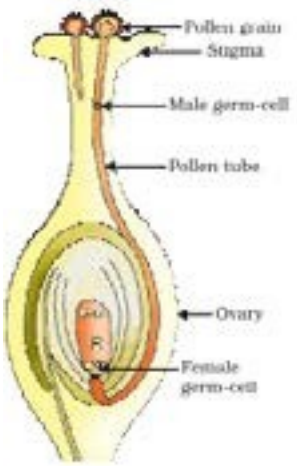
View Solution

(i) The main thinking part of brain is hind brain.
(ii) Centres of hearing, smell, memory, sight etc. are located in fore brain.
(iii) Involuntary actions like salivation, vomiting, blood pressure are controlled by the medulla in the hind brain.
(iv) Cerebellum does not control posture and balance of the body

(a) (i) and (ii) (b) (i), (ii) and (iii)
(c) (ii) and (iii) (d) (iii) and (iv)

12. Length of pollen tube depends on the distance between

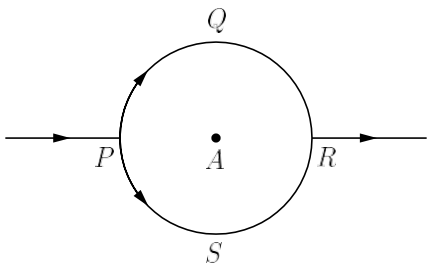
View Solution



(a) pollen grain and upper surface of stigma
(b) pollen grain on upper surface of stigma and ovule
(c) pollen grain in anther and upper surface of stigma
(d) upper surface of stigma and lower part of style

13. In the given circuit, *PQR* and *PSR* are semicircles. What will be the magnetic field at the center *A* of the circular loop ?

View Solution



(a) Zero
(b) $2\pi r\mu_0$
(c) 1
(d) $\mu_0 \frac{B}{2\pi r}$

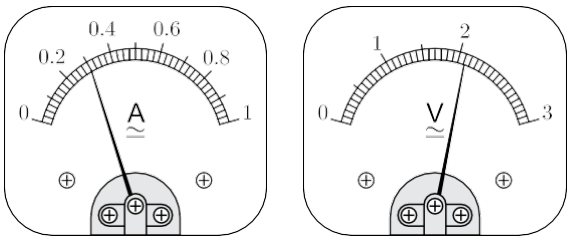
14. The pattern of the magnetic field produced by the straight current carrying conducting wire is

View Solution

(a) in the direction opposite to the current
(b) in the direction parallel to the wire
(c) circular around the wire
(d) in the same direction of current

15. The current flowing through a resistor connected in an electrical circuit and the potential difference developed across its ends are shown in the given ammeter and voltmeter. The voltage and the current across the given resistor are respectively:

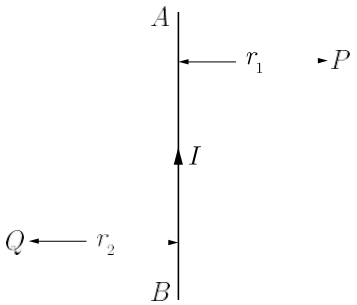
View Solution



(a) 2.1 V, 0.3 A
(b) 3.1 V, 1.3 A
(c) 1.1 V, 0.6 A
(d) 0.1 V, 0.2 A

16. *AB* is a current carrying conductor in the plane of the paper as shown in figure. The directions of magnetic fields produced by it at points *P* and *Q* (Given $r_1 > r_2$, where will the strength of the magnetic field be larger)

View Solution



(a) Inwards, Outwards
(b) Outwards, Inwards
(c) Inwards, Inwards,
(d) Outwards, Outwards

Question no. 17 to 20 are Assertion-Reasoning based questions.

17. **Assertion :** During digestion, carbohydrates are broken down to form glucose.
View Solution **Reason :** Glucose is necessary for breathing.
(a) Both Assertion and Reason are True and Reason is the correct explanation of the Assertion.
(b) Both Assertion and Reason are True but Reason is not the Correct explanation of the Assertion.
(c) Assertion is True but the Reason is False.
(d) Both Assertion and Reason are False.

18. **Assertion :** In humans, males play an important role in determining the sex of the child.
View Solution **Reason :** Males have two X chromosomes.
(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
(c) Assertion (A) is true but reason (R) is false.
(d) Assertion (A) is false but reason (R) is true.

19. **Assertion :** Failure of the kidneys leads to death of the person and there is no way he can survive.
View Solution **Reason :** Transplant of kidneys in humans is not possible.
(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
(b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
(c) Assertion is true but Reason is false.
(d) Both Assertion and Reason are false.

20. **Assertion :** There is no change in the energy of a charged particle moving in a magnetic field although a magnetic force is acting on it.
View Solution **Reason :** Work done by centripetal force is always zero.
(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
(c) Assertion (A) is true but reason (R) is false.
(d) Assertion (A) is false but reason (R) is true.

SECTION-B

Question no. 21 to 26 are very short answer questions.

21. Give reasons for the following :
View Solution (a) Sodium chloride has a high melting point.
(b) Non-metals do not displace hydrogen from dilute acids.

OR

A substance *X* , which is an oxide of a metal is used intensively in the cement industry. This element is present in bones also. On treatment with water it forms a solution which turns red litmus blue. Identify *X* and also write the chemical reactions involved.

22. What is parasitism ? Give two examples of parasites one from animals and one from plants.

View Solution

23. What is phloem ? Name its two main components (elements) which help in the conduction of food.

View Solution

24. Name the parts of a nephron in their proper sequence starting from the point of entry of blood into it upto the point of pouring out of the urine from the nephron.

View Solution

25. Why does it take some time to see the objects in a dim-lit room when we enter the room from bright sunlight outside ?

View Solution

OR

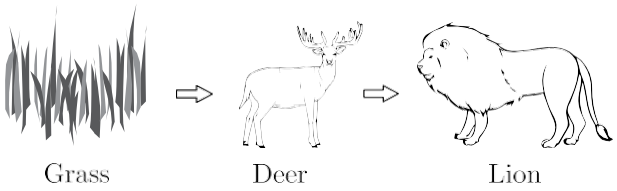
Give reason :

(a) Danger signals are red.

(b) We cannot see an object clearly if it is placed very close to the eyes.

26. Consider the food chain :

View Solution



What will happen it lions are removed from the above food chain ?

SECTION-C

Question no. 27 to 33 are short answer questions.

27. Give chemical explanation for evolution and absorption of heat in a chemical reaction.

View Solution

28. (a) Why metals are not found in their free state generally ?

View Solution (b) If a strip of aluminium with scratched clean surface is dipped into an aqueous solution of copper sulphatefor little time, the surface of the strip becomes brownish. What is the reason for this ? Write the balancedchemical equation for the reaction.

29. Define pollination. Explain the different types of pollination.' List two agents of pollination? How does suitable pollination lead to fertilization?

View Solution

OR

A student wants to germinate dicot seeds. Write the four steps in correct sequence that will help him to perform the experiment in the right way.

30. (a) State laws of refraction.

View Solution (b) A ray of light is incident normally to the surface of a glass slab placed in air. Find the angle of incidence and angle of refraction in this case.

31. A 3 cm tall object is placed 18 cm in front of a concave mirror of focal length 12 cm. At what distance from the mirror should a screen be placed to see a sharp image of the object on the screen. Also calculate the height of the image formed.

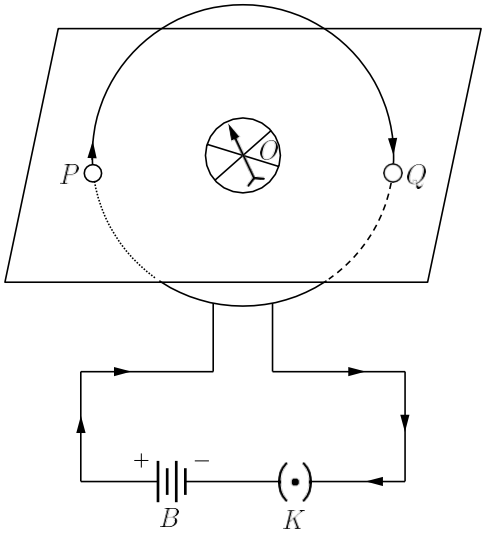
View Solution

32. Demonstrate that due to motion of a magnet near a solenoid coil an induced current is set up in the coil.

View Solution

OR

The flow of current in a circular loop of wire creates a magnetic field at its center. How may existence of this field be detected ? State the rule which helps to predict the direction of this magnetic field.



33. Give reason to justify the following :

View Solution

(i) The existence of decomposer is essential in a biosphere.

(ii) Flow of energy in a food chain is unidirectional.

SECTION-D

Question no. 34 to 36 are Long answer questions.

34. The formula of four organic compounds are given below:

View Solution

$\overset{A}{C_2H_4}$ $\overset{B}{CH_3COOH}$ $\overset{C}{C_2H_5OH}$ $\overset{D}{C_2H_6}$

(i) Which one of these compounds *A*, *B*, *C* or *D* is a saturated hydrocarbon?

(ii) Identify the organic acid and give its structural formula.

(iii) Which of the above compounds when heated at 443K in the presence of concentrated H_2SO_4 forms ethene as the major product ? What is the role played by concentrated H_2SO_4 in this reaction? Also write the chemical equation involved.

(iv) Give a chemical equation when *B* and *C* react with each other in presence of concentrated H_2SO_4. Name the major product formed and mention one of its important use.

OR

(a) Carry out the following conversions giving complete conditions for the reaction to take place in each case :

(i) Ethanoic acid from Ethanol

(ii) Ethane from Ethene

(iii) Ester from Ethanoic acid and ethanol

Also state the names given to all the above conversions.

(b) Detergents are preferred over soaps. Why? (Give one reason)

35. (a) Which device prevents implantation by irritating the lining of uterus?

View Solution (b) What could be the possible reason for declining female: male sex ratio in our country? Suggest two measures to achieve 1:1 ratio.

(c) Name those parts of a flower which serve the same function as the following do in animals :

(i) Testis

(ii) Ovary

(iii) Eggs

(iv) Sperms

OR

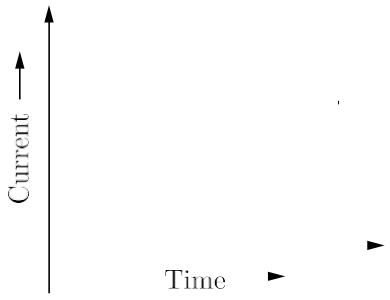
(a) With the help of diagram show asexual reproduction in Rhizopus.

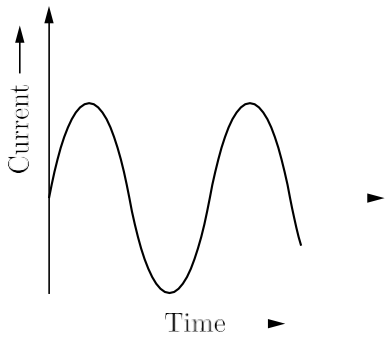
(b) How is this method advantageous for Rhizopus?

(c) How is mode of reproduction in unicellular organisms differ from multicellular organisms?

36. In our daily life we use two types of electric current whose current time graphs are given below :

View Solution





(i) Name the type of current in two cases.

(ii) Identify any one source for each type of current.

(iii) What is the frequency of current in case (b) in our country ?

(iv) On the basis of these graphs list two differences between the two currents.

(v) Out of the two which one is used in transmitting electric power over long distances and why ?

SECTION-E

Question no. 37 to 39 are case-based/data-based questions with 2 to 3 short sub-parts. Internal choice is provided in one of these sub-parts.

37. Electronic configuration of some of the elements are given :

View Solution

Type of element	Element	Atomic number	Number of electrons in shell
Metals	Sodium (Na) Magnesium (Mg) Aluminium (Al)	11 12 13	2 8 1 2 8 2 2 8 3
Non-metals	Oxygen (O) Sulphur (S) Chlorine (Cl)	8 16 17	2 6 2 8 6 2 8 7

(i) State one physical property to distinguish between metals and non-metals.

(ii) What is the nature of the bond formed when magnesium reacts with chlorine? Write the formula of the compound.

OR

(ii) What is common between oxygen and sulphur? Draw the electron dot structure of O_2 molecule.

38. Plant hormones affect gene expression and transcription levels, cellular division and growth. They are naturally View Solution produced within plants, but very similar chemicals are produced by fungi and bacteria that can also affect plant growth. A large number of related chemical compounds are synthesized by humans. They are used to regulate the growth of cultivated plants, weeds and in vitro-grown plants and plant cells; these man-made compounds are called plant growth regulators or PGRs for short. Plant hormones are not nutrients, but chemicals that in small amounts promote and influence the growth, development and differentiation of cells and tissues. The biosynthesisof plant hormones within plant tissues is often diffused and not always localized. Plants lack glands to produceand store hormones, because, unlike animals which have two circulatory systems (lymphatic and cardiovascular) powered by a heart that moves fluids around the body. Plants use more passive means to move chemicals aroundtheir bodies. Plants utilize simple chemicals as hormones, which move more easily through their tissues. They are often produced and used on a local basis within the plant body. Plant cells produce hormones that affect different regions of the cell producing the hormone.

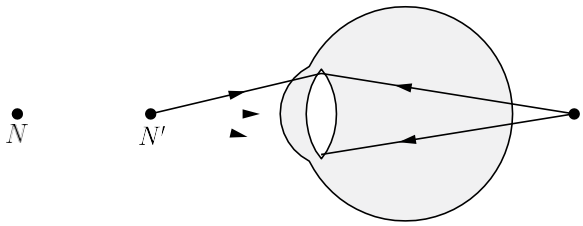
Different hormones can be sorted into different classes, depending on their chemical structures. Within each class of hormone the exact structures vary, but they have similar physiological effects. Initial research into plant hormones identified five major classes : abscisic acid, auxin, cytokinins, ethylene and gibberellins. This list was later expanded and brassinosteroids, jasmonates, salicylic acid and strigolactones are now considered as major plant hormones.

(i) What are the factors affected by the plant hormones ?
(ii) What does PGR stands for ?
(iii) Which class does plant hormones fall into ?

OR

(iv) What were the five major plant hormones discovered in the initial research ?

39. A person is suffering from hypermetropia (long sightedness). It is a defect in which a human eye can see far off View Solution object clearly, but is unable to see nearby object distinctly. The near point of the person is 1.5 m. Assume that the near point of the normal eye is 25 cm.



(i) What type of lens should be used in his spectacles?
(ii) What should be the focal length of the lens he used ?
(iii) What will be the power of the lens ?

OR

(iv) Write one possible cause of this defect.