



INDIAN SCHOOL AL WADI AL KABIR

First Rehearsal Examination 2022-23

SUB: Science (086)

Date: 11 /12/2022

Time Allowed :3 hours

Class: X

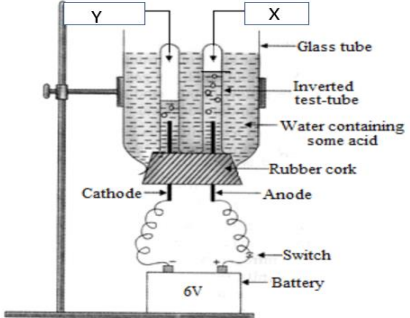
SET 1

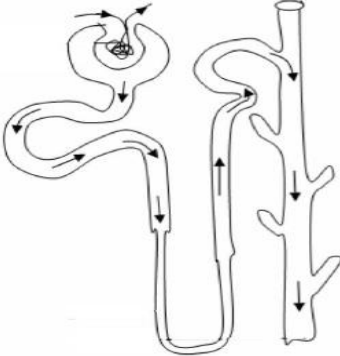
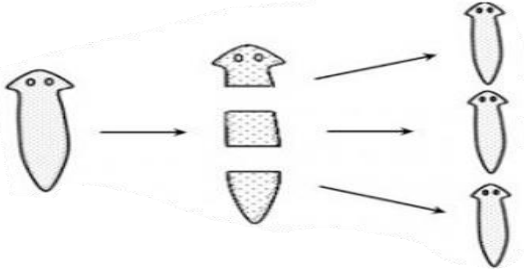
Maximum Marks: 80

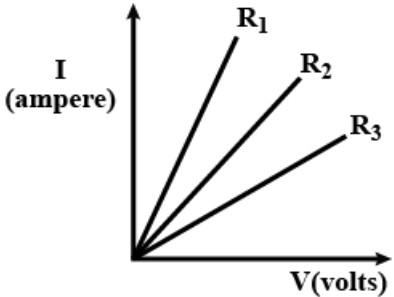
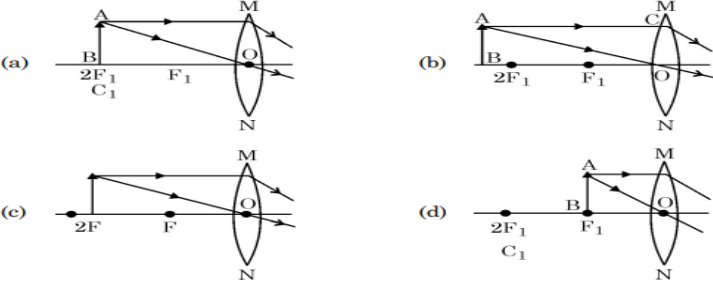
General Instructions:

- i. This question paper consists of 39 questions in 5 sections.
- ii. All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
- iii. Section A consists of 20 objective type questions carrying 1 mark each.
- iv. 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.
- v. 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
- vi. 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.
- vii. Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts

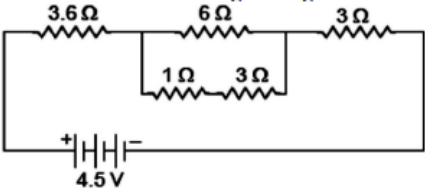
SECTION - A		
Select and write one most appropriate option out of the four options given for each of the questions 1 – 20		
Q. No	Questions	Marks
1	Which of the following statements is correct about an aqueous solution of an acid and a base? I. Higher the pH, stronger the acid II. Higher the pH, weaker the acid III. Lower the pH, stronger the base IV. Lower the pH, weaker the base (a) I and II (b) I and III (c) I and IV (d) II and IV	1

2	<p>Given below is a diagram showing an experimental set-up:</p>  <p>Identify the gases X and Y evolved during the experiment.</p> <p>(a) X is hydrogen and Y is oxygen (b) X is oxygen and Y is hydrogen (c) X is carbon dioxide and Y is oxygen (d) X is chlorine and Y is hydrogen</p>	1
3	<p>The heating of lead nitrate produces brown fumes of gas X. Identify gas X from the following.</p> <p>(a) Lead oxide (b) Oxygen (c) Nitrogen dioxide (d) Nitrogen</p>	1
4	<p>A sample of soil is mixed with water and allowed to settle. The clear solution changes the pH paper yellowish orange. Which of the following would change the colour of this pH paper to greenish blue?</p> <p>(a) Lemon juice (b) Vinegar (c) Common salt (d) An antacid</p>	1
5	<p>On placing an iron nail in a test tube containing blue copper sulphate solution, it will be observed that the copper sulphate solution</p> <p>(a) Turns green, and a grey substance is deposited on the iron nail. (b) Turns colourless and a grey substance is deposited on the iron nail. (c) Turns colourless and a reddish–brown substance is deposited on the iron nail. (d) Turns green and a reddish-brown substance is deposited on the iron nail.</p>	1
6	<p>Sodium hydrogen carbonate when added to hydrochloric acid, evolves a gas. Which of the following statements are true about the gas evolved?</p> <p>I. It turns lime water milky. II. It extinguishes a burning splinter. III. It catches fire easily. IV. It is reddish brown in colour.</p> <p>(a) I and II (b) I and III (c) II and III (d) II and IV</p>	1

7	<p>Covalent compounds</p> <p>(a) have high melting and boiling points</p> <p>(b) are mostly soluble in water</p> <p>(c) are formed between atoms of metals and non-metals</p> <p>(d) are formed by the sharing of electrons.</p>	1
8	<p>The phloem in plants are responsible for -</p> <p>(a) transportation of water</p> <p>(b) transportation of food</p> <p>(c) transportation of water and food</p> <p>(d) transportation of oxygen and carbon di oxide</p>	1
9	<p>Identify the figure and its function –</p>  <p>(a) Neuron, filtration of waste</p> <p>(b) Nephron, filtration of waste</p> <p>(c) Neuron, transmission of impulse</p> <p>(d) Nephron, transmission of impulse</p>	1
10	<p>Observe the figure given below and identify the event and the organism</p>  <p>(a) Hydra, Regeneration</p> <p>(b) Hydra, fission</p> <p>(c) Planaria, Regeneration</p> <p>(d) Planaria, fission</p>	1
11	<p>During sex determination what is the probability that the offspring will be a girl?</p> <p>(a) 50%</p> <p>(b) 100%</p> <p>(c) It varies from person to person</p> <p>(d) 47 to 49%</p>	1
12	<p>Which of the two sets belong to the same trophic level?</p> <p>(a) Rabbit: Tiger</p> <p>(b) Vulture: Rat</p> <p>(c) Grasshopper: Hawk</p> <p>(d) Frog: Lizard</p>	1

13	<p>A student carries out an experiment and plots the V-I graph of three samples of nichrome wire with resistances R_1, R_2 and R_3 respectively. Which of the following is true?</p>  <p>a. $R_1 = R_2 = R_3$ b. $R_1 > R_2 > R_3$ c. $R_3 > R_2 > R_1$ d. $R_2 > R_3 > R_1$</p>	1
14	<p>A student wants to obtain magnified image of an object AB as on a screen. Which one of the following arrangements shows the correct position of AB for him/her to be successful?</p> 	1
15	<p>If the speed of light in vacuum is 3×10^8 m/s, find the speed of light in a medium of absolute refractive index 1.5.</p> <p>a) 2.14 b) 3×10^8 m/s c) 2×10^8 m/s d) 4.5×10^8 m/s</p>	1
16	<p>A cylindrical conductor of length 'l' and uniform area of cross-section 'A' has resistance 'R'. The area of cross-section of another conductor of the same material and same resistance but of length '2l' is</p> <p>a) $A/2$ b) $3A/2$ c) $2A$ d) $3A$</p>	1
<p>Q. no 17 to 20 are Assertion - Reasoning based questions. These consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:</p> <p>(a) Both A and R are true and R is the correct explanation of A (b) Both A and R are true and R is not the correct explanation of A (c) A is true but R is false (d) A is False but R is true</p>		
17	<p>Assertion(A): Calcium carbonate on heating decomposes to give calcium oxide and carbon dioxide Reason(R): Photochemical decomposition occurs in the presence of sunlight.</p>	1

18	Assertion (A): Amoeba shows multiple fission during unfavourable conditions. Reason (R): Chances of survival are less during unfavourable conditions.	1																					
19	Assertion (A): The concentration of harmful chemicals is least in human beings. Reason (R) :Man is at the apex of the food chain.	1																					
20	Assertion (A): Hypermetropia is the defect of the eye in which only nearer objects are seen. Reason (R) : Hypermetropia is corrected by using convex lens	1																					
SECTION – B																							
Q. no. 21 to 26 are very short answer questions																							
21	(a) Show the formation of MgO by the transfer of electrons. (b) Why are ionic compounds usually hard? OR What is cinnabar? How is metal extracted from cinnabar?	2																					
22	In the following food chain, 100 J of energy is available to the lion. How much energy was available to the producers? Plants → Deer → Lion	2																					
23	Define nutrition? What are the different modes of nutrition?	2																					
24	Draw a diagram of binary fission in Amoeba.	2																					
25	Define 1 volt. Calculate the amount of energy consumed in carrying a charge of 1 coulomb through a battery of 3 V. OR What is an ammeter? .A charge of 150 coulomb flows through a wire in one minute .Find the electric current flowing through it.	2																					
26	How is the equal genetic contribution of male and female parents ensured in the progeny?	2																					
SECTION - C																							
Q.no. 27 to 33 are short answer questions.																							
27	What is a redox reaction? When a magnesium ribbon burns in air with a dazzling flame and forms a white ash, is magnesium oxidised or reduced? Why?	3																					
28	(a) Name the by-product of chlor-alkali process which is used for the manufacture of bleaching powder (b) Explain why is hydrochloric acid a strong acid and acetic acid a weak acid. (c) Name the compound which is obtained from baking soda and is used to remove permanent hardness of water.	3																					
29	In a cross between plants with round seeds and plants with wrinkled seeds the offspring of F1 generation all had round seeds. When the F1 generation was self-crossed, it was observed in the F2 generation that out of 100, 75 seeds were round. Make a cross and answer the following: (i) What are the genotypes of F1 progeny? (ii) What is the ratio of round: wrinkled seeds in the F2 generation?	3																					
30	Analyse the following observation table showing variation of image-distance (v) with object-distance (u) in case of a convex lens and answer the questions that follow without doing any calculations : <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>S.No</th> <th>Object distance u (cm)</th> <th>Image distance v (cm)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-100</td> <td>+ 25</td> </tr> <tr> <td>2</td> <td>-60</td> <td>+30</td> </tr> <tr> <td>3</td> <td>-40</td> <td>+40</td> </tr> <tr> <td>4</td> <td>-30</td> <td>+60</td> </tr> <tr> <td>5</td> <td>-25</td> <td>+100</td> </tr> <tr> <td>6</td> <td>-15</td> <td>+120</td> </tr> </tbody> </table>	S.No	Object distance u (cm)	Image distance v (cm)	1	-100	+ 25	2	-60	+30	3	-40	+40	4	-30	+60	5	-25	+100	6	-15	+120	3
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	<p>(a) What is the focal length of the convex lens? Give reason to justify your answer.</p> <p>(b) Write the serial number of the observation which is not correct. On what basis have you arrived at this conclusion?</p> <p>(c) Select an appropriate scale and draw a ray diagram for the observation at S.No. 2.</p>	
31	<p>Name the type of mirror used in the following situations.</p> <p>(a) Headlights of a car</p> <p>(b) Side/rear-view mirror of a vehicle</p> <p>(c) Solar furnace</p> <p>Support your answer with reason.</p>	3
32	<p>Find the current flowing through the following electric circuit.</p>  <p style="text-align: center;">OR</p> <p>Three resistors R_1, R_2 and R_3 having values 5Ω, 10Ω, and 30Ω respectively are connected in parallel across a battery of $12V$. Calculate</p> <p>(a) the current through each resistor</p> <p>(b) the total current in the circuit</p> <p>(c) the total circuit resistance.</p>	3
33	<p>What will happen if all the carnivores are removed from the earth?</p> <p style="text-align: center;">OR</p> <p>What will happen to the grasslands if all the grazers are removed from there?</p>	3
<p>SECTION - D</p> <p>Q.no. 34 to 36 are Long answer questions.</p>		
34	<p>(a) Write the molecular formula of the following compounds and draw their electron dot structures.</p> <p>(i) Ethane (ii) Ethene</p> <p>(b) What are isomers? Write all the possible isomers of pentane.</p> <p style="text-align: center;">OR</p> <p>(a) Identify the functional group present in the following compounds</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>(i)</p> $\begin{array}{c} \text{H} \quad \text{H} \\ \quad \\ \text{H}-\text{C}-\text{C}-\text{O}-\text{H} \\ \quad \\ \text{H} \quad \text{H} \end{array}$ </div> <div style="text-align: center;"> <p>(ii)</p> $\begin{array}{c} \text{H} \quad \text{O} \\ \quad \\ \text{H}-\text{C}-\text{C}-\text{OH} \\ \\ \text{H} \end{array}$ </div> </div> <p>(b) List any two characteristics of homologous series. Write the name and formula of the first member of alkene series.</p> <p>(c) Write the formula and electron dot structure of cyclopentane.</p>	5
35	<p>(a) Draw a longitudinal section of a flower and label the following parts:</p> <p>(i) Part that produces pollen grain.</p> <p>(ii) Part that transfers male gametes to the female gametes.</p> <p>(iii) Part that is sticky to trap the pollen grain.</p>	5

	<p>(iv) Part that develops into a fruit.</p> <p>(b) Briefly explain double fertilization in plants.</p> <p style="text-align: center;">OR</p> <p>Draw a diagram of a diagram of a female reproductive system and label the part</p> <p>(i) That produces egg</p> <p>(ii) Where fusion of egg and sperm take place</p> <p>(iii) Where zygote is implanted</p> <p>(iv) The passage from where sperms enter</p> <p>What happens to human egg when it is not fertilized?</p>	
36	<p>a. State Ohm's law</p> <p>b. With the help of a suitable circuit diagram prove that the reciprocal of the equivalent resistance of a group of resistances joined in parallel is equal to the sum of the reciprocals of the individual resistances.</p> <p>c. In an electric circuit two resistors of $12\ \Omega$ each are joined in parallel to a 6 V battery. Find the current drawn from the battery.</p>	5
SECTION – E		
Q.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	<p>Ores mined from the earth are usually contaminated with large amounts of impurities such as soil, sand, etc., called gangue. The impurities must be removed from the ore prior to the extraction of the metal. The processes Several steps are involved in the extraction of pure metal from ores. Metals and Non-metals used for removing the gangue from the ore are based on the differences between the physical or chemical properties of the gangue and the ore. Different separation techniques are accordingly employed.</p> <p>i) Which of the following methods is used for the extraction of highly reactive metals?</p> <p>(a) Roasting</p> <p>(b) Electrolytic reduction</p> <p>(c) Electrolytic refining</p> <p>(d) Calcination</p> <p>ii) Why should the metal sulphides and carbonates be converted to metal oxides in the process of extraction of metal from them?</p> <p>iii) Differentiate between calcination and roasting with suitable examples.</p> <p style="text-align: center;">OR</p> <p>iii) How is copper obtained from its sulphide ore? Give equations of the reactions.</p>	4
38	<p>As we have seen, the process of sexual maturation is gradual, and takes place while general body growth is still going on. Therefore, some degree of sexual maturation does not necessarily mean that the body or the mind is ready for sexual acts or for having and bringing up children. How do we decide if the body or the mind is ready for this major responsibility? All of us are under many different kinds of pressures about these issues. There can be pressure from our friends for participating in many activities, whether we really want to or not. There can be pressure from families to get married and start having children. There can be pressure from government agencies to avoid having children. In this situation, making choices can become very difficult.</p>	4

	<p>i. What is reproductive health? ii. List any one kinds of pressures do we face in the society? iii. Write any two importance of reproductive health?</p> <p style="text-align: center;">OR</p> <p>iii. Write any two preventive measures for STD?</p>	
39	<p>The twinkling of a star is due to atmospheric refraction of starlight. The starlight on entering the earth's atmosphere, undergoes refraction continuously before it reaches the earth. The atmospheric refraction occurs in a medium of gradually changing refractive index. Since the atmosphere bends starlight towards the normal, the apparent position of the star is slightly different from its actual position. The star appears slightly higher than its actual position when viewed near the horizon. Further this apparent position of the star is not stationary, but keeps on changing slightly, since the physical conditions of the earth's atmosphere are not stationary. Since the stars are very distant they are approximate point-sized source of light. As the path of rays of light coming from the star goes on varying slightly, the apparent position of the star fluctuates and the amount of starlight entering the eye flickers the stars sometimes appear brighter and at some other time, fainter, which is the twinkling effect.</p> <p>i) What is atmospheric refraction? ii) What will be the colour of sky as seen from the earth if there is no atmosphere?</p> <p>iii) List two phenomena which can be explained on the basis of atmospheric refraction.</p> <p style="text-align: center;">OR</p> <p>iii) Explain the reason why stars appear to twinkle and the planets do not twinkle.</p>	4