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केंद्रीय विद्यालय संगठन, जयपुर संभाग  
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अभ्यास पत्र / Practice Paper :2024-25

कक्षा / CLASS: 10<sup>th</sup>

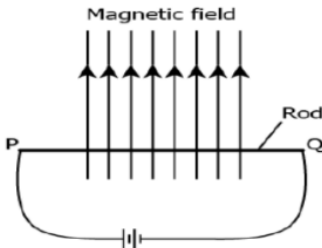
विषय /SUB: Science (कोड / CODE: 086)

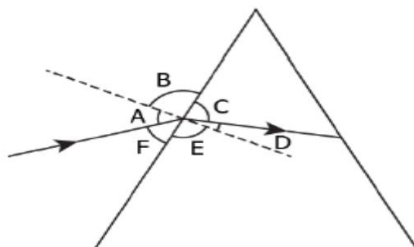
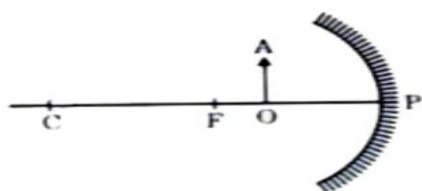
अधिकतम आवधि / Time Allowed: 3 Hours

अधिकतम अंक/ Maximum Marks: 80

सामान्य निर्देश / General Instructions:

- All questions would be compulsory. However, an internal choice of approximately 33% would be provided. 50% marks are to be allotted to competency-based questions.
- Section A would have 16 simple/complex MCQs and 04 Assertion-Reasoning type questions carrying 1 mark each.
- Section B would have 6 Short Answer (SA) type questions carrying 02 marks each.
- Section C would have 7 Short Answer (SA) type questions carrying 03 marks each.
- Section D would have 3 Long Answer (LA) type questions carrying 05 marks each.
- Section E would have 3 source based/case based/passage based/integrated units of assessment (04 marks each) with sub-parts of the values of 1 or 2 marks.

SECTION A		
Q.N	QUESTIONS	MARKS
1	Which one of the following pairs belong to the category of primary consumers? (a) Eagle and snake (b) Grasshoppers & cattle (c) Snake and frog (d) Water beetles & fish	1
2	A metal rod PQ is placed in the magnetic field. The ends of the rod are connected to a battery using wires.  In which direction the rod will move? (a) Upward (b) Downwards (c) Into the field (d) Out of the field	1
3	If four identical resistors of resistance 8 ohm are first connected in series so as to give an effective resistance $R_s$ and the. connected in parallel so as to give an effective resistance $R_p$ then the ratio $R_s/R_p$ is (a) 32:1 (b)2:1 (c) 0.5:1 (d) 16:1	1

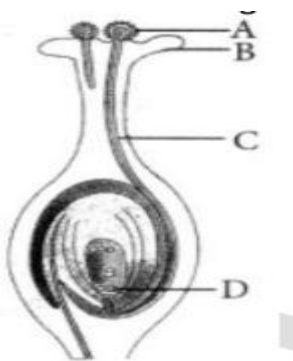
4	<p>The image shows a light ray incident on a glass prism.</p>  <p>The various angles are labelled in the image. Which angle shows the angle of incidence and angle of refraction, respectively?</p> <p>(a) A and D      (b) B and E      (c) C and F      (d) D and F</p>	1
5	<p>A person gets out in the sunlight from a dark room. How does his pupil regulate and control the light entering in the eye?</p> <p>(a) The size of pupil will decrease, and less light will enter the eye  (b) The size of pupil will decrease, and more light will enter the eye  (c) The size of pupil will remain the same, but more light will enter the eye  (d) The size of pupil will remain the same, but less light will enter the eye</p>	1
6	 <p>For the diagram shown, according to the new Cartesian sign convention the magnification of the image formed will have the following specifications:</p> <p>(a) Sign -Positive, Value -Less than 1  (b) Sign- Positive, Value -More than 1  (c) Sign -Negative, Value - Less than 1  (d) Sign -Negative, Value - More than 1</p>	1
7	<p>In garden peas, a pure tall plant (TT) is crossed with a short plant (tt) The ratio of pure tall plants to short plants in F<sub>2</sub> generation is –</p> <p>(a) 1:3      (b) 3:1      (c) 1:1      (d) 2:1</p>	1
8	<p>Posture and balance of the body is controlled by</p> <p>(a) Pons      (b) Medulla oblongata      (c) Cerebellum      (d) Cerebrum</p>	1
9	<p>Dwarfism is caused due to</p> <p>(a) over secretion of hormone produced by pancreas  (b) over secretion of hormone produced by pituitary gland  (c) under secretion of hormone produced by pancreas  (d) under secretion of hormone produced by pituitary gland</p>	1
10	<p>The amount of water reabsorbed from nephric tubule depend upon</p> <p>(a) The amount of soluble waste to be removed from blood  (b) The amount of water present in blood  (c) The length of the nephron  (d) Both (a) and (b)</p>	1

11	<p>Which of the statements are true for respiration?</p> <p>i. Ribs move inwards and diaphragm is raised during inhalation            ii. Gaseous exchange occurs at alveoli of lungs            iii. Hemoglobin has greater affinity for carbon dioxide than oxygen            iv. Alveoli increases surface area for exchange of gases</p> <p>(a) i. and iv.      (b) ii. and iii.      (c) i. and iii.      (d) ii. and iv.</p>	1
12	<p>Which of the following statements about the given reaction are correct?</p> $\text{MnO}_2 + 4\text{HCl} \rightarrow \text{MnCl}_2 + 2\text{H}_2\text{O} + \text{Cl}_2$ <p>(i) HCl is oxidized to <math>\text{Cl}_2</math>      (ii) <math>\text{MnO}_2</math> is reduced to <math>\text{MnCl}_2</math>            (iii) <math>\text{MnCl}_2</math> acts as an oxidizing agent      (iv) HCl acts as an oxidizing agent</p> <p>(a) (ii), (iii) and (iv)      (b) (i), (ii) and (iii)            (c) (i) and (ii) only      (d) (iii) and (iv) only</p>	1
13	<p>In an attempt to demonstrate electrical conductivity through an electrolyte, the following apparatus was set up. Which among the following statement(s) is(are) correct?</p> <div style="text-align: center;"> <p>The diagram shows a circuit for testing electrical conductivity. It consists of a 6 Volt battery, a glowing bulb, and a switch connected in a loop. Two nails are placed in a beaker containing dilute NaOH solution. The nails are supported by a rubber cork at the bottom of the beaker. The circuit is completed by the nails and the solution.</p> </div> <p>1) Bulb will not glow because the electrolyte is not acidic.            2) Bulb will glow because NaOH is a strong base and furnishes ions for conduction.            3) Bulb will not glow because the circuit is incomplete.            4) Bulb will not glow because it depends upon the type of electrolytic solution.</p> <p>(a) (i) and (iii)      (b) (ii) and (iv)      (c) (ii) only      (d) (iv) only</p>	1
14	<p>Which of the following phenomena occur, when a small amount of acid is added to water?</p> <p>(i) Ionisation      (ii) Neutralisation      (iii) Dilution      (iv) Salt formation</p> <p>(a) (i) and (ii)      (b) (i) and (iii)      (c) (ii) and (iii)      (d) (ii) and (iv)</p>	1
15	<p>The electronic configurations of three elements X, Y and Z are X – 2, 8; Y – 2, 8, 7 and Z – 2, 8, 2. Which of the following is correct?</p> <p>(a) X is a metal      (b) Y is a metal            (c) Z is a non-metal      (d) Y is a non-metal and Z is a metal</p>	1

16	<p>On the basis of sequence of reactions, identify the most and least reactive elements.</p> <p><math>A + BX \rightarrow AX + B</math>  <math>C + AY \rightarrow CY + A</math></p> <p>(a) Most reactive: C; Least reactive: B      (c) Most reactive: A; Least reactive: B  (b) Most reactive: B; Least reactive: C      (d) Most reactive: B; Least reactive: A</p>	1
17-20	<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><b>Assertion:</b> The flow of energy in an ecosystem is bidirectional  <b>Reason:</b> Energy captured by the autotrophs does not get revert back to the solar input and it passes to the herbivores.</p>	1
18	<p><b>Assertion:</b> Concave mirrors are used as make-up mirrors.  <b>Reason :</b> When the face is held within the focus of a concave mirror, then a diminished image of the face is seen in the concave mirror</p>	1
19	<p><b>Assertion:</b> Probability of survival of an organism produced through sexual reproduction is more than that of organism produced through asexual mode.  <b>Reason:</b> Variations provide advantages to individuals for survival</p>	1
20	<p><b>Assertion :</b> pH of ammonium nitrate solution is acidic.  <b>Reason:</b> Solution of a salt of weak base and strong acid is acidic.</p>	1
<b>SECTION B</b>		
21	<p>What do you mean by solenoid. Compare the magnetic field produced by a solenoid with that of a bar magnet?</p>	2
22	<p>(A) An electric heater rated 1100W operates at 220V. Calculate  (i) its resistance, and  (ii) the current drawn by it</p> <p style="text-align: center;"><b>Or</b></p> <p>(A) A copper wire has diameter 0.5 mm and resistivity <math>1.6 \times 10^{-8} \Omega \text{ m}</math>. Calculate the length of this wire to make it resistance 100 <math>\Omega</math>.</p>	1+1  2
23	<p>A Mendelian experiment consisted of breeding pea plants VV, bearing violet flowers with pea plants vv, bearing white flowers. What will be the result in F1 and F2 progeny? What will be the percentage of white flowers in F2 generation?</p> <p style="text-align: center;"><b>Or</b></p> <p>In an asexually producing organism, a trait 'A' exists in 10% of a population and trait 'B' exists in 75% of the same population. Which of the two traits is likely to arise earlier? Give reason to justify your choice.</p>	1+1
24	<p>a) Draw a diagram of human excretory system and label the following:  i) part that carries urine from the bladder to outside of the body  ii) The part where urine is stored temporarily before it is excreted off the system.</p>	$\frac{1}{2} \times 4$
25	<p>In the electrolysis of water  (a) Name the gases liberated at anode and cathode.  (b) Why is the volume of gas collected on one electrode is two times that on the other electrode?</p>	2

26	Write the name and general formula of a chain of hydrocarbons in which an addition reaction with hydrogen is possible. Write a chemical equation with the essential conditions.	1+1
<b>SECTION C</b>		
27	Draw magnetic field lines produced around a current carrying straight conductor passing through cardboard. How will the strength of the magnetic field change, when the point where magnetic field is to be determined, is moved away from the straight wire carrying constant current? Justify your answer	3
28	A student is not able to see clearly the questions written on the blackboard placed at a distance of 5 m from him. Name the defect of vision he is suffering from. Write causes of this defect. How can this defect can be corrected. Draw label diagram of defected and corrected eye.	3
29	How many pairs of chromosomes are present in human beings? Out of these how many are sex chromosomes? How many types of sex chromosomes are found in human beings? "The sex of a new born child is a matter of chance and none of the parents may be considered responsible for it". Draw a flow chart showing determination of sex of a new born to justify this statement.	
30	(a) Identify the glands that secrete: (i) Insulin (ii) Thyroxin. (b) Explain with an example how the timing and amount of hormone secreted are regulated in the human body.	3
31	2 g of lead nitrate powder is taken in a boiling tube. The boiling tube is heated over a flame. Now answer the following: (i) State the color of the fumes evolved and the residue left. (ii) Name the type of chemical reaction that has taken place and write its balanced equation.  <b>OR</b>  A student dropped few pieces of marble in dilute hydrochloric acid contained in a test tube. The evolved gas was then passed through lime water. What change would be observed in lime water? Identify the gas evolved. What happens when the evolved gas is passed in excess through lime water? Write balanced chemical equation for each change observed?	3
32	Will the impact of removing all the organisms in a trophic level be different for different trophic levels? Can the organisms of any trophic level be removed without causing any damage to the ecosystem?	3
33	Answer the following questions: a. State the color of phenolphthalein in soap solution. b. Name the by-product of chlor-alkali process which is used for the manufacture of bleaching powder. c. Name one indicator which specifies the various levels of H <sup>+</sup> ion concentration.	3

**SECTION D**

34	<p>It is desired to obtain an erect image of an object, using a concave mirror of focal length 20 cm.</p> <p>(i) What should be the range of distance of the object from the mirror? (ii) Will the image be bigger or smaller than the object? (iii) Draw a ray diagram to show the image formation in this case.</p> <p style="text-align: center;"><b>OR</b></p> <p>a) A child reads words of a book with the help of a convex lens keeping it close to the book. He finds words enlarged and erect when he gradually withdraws the lens away from the book. At one position, the words again become distinctly visible but this time, these are enlarged and inverted. Explain the difference with the help of a ray diagram for both cases.</p> <p>b) An object is held at the principal focus of a concave lens of focal length <math>f</math>. Where the image will form.</p>	5
35	<p>a) Write two functions of placenta in humans. b) What happens to the lining of uterus: (i) before release of a fertilized egg? (ii) if no fertilization occurs? c) Write two differences between zygote and foetus.</p> <p style="text-align: center;"><b>OR</b></p> <p>Based on the given diagram answer the questions given below:</p> <div style="text-align: center;"></div> <p>(a) Label the parts A, B, C and D. (b) How does A reaches part B? (c) State the importance of the part C. (d) What happens to the part marked D after fertilization is over?</p>	1+2+2

36

- (i) Write the steps involved in the extraction of pure metals in the middle of the activity series from their carbonate ores.
- (ii) How is copper extracted from its sulphide ore? Explain the various steps supported by chemical equations. Draw labelled diagram for the electrolytic refining of copper.

5

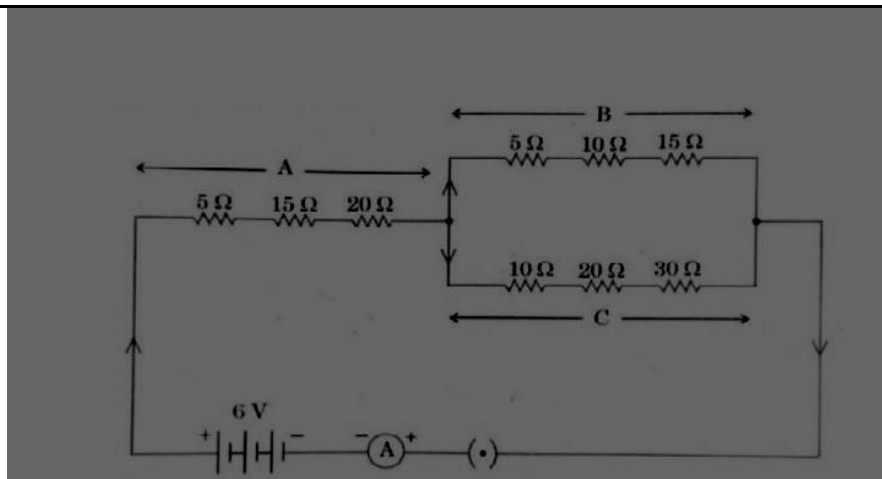
**OR**

Explain the following

- (a) Reactivity of Al decreases if it is dipped in  $\text{HNO}_3$
- (b) Carbon cannot reduce the oxides of Na or Mg
- (c) NaCl is not a conductor of electricity in solid state whereas it does conduct electricity in aqueous solution as well as in molten state
- (d) Iron articles are galvanized.
- (e) Metals like Na, K, Ca and Mg are never found in their free state in nature

**SECTION E**

37



- (a) Find the equivalent resistance of arm A.
- (b) Calculate the equivalent resistance of the parallel combination of the arms B and C.
- (c) Determine the current that flows through the ammeter.

**OR**

Determine the current that flows in the ammeter when the arm B is withdrawn from the circuit

38	<p>The heart is a muscular organ which is as big as our fist. Because both oxygen and carbon dioxide must be transported by the blood, the heart has different chambers to prevent the oxygen-rich blood from mixing with the blood containing carbon dioxide. The carbon dioxide-rich blood has to reach the lungs for the carbon dioxide to be removed, and the oxygenated blood from the lungs has to be brought back to the heart. This oxygen-rich blood is then pumped to the rest of the body.</p> <p>a) How many chambers are present in the heart of mammals and reptiles? b) What do you mean by the term double circulation?</p> <p style="text-align: center;"><b>OR</b></p> <p>Explain with diagram the blood circulation in fish</p> <p>c) If diffusion were to move oxygen in our body, it is estimated that it would take three years for a molecule of oxygen to reach our toes from our lungs. How do transport of oxygen and carbon dioxide take place in human?</p>															
39	<p>Read the passage given below and answer the following questions. The table given below shows six organic compounds A, B, C, D, E and F having different molecular formula:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Organic compound</th> <th>Molecular formula</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>C<sub>7</sub>H<sub>16</sub></td> </tr> <tr> <td>B</td> <td>C<sub>8</sub>H<sub>16</sub></td> </tr> <tr> <td>C</td> <td>C<sub>4</sub>H<sub>6</sub></td> </tr> <tr> <td>D</td> <td>C<sub>6</sub>H<sub>10</sub></td> </tr> <tr> <td>E</td> <td>C<sub>5</sub>H<sub>10</sub></td> </tr> <tr> <td>F</td> <td>C<sub>9</sub>H<sub>20</sub></td> </tr> </tbody> </table> <p>1. Which of the above compounds belong to same alkyne homologous series? 2. Which of the above is the member of the same homologous series as E? 3. Identify the saturated and unsaturated compound from the above table and differentiate between them .</p> <p style="text-align: center;"><b>OR</b></p> <p>A student studies that acetic acid is a saturated compound. Why is acetic acid classified as a saturated compound? Draw the structural formula of it.</p>	Organic compound	Molecular formula	A	C <sub>7</sub> H <sub>16</sub>	B	C <sub>8</sub> H <sub>16</sub>	C	C <sub>4</sub> H <sub>6</sub>	D	C <sub>6</sub> H <sub>10</sub>	E	C <sub>5</sub> H <sub>10</sub>	F	C <sub>9</sub> H <sub>20</sub>	1+1+2
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