केन्द्रीय विद्यालय संगठन तिनसुकिया संभाग

KENDRIYA VIDYALAYA SANGATHAN TINSUKIA REGION

पूर्व परिषदीय परीक्षा 2025-26 / PRE-BOARD EXAMINATION 2025-26

विषय/Subject :- विज्ञान/ Science विषय कोड (सीबीएसई)/Subject Code(CBSE):-086

कक्षा/ Class:-दसवीं-X

प्रश्न पत्र कोड /Q.P. Code:- QP10SCI02PB25

निर्धारित समय/Time Allowed:- 3 घंटे अधिकतम अंक/Maximum Marks :-80

सामान्य निर्देश/ GENERAL INSTRUCTIONS:-

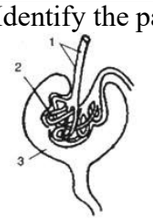
निम्नलिखित निर्देशों को ध्यानपूर्वक पढ़िए एवं उनका पालन कीजिये :

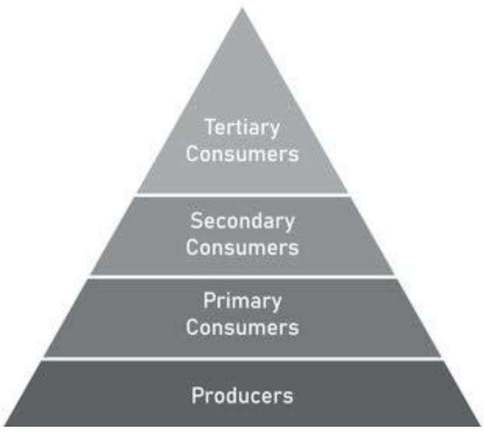
(i) Read the following instructions carefully and follow them:

(ii) This question paper consists of 39 questions in 3 sections. Section A is Biology; Section B is Chemistry and Section C is Physics

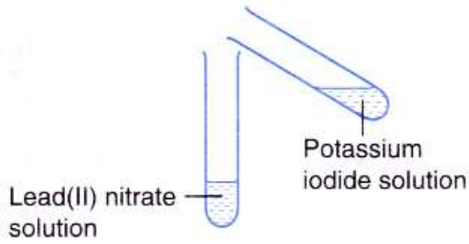
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(iii) All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions

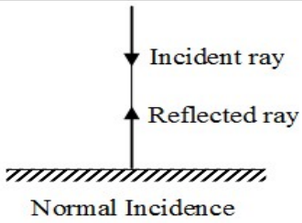
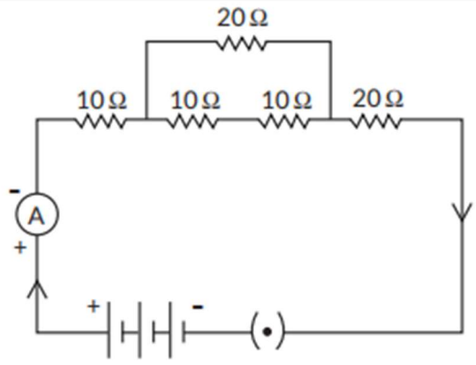
	SECTION A (BIOLOGY)	Marks
1	Identify the parts labelled as 2 and 3 in the diagram given below  a. 2-Bowman's capsule, 3-Glomerulus b. 2 and 3-Bowman's capsule c. 2-Glomerulous, 3-Bowman's capsule d. 2-Loop of Henle, 3-Glomerulous	1
2	What is the pathway of a typical reflex arc? a. Receptor – sensory neuron – interneuron – motor neuron – effector b. Receptor – motor neuron – sensory neuron – interneuron – effector c. Effector – motor neuron – sensory neuron – interneuron – receptor d. Effector – interneuron – sensory neuron – motor neuron – receptor	1
3	In a monohybrid cross between two heterozygous individuals (Tt) for tallness in plants, what is the probability of obtaining a homozygous recessive offspring? a. 0 % b. 25 % c. 50 % d. 75 %	1
4	In Mendelian inheritance, what is the term used to describe an allele that is masked by a dominant allele in a heterozygous individual? a. Homozygous allele b. Recessive allele c. Dominant allele d. Co-dominant allele	1

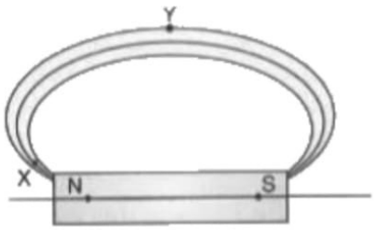
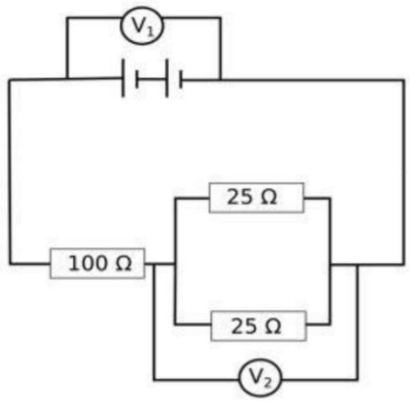
5	In the world of food chains, which of the following does NOT fit the narrative of interconnected consumption? a. Grass, rabbit, lion b. Plankton, fish, man c. Wolf, grass, snake, tiger d. Grass, grasshopper, frog, snake, eagle	1
6	What is the primary function of the ozone layer in the atmosphere? a. Absorbing ultraviolet radiation b. Trapping greenhouse gases c. Regulating temperature d. Filtering particulate matter	1
7	Shown below are the trophic levels of an ecosystem.  In which trophic level can an omnivore be present? a. Secondary consumers b. Secondary and tertiary consumers c. Primary and secondary consumers d. Primary, secondary and tertiary consumers	1
The following two questions consist of two statements – Assertion (A) and Reason (R). Answer these questions by selecting the appropriate option given below: 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.		
8	Assertion (A): Energy is necessary for the execution of various life processes Reason (R): Mitochondria produce energy in the form of ATP	1
9	Assertion (A): Diabetes develop from deficiency of insulin secretion. Reason (R): Insulin plays a crucial role in the regulation of blood sugar level.	1
10	Why is the small intestine in herbivores longer than in carnivores?	2
11	Attempt either A or B A. Differentiate between arteries and veins on the basis of (a) wall thickness and (b) direction of blood flow. Or, B. How many chambers are there in the heart of the following organisms? How is mixing of oxygenated and deoxygenated blood prevented in their body? (a) Fishes (b) Humans	2

12	If the energy available at the producer level is 15,000 J, calculate the energy available to the tertiary consumer in the food chain: Plants → Grasshopper → Frog → Snake.	2
13	What is feedback mechanism of hormones regulation? Take the example of insulin to explain this phenomenon.	3
14	*"The sex of a new born child is a matter of chance and none of the parents may be considered responsible for it."* Justify the statement with the help of a flow chart showing sex-determination in human beings.	3
15	Attempt either A or B A. Ravi observed that during heavy exercise, he started breathing faster and deeper than usual. His teacher explained that this happens because the demand for energy in the muscles increases during exercise. The energy is released by breaking down glucose molecules in the cells. Sometimes, when the supply of oxygen is insufficient, muscles switch to anaerobic respiration. Based on the above case, answer the following questions: a) Why does the breathing rate increase during vigorous exercise? b) What is the difference between aerobic and anaerobic respiration? c) Name one product formed in human muscles under anaerobic respiration. Or B. Neha consumed boiled sweet potatoes and boiled eggs for breakfast. Help her to understand some steps in the process of digestion of the food taken by her by answering the questions given below. A. Which of these food items is rich in proteins? In which part of the alimentary canal is the digestion of this component initiated? Name the enzymes, conditions required and the glands associated with the digestion here. B. Which of these food items is rich in starch? How is its digestion initiated? C. Which of these food items contains fats? How is it digested.	4
16	Attempt either A or B A. (a) . Compare asexual and sexual reproduction. Write any three differences. (b) . What is binary fission? Explain the process with the help of a suitable example and diagram. Or B. Puneet wanted to grow banana plants. (a) Based on your knowledge on plant reproduction, should he opt for seeds or any alternate method of reproduction? Justify your answer. (b) Offsprings of a banana plant usually show very little variation. What causes variation, and are variations good or bad? Justify.	5
	SECTION B (CHEMISTRY)	
17	What is true about cellular respiration that takes place in animals? a. It is an exothermic reaction b. It is an endothermic reaction	1

	c. It is a double displacement reaction d. It is a neutralisation reaction	
18	Samina has taken 5 mL of lead nitrate solution in a test tube and add 4 mL drops of potassium iodide solution to it. What would she observe?  a. Solution turned red b. Solution turned blue c. White ppt. was formed d. Yellow ppt. was formed	1
19	Which of the following has a chemical formula $CaCO_3$? I. Limestone II. Lime water III. Quick lime IV. Chalk V. Marble a. I, IV and V b. I, II and III c. III, IV and V d. Only I	1
20	On passing excess of carbon dioxide through lime water, the following happens a. Lime water turns milky and white ppt. of calcium carbonate formed b. Soluble calcium bicarbonate is formed c. Insoluble white ppt. of calcium bicarbonate is formed d. Soluble calcium carbonate is formed	1
21	The aqueous solution of which one of the following salts will have pH more than 7? a. NH_4Cl b. NaCl c. Na_2CO_3 d. $NaNO_3$	1
22	Ramesh adds a highly reactive metal in a test tube containing water. The pH of the solution a. Increases b. Decreases c. Remains same d. First decreases then increases	1
23	Which of the following has double bond between the atoms of following compounds? i. N_2 ii. O_2 iii. C_2H_4 iv. C_4H_8 a. (i) and (ii) b. (iii) and (iv) c. (ii), (iii) and (iv) d. Only (iii)	1
The following question consist of two statements – Assertion (A) and Reason (R). Answer these questions by selecting the appropriate option given below: 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.		
24	Assertion (A): The universal indicator shows different colours at different concentration of H^+ ions in a solution. Reason (R): Higher the hydronium ion concentration, higher is the pH value.	1
25	Why is sodium metal always stored in kerosene?	2
26	Explain the following with suitable reasons: (a) Aluminium is used for making cooking utensils. (b) Copper is used in electrical wires. (c) Zinc is used for galvanisation of iron.	3

27	A student adds dilute hydrochloric acid to zinc granules in a test tube and quickly closes it with a cork fitted with a delivery tube. The other end of the tube is dipped in a soap solution. Bubbles are formed in the soap solution. Answer the following: (a) Which gas is evolved in the reaction? (b) Write the balanced chemical equation for the reaction. (c) What will happen if a burning matchstick is brought near the bubbles?	3
28	Ravi's mother stored some iron nails in the kitchen. After a few days, he noticed that the shiny iron nails had developed a reddish-brown flaky coating. His teacher explained that this is due to a chemical reaction between iron, oxygen, and moisture present in air. Answer the following: (a) Name the process responsible for the formation of the reddish-brown coating. (b) Write the chemical equation for the reaction taking place. (c) What type of chemical reaction is rusting? (d) Suggest two methods to prevent this process.	4
29	Attempt either A or B A. An element 'X' combines with 'Y' to form a colourless, odourless gas 'Z'. 'Z' turns lime water milky. Five 'X' atoms combine with hydrogen to form a cyclic saturated hydrocarbon 'J' and two 'X' atoms combines with hydrogen and forms aliphatic unsaturated hydrocarbon 'Q'. 'Q' is used in gas welding. (a) Identify Z and draw its electron dot structure. (b) Write the chemical formula and IUPAC name of compound Q. (c) What is the common name of Q? (b) How many covalent bonds (single) present in 'J'. Draw its structure and write chemical formula. Or B. A hydrocarbon with the formula C x H y undergoes complete combustion as shown in the following equation: 2 C x H y + 9 O 2 → 6 C O 2 + 6 H 2 O (a) What are the values of 'x' and 'y'? (b) Give the chemical (IUPAC) name of the hydrocarbon. (c) Draw its electron dot structure. (d) Name the alcohol which on heating with conc. H 2 S O 4 will produce the above hydrocarbon C x H y . $C\ x\ H\ y$. (e) Write a balanced chemical equation for the reaction of C x H y with hydrogen gas in presence of Nickel.	5

SECTION C (PHYSICS)		
30	If an incident ray of light falls normally on a reflecting surface of a mirror, what is the angle of reflection? a. 90° b. 45° c. 25° d. 0° 	1
31	If a person, cannot see clearly beyond 2m distinctly. What should be type of lens used to restore proper vision? a. Convex lens c. bifocal lens b. Concave lens d. both (a) and (b)	1
The following question consist of two statements – Assertion (A) and Reason (R). Answer these questions by selecting the appropriate option given below: 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.		
32	Assertion (A): Refractive index has no unit. Reason (R): The refractive index is a ratio of two different quantities	1
33	A current of 0.5 A is drawn by a filament of an electric bulb for 10 minutes. Find the amount of charge flowing through the circuit.	2
34	Light enters from air to glass having refractive index 1.50. Calculate the speed of light in the glass. [Given, the speed of light in vacuum = 3×10^8 m/s].	2
35	Two lamps, one rated 100 W at 220 V and the other 60 W at 220 V, are connected in parallel to a 220 V supply. (a) Draw the circuit diagram. (b) Calculate the current drawn from the line. (c) Calculate the total energy consumed in 1 hour.	3
36	 Study the circuit above having potential difference of 10 V and find (a) Effective resistance of the circuit (b) Current drawn from the battery (c) Potential difference across the first 10 Ω resistance	3

37	Magnetic field lines are shown in the given diagram. A student makes a statement that the magnetic field at X is stronger than at Y. (a) Explain with reason if the student's claim is correct. (b) Also redraw the diagram and mark the direction of magnetic field lines. 	3
38	A dentist uses a concave mirror while examining teeth of patients. The tooth to be observed is placed very close to the mirror. Answer the following: (a) What kind of image is formed by the concave mirror in this case? (b) Draw a ray diagram to show the image formation. (c) State one use of concave mirror other than in dentistry.	4
39	Attempt either A or B A. Two lamps, one rated 100 W at 220 V and the other 60 W at 220 V, are connected in parallel to a 220 V supply. (a) Draw the circuit diagram. (b) Calculate the current drawn from the line. (c) Calculate the total energy consumed in 1 hour. Or B. The arrangement of resistors shown in the figure is connected to a battery. Given: Power dissipation in the 100 Ω resistor is 81 W. Calculate: (a) The current in the circuit (b) The reading on the voltmeter V_2 (c) The reading on the voltmeter V_1 	5

-x-x-x-