KENDRIYA VIDYALAYA SANGATHAN, JABALPUR REGION

PRE-BOARD EXAMINATION-2025-26

Class :X

Subject: SCIENCE (086)

Max marks: 80 **Time allowed: 3 hours**

General Instructions: -

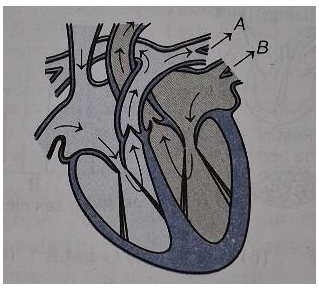
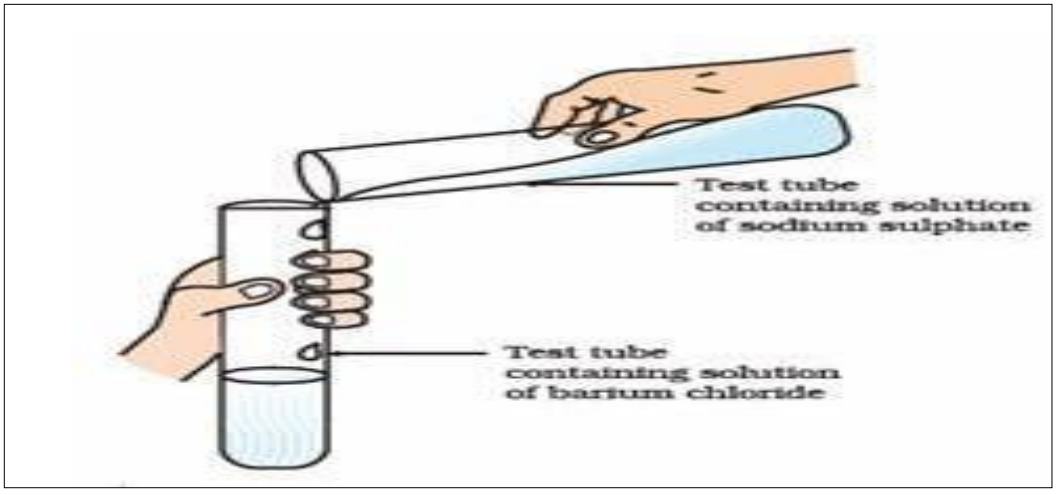
1. This question paper consists of 39 questions in 3 Sections. Section A is Biology; Section B is Chemistry and Section C is physics.
2. All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.

	SECTION –A	Marks
1	A sportsman, after a long break of his routine exercise, suffered muscular cramps during a heavy exercise session. This happened due to: a) Lack of carbon dioxide and formation of pyruvate. b) Presence of oxygen and formation of ethanol. c) Lack of oxygen and formation of lactic acid. d) Lack of oxygen and formation of carbon dioxide.	1
2	Which of the following is know as exocrine as well as endocrine gland? (a) a. Testis b. Pancreas c. Thyroid d. Ovaries	1
3	If T is for tallness and t for dwarfness, what shall be the genotype of a tall pea plant according to Mendelism? a) Tt b) TT or Tt c) tt d) TT	1
4	Which of the following statement(s) is (are) correct? i. Pyruvate can be converted into ethanol and carbon dioxide by yeast ii. Fermentation takes place in aerobic bacteria iii. Fermentation takes place in mitochondria iv. Fermentation is a form of anaerobic respiration a) (ii) and (iv) b) (ii) and (iii) c) (i) and (iii) d) (i) and (iv)	1
5	What will happen if the deer are missing in the following Food Chain? Grass→ Deer →Tiger a) The population of Tigers will decrease and population of grass will increase. b) The tiger will die c) The amount of grass will decrease d) The tigers will start eating grass.	1
6	In which of the following plant, a piece of leaf can regenerate the whole plant? a) Banana b) Rose c) Bougainvillea d) Bryophyllum	1
7	Which of the following is a correct combination of function and part of the brain? a) Posture and balance: cerebrum b) Salivation: medulla in midbrain c) Hunger: pons in hind brain d) Blood pressure: cerebellum in hindbrain	1

Question 8 and 9 have two statements- one labeled **Assertion (A**) and the other labeled **Reason (R)**. Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below: as-

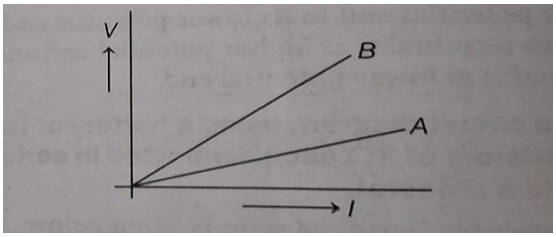
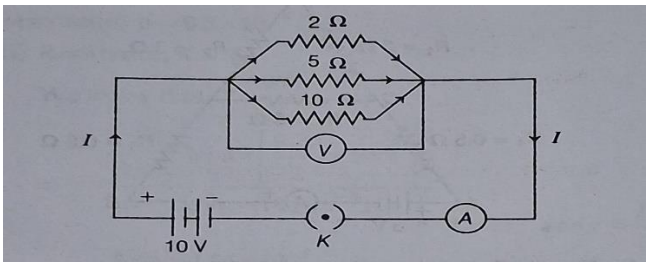
(a) Both A and R is true, and R is correct explanation of the assertion.
(b) Both A and R is true, but R is not the correct explanation of the assertion.
(c) A is true, but R is false.
(d) Both assertion and reason are false

8	**Assertion**-Accumulation of harmful chemicals is maximum in the organisms at the highest trophic level of a food chain. **Reason**- Harmful chemicals are sprayed on the crops to protect them from diseases and pest	1
9	**Assertion**-tallness of a pea plant is controlled by a gene. **Reason**- the gene for that enzyme makes proteins which help the plant to be tall.	1
10	*Students to attempt either A or B* A. List two advantages of growing grapes or banana plant through vegetative propagation. **OR** B. How will an organism be benefitted if it reproduces through spores?	2
11	There is an enzyme which digest food in acidic medium in the presence of HCl in human body, Name the enzyme, place of digestion and the food component it digests. What is the approx. pH in that place?	2
12	Give reason- a) Placenta is extremely essential for foetal development. b) Blocking of vas deferens prevents pregnancy.	2
13	State one important function of ozone layer in the atmosphere. How it is formed there? Which components are responsible for the depletion of ozone layer	3
14	A plant having red color flowers crossed with the other having the same color, produced 40 progenies, out of which 30 plants were with red colored flowers, 10 plants were with white colored flowers. (take R/ r of genetic combination) Find out- a. What is the possible genotype of parent plant? **b.** What is the genotype ratio of progenies? **c.** Write the genotype of progeny in F2 (next) generation, if heterozygous dominant will be crossed with recessive plant, show cross between them.	3
15	Some plants like the pea plant climb up other plants or fences by means of tendrils. These tendrils are sensitive to touch. When they come in contact with any support, the part of the tendril in contact with the object does not grow as rapidly as the part of the tendril away from the object. This causes the tendril to circle around the object and thus cling to it. More commonly, plants respond to stimuli slowly by growing in a particular direction. Because this growth is directional, it appears as if the plant is moving. (a) Name different types of tropism shown by plants. (b) The movement of 'touch me not' plant is different from growth of shoot in the response to light. What is the difference? (c) Give one example of chemotropism. (d) Name the plant hormones which promote and inhibit cell division in plants. **OR** State the plant hormone that stimulates ripening of fruits.	4

16	*Students to attempt either A or B* A. (i) During aerobic respiration, 3 carbon molecules (compound) is formed as an end product instead of CO_2 in some cell of human being, give reason. Name the cells and compound formed. (2 marks) (ii) Glucose breaks in various ways, draw the pathways of break down the glucose in the body of living organisms. (3 marks) **OR** B. (i) Observe the image given below and identify A and B, also write the function of A and B. 2 marks  (ii) What is double circulation? State its importance in human body (any one), 3 marks	5
	SECTION –B	
17	Which of the following equation represents redox reaction and what are the value of 'p' and 'q' in these reactions? Equation 1: $Fe_2O_3(s) + 2Al(s) \longrightarrow Al_2O_3(s) + p\ Fe(I) + heat$ Equation 1: $2C_4H_{10}(G) + 13O_2(g) \longrightarrow 8CO_2(g) + q\ H_2O(g) + heat$ a. Only equation 1 is redox reaction, p = 2 and q =3 b. Both equation 1 and 2 are redox reaction, p = 2 and q =4 c. Only equation 1 is redox reaction, p = 2 and q =10 d. Both equation 1 and 2 are redox reaction, p = 2 and q =10	1
18	What is formed when zinc reacts with sodium hydroxide? (a) Zinc hydroxide and sodium (b) Sodium zincate and hydrogen gas (c) Sodium zinc-oxide and hydrogen gas (d) Sodium zincate and water	1
19	A student took sodium sulphate solution in a test tube and added barium chloride solution to it. He observed that an insoluble substance has formed. The color and molecular formula of the insoluble substance is  a) Grey, Ba_2SO_4 (b)Yellow, $Ba(SO4)$ (c) White, $BaSO_4$ (d) Pink, $BaSO_4$	1
20	Name the functional group present in CH_3COCH_3. A. Alcohol B. Carboxylic acid C. Ketone D. Aldehyde	1

21	Metal oxides react generally with acids but few oxides of metal also react with bases. Such metallic oxides are: - I. MgO II. ZnO III. Al_2O_3 IV. CaO a) I and II b) II and III c) III and IV d) I and IV	1
22	A metal and a non-metal that exist in liquid state at room temperature are respectively: - a) Bromine and Mercury b) Mercury and Bromine c) Mercury and Iodine d) Iodine and Mercury	1
23	Which one of the following salts does not contain water of crystallization? (a) Blue vitriol (b)Washing soda (c) Baking soda (d) Gypsum	1
Question number 24 have two statements- one labeled **Assertion (A**) and the other labeled **Reason (R)**. Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below: as- (a) Both A and R is true, and R is correct explanation of the assertion. (b) Both A and R is true, but R is not the correct explanation of the assertion. (c) A is true, but R is false. (d) Both assertion and reason are false		
24.	**Assertion** – Sodium hydrogen carbonate is used as ingredient in antacids. **Reason**- $NaHCO_3$ is mild non corrosive basic salt.	1
25	A light sensitive compound "X" of silver is used in black and white photography. On the exposure to sunlight its color changes to grey. a. Identify "X" b. Identify the type of chemical reaction c. Write the chemical equation to express the above changes.	2
26	2 g of ferrous sulphate crystals are heated in a dry boiling tube. (a) Name the type of chemical reaction taking place. (b) Write balanced chemical equation for the reaction. (c) Name the 2 gases formed.	3
27	*Students to attempt either A or B* A. A metal carbonate X on heating with an acid gives a gas, this gas when passed through a solution Y gives the carbonate back. Identify X and Y and write chemical equation for both cases. **OR** B. Mention the type of chemical reaction and write the balanced chemical equation that takes place when: (i) Ammonia and hydrogen chloride are mixed with each other. (ii) Lime stone is heated.	3
28	Explain the extraction of zinc and give the reaction involved during extraction of zinc from its ore by- a) Roasting of Zinc ore b) Calcination of Zinc ore	4

29	*Students to attempt either A or B* A. A and B are two organic compounds with the same molecular formula C_5H_{10}. Write their names and structural formulae in case (a) A is a cyclic compound. (b) B is a straight chain compound. (c) Among A and B, which one will have only single bonds? (d) Which one out of 'A' and 'B' has both single and double bonds? **OR** B. a) Name the simplest saturated hydrocarbon. Draw its electron dot structure. Which type of bonds exists in this compound. b) In which homologous series of carbon compounds can this compound be placed? Write the general formula of the series. c) Which type of flame is produced on burning it?	5
	SECTION –C	
30	Rays from Sun converge at a point 15 cm in front of a concave mirror. Where an object should be placed so that size of its image is equal to the size of the object? (a) 15 cm in front of the mirror (b) 30 cm in front of the mirror (c) between 15 cm and 30 cm in front of the mirror (d) more than 30 cm in front of the mirror	1
31	The far point of Myopic a person is 60 cm in front of the eye. what is the nature and power of the lens required to correct the problem? (i) 1.66 D concave (ii) - 1.66 D concave (iii) 1.66 D convex (iv) - 1.66 D convex	1
Question number 32 have two statements- one labeled **Assertion (A)** and the other labeled **Reason (R)**. Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below: as- (a) Both A and R is true, and R is correct explanation of the assertion. (b) Both A and R is true, but R is not the correct explanation of the assertion. (c) A is true, but R is false. (d) Both assertion and reason are false		
32	**Assertion** -Rainbow formed after rain is a natural phenomenon. **Reason** - Rainbow formation occurs due to Refraction, Dispersion and Total Internal Reflection	1
33	Light enters from air to diamond with refractive index 2.42. what is the speed of light in diamond? Given, speed of light in air is $3x10^8$ m/s	2
34	A compass needle is placed near a current carrying wire. State your observation of compass needle for the following cases and give reasons for the same in each case. a. Magnitude of electric current in wire is increased b. The compass needle is displaced away from the wire.	2

35	*Students to attempt either A or B* A. V-I Graph for two conducting wires A and B are as shown. If both wires are of same length and same diameter, which of the two have high resistivity. Give reason to justify your answer.  **OR** B. Three resistors A, B and C, each having 2 Ω resistance are connected in such a way that the total resistance of the combination is 3Ω. Show the arrangement of the three resistors and justify your answer.	3
36	(a) State three factors on which the strength of magnetic field produced by a current carrying solenoid depends. (b) Draw circuit diagram of a solenoid to prepare an electromagnet.	3
37	A myopic person having far point 80 cm using spectacles of power is – 1 D. How far can he see?	3
38	If the image formed by a lens for all position of an object placed in front of it is always erect and diminished, what is the nature of this lens? Draw a ray diagram to justify your answer. If the numerical value of the power of this lens is of 10D, what is its focal length in the Cartesian system? **Or** The image formed by a spherical mirror is real, inverted and is of magnification-2. If the image is at a distance of 30 cm from the mirror, where is the object placed? Find the focal length of the mirror. List two characteristics of the image formed if the object is moved 10 cm towards the mirror.	4
39	*Students to attempt either A or B* A. A circuit diagram is given as shown below, calculate- a) the total effective resistance of the circuit. b) The total current in the circuit. c) The current through each resister  **OR** B. Draw a circuit diagram for a circuit consisting of a battery of five cells of 2 volts each, a 5Ω resistor, a 10 Ω resistor and a15 Ω resistor, an ammeter and a plug key, all connected in series. Also connect a voltmeter to record the potential difference across the 15 Ω resistor and calculate- a. The electric current passing through the above circuit b. Potential difference across 5 Ω resistor when the key is closed.	5