SHRI GULABRAO ESHWARA KHANDVE EDUCATIONAL FOUNDATION

JAGADGURU INTERNATIONAL SCHOOL LOHEGAON, PUNE 411047

PERIODIC TEST - II (A.Y. 2025-2026)

SET B

Name of Student: _____ **Subject: Science(086)**
Class & Div.: XA **Date: 10/10/ 2025**
Roll No. : _____ **Time.: 90 Minutes**

Marks Obtained	
Total Marks :-	40

_____ _____ _____
Invigilator **Examiner** **Moderator**

SET B

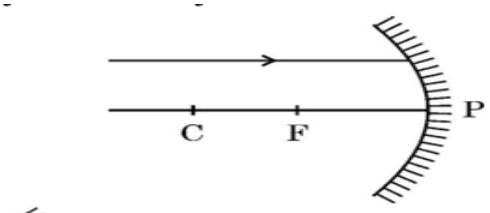
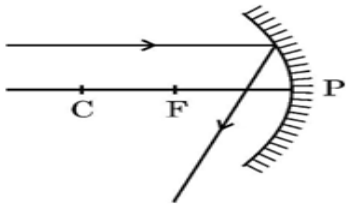
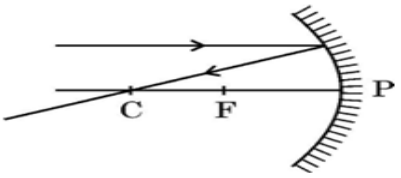
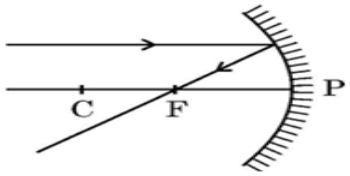
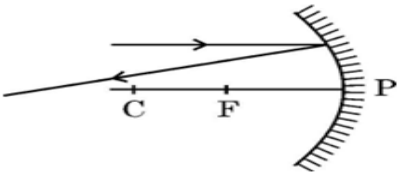
Sr. No	Questions	Marks
	SECTION A (BIOLOGY)	
1	A student conducts an experiment to test the effect of humidity on transpiration. She places two identical plants in different humidity conditions: high humidity and low humidity. After 2 hours, she measures the amount of water lost by each plant. Which of the following is most likely to occur? (A) Both plants will lose the same amount of water. (B) The plant in high humidity will lose more water. (C) The plant in low humidity will lose more water. (D) Neither plant will lose water.	1
2	If a primary producer has 50,000 Kcal of energy how much energy will be available to the tertiary consumer ? (A) 50kcal (B) 500kcal (C) 5,000kcal (D) 50,000kcal	1
3	In some turtle species, what determines the sex of the offspring? (A) Genetic makeup of the parents (B) Temperature at which eggs are incubated (C) Environmental factors like humidity (D) Presence of specific predators	1
4	During seed germination, which part of the seedling emerges first and grows downwards into the soil? (A)Cotyledon (B) Radicle (C) Plumule (D) Hypocotyl	1
5	A woman is using a combination oral contraceptive pill that contains both estrogen and progestin. Which of the following mechanisms is primarily responsible for the contraceptive effect of this pill? (A) Inhibition of ovulation due to suppression of LH and FSH (B) Thickening of cervical mucus to prevent sperm penetration (C) Alteration of the endometrium to prevent implantation (D) Inhibition of sperm motility	1
6	Study the following table and select the row that has the incorrect information.	1

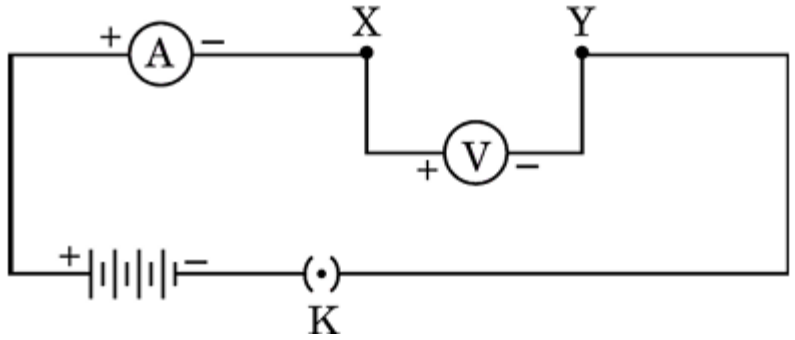
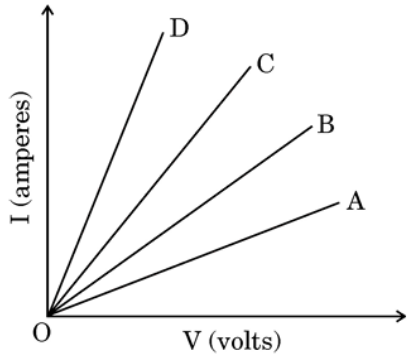
	REFLEX ACTION	WALKING
(i)	Involuntary action	Voluntary action
(ii)	Conducted by spinal cord	Controlled by hind-brain
(iii)	Occurs in fraction of seconds	Takes longer time
(iv)	Intentional and non-mechanical response	Spontaneous ,automatic and mechanical response

	Select the correct option: (A) (i) (B) (ii) (C) (iii) (D) (iv)	
7	A mother is blood group O and the father is blood group B. What are the possible genotypes of the father, and what blood groups can the children have? A) Father's genotype I^B I^B or I^B i, children B or O B) Father's genotype only I^B i, children B or O C) Father's genotype I^B I^B, children only B D) Father's genotype I^B i, children only B	1
8	A cross between a pink flower and a white flower resulted in all pink flowers in F_1 progeny .What would be the genotypic ratio of pure white flowers and hybrid pink flowers in F_2 generation? (A) 3:1 (B) 1:1 (C) 2:1 (D) 1:2	1
The following question consists 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.		
9	Assertion (A): Warm-Blooded animals have their left and right side of heart separated for more efficient supply of oxygen to the body. Reason (R): Warm- blooded animals need high energy to maintain their body temperature.	1
10	Assertion (A):Plants that can reproduce asexually cannot reproduce sexually. Reason (R): Asexual reproduction does not involve the production of the gametes.	1
11	The study of heredity is called genetics. Traits are characteristics such as hair colour, eye colour, artistic or athletic ability, height, and more. Every living organism, plant, or animal, receives its characteristics or traits from its parents. In plants these traits may include seed colour, flower position, length of stem, and much more. The first person to discover this passing of traits was a scientist named Gregor Mendel. He is considered as the father of genetics. He studied pea plants and discovered that certain traits were passed on, or inherited from parent to offspring. (i) In humans if gene B gives brown eyes and gene b gives blue eyes, what will be the colour of eyes of the persons having combinations. (i) Bb and (ii) BB? (a) (i) Blue and (ii) Brown (b) (i) Brown and (ii) Blue (c) (i) Brown and (ii) Brown (d) (i) Blue and (ii) Blue (ii) If a round, green seeded pea plant (RRyy) is crossed with a wrinkled yellow seeded pea plant (rrYY), the seeds produced in F1 generation are: (a) round and green (b) round and yellow (c) wrinkled and green (d) wrinkled and yellow (iii) A cross between two individuals results in a ratio of 9: 3: 3:1 for four possible phenotypes of progeny. This is an example of a: (a) Monohybrid cross (b) Dihybrid cross (c) Test cross (d) F1 generation (iv) A man with blood group A marries a woman having blood group O. What will be the blood group of the child? (a) O only (b) A only (c) AB (d) Equal chance of acquiring blood group A or blood group O	4
SECTION B (CHEMISTRY)		
12	Aluminium metal is significantly more reactive than Iron. Yet, iron objects rust completely	1

	over time while aluminium objects resist extensive corrosion. Which statement best explains this phenomenon? (A) Aluminium oxide is naturally reduced back to aluminium by moisture in the air. (B) Aluminium metal has a much higher density than iron, preventing oxygen penetration. (C) The oxide layer formed on aluminium is thin, tough, and non-porous, acting as a protective barrier to the underlying metal. (D)The layer formed on aluminium is porous and easily flakes off, preventing further reaction.	
13	Which statement correctly differentiates a strong acid from a concentrated acid? (A) A strong acid is always concentrated, and a weak acid is always dilute. (B) A strong acid has a low solute-to-solvent ratio, while a concentrated acid has a high degree of ionization. (C) A strong acid completely ionizes in water to produce ions, while a concentrated acid has a high ratio of acid solute to water solvent. (D) A strong acid is corrosive, while a concentrated acid is not.	1
14	Ionic compounds have high melting points, and they exist as hard, brittle solids at room temperature. This is primarily a result of the: (A) Weak van der Waals forces that allow ions to easily align into a crystal lattice structure. (B) Sharing of electrons between the metal and non-metal atoms to form a stable bond. (C) Malleability of the metal ion, allowing it to conform to the non-metal ion's shape. (D) Very strong electrostatic forces of attraction holding the oppositely charged ions in a rigid, fixed crystal lattice.	1
15	Highly reactive metals like Sodium and Magnesium are extracted from their molten salts by electrolysis, and not by reduction with carbon (coke). Why is carbon reduction ineffective for these metals? (A) These metals are liquid at the reduction temperature, making the process inefficient. (B) Electrolysis is preferred because it is a much cheaper industrial method than heating with carbon. (C) The highly reactive metals have a greater affinity for oxygen than carbon, meaning carbon cannot act as the reducing agent. (D) Carbon reacts with the molten salt to form a poisonous gas, making the process dangerous.	1
16	Consider the following three chemical changes: I. Thermal decomposition of lead nitrate. II. Electrolysis of acidulated water. III. Reaction of silver bromide in sunlight. Which of the following statements about the products of these three changes is accurate? (A) All three reactions produce a metallic element. (B) The gas produced in I and the gas produced in II are both colourless and odourless. (C) Both reactions I and II involve the breaking of bonds by energy, while reaction III is an example of a photochemical reaction. (D) Reaction II is a redox reaction, but reactions I and III are only simple decomposition reactions.	1
17	A student observes that when a bright, shiny metal 'M' is heated in air, it forms a black, brittle oxide 'MO'. When a piece of metal 'M' is dropped into a solution of silver nitrate, a silver-colored deposit forms on the surface of 'M'. Which property of metal 'M' is correct? (A) Metal 'M' is (Iron), and the oxide 'MO' is reddish-brown. (B) Metal 'M' is (Copper), and the oxide 'MO' is basic, reacting with acids to form salt and water. (C) Metal 'M' is (Zinc) and is characterized by the formation of an amphoteric oxide.	1

	(D) Metal 'M' is (Silver) and has a lower affinity for oxygen than hydrogen.	
18	Food cans are coated with tin and not with zinc because: (A) zinc is costlier than tin. (B) zinc has a higher melting point than tin. (C) zinc is more reactive than tin. (D) zinc is less reactive than tin.	1
The following question consists 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.		
19	Assertion: Copper is used to make hot water tanks and not steel (an alloy of iron). Reason: Copper does not react with hot water.	1
20	Assertion: Ammonia is acidic in nature. Reason: Ammonia dissolves in water and forms OH^-.	1
21	A chemist studies the properties and potential extraction methods of four metals:A ,B ,C , and D . The following observations were made: 1. **Metal A :** Reacts with cold water to produce a solution of its hydroxide and gas. It is extracted by **electrolysis** of its molten chloride salt. 2. **Metal B:** Does not react with water, even as steam, but reacts with dilute . Its common oxide is reduced to the metal by heating with Carbon. 3. **Metal C:** Is found in nature in its **free state** (native state) and forms a sulfide that can be converted to the metal simply by heating in air. 4. **Metal D :** Does not react with water or dilute acids, and its oxide is not reducible by Carbon or Bmetal, but it can be reduced by A metal. **Q1. Which option correctly identifies the likely placement of the four metals in the Reactivity Series (from most reactive to least reactive)?** (A) C > B > A > D (B) A > B > D > C (C) A > D > B > C (D) B > A > C > D **Q2. Metal C's unique occurrence in the free state is chemically due to:** (A) Its ability to form amphoteric oxides. (B) Its strong affinity for oxygen and moisture. (C) Its position below Hydrogen and its inherent low reactivity. (D) Its high electrical conductivity in the solid state. **Q3. The difference in extraction methods for Metal A (electrolysis) and Metal B (reduction by Carbon) is due to the fact that:** (A) Metal B is a noble metal, while Metal A is a transition metal. (B) Metal A's compounds are too stable for the cheap chemical reducing agent Carbon to be effective. (C) Metal B is more volatile than A, requiring thermal reduction. (D) Metal A forms covalent compounds, while Metal B forms ionic compounds. **Q4. Which of the following displacement reactions would occur based on the information provided?** (A) B + D's sulfate → No reaction (B) C + D's oxide →C's oxide + D (C) A + B's chloride → A's chloride + B (D) D + A's chloride → D's chloride + A	4
SECTION C (PHYSICS)		

22	An old person is suffering from an eye defect caused by weakening of ciliary muscles and diminishing flexibility of the eye lens. If the defect of vision is 'a' which can be corrected by lens 'b', then 'a' and 'b' respectively are : (A) hypermetropia and convex lens (B) presbyopia and bifocal lens (C) myopia and concave lens (D) myopia and bifocal lens	1
23	**Identify from the following the ray diagram which shows the correct path of the reflected ray for the ray incident on a concave mirror as shown :**  (A)  (B)  (C)  (D)  	1
24	An object is placed at a distance of 30 cm from the pole of a concave mirror. If its real and inverted image is formed at 60 cm in front of the mirror, the focal length of the mirror is : (A) – 15 cm (B) – 20 cm (C) + 20 cm (D) + 15 cm	1
25	Mirror 'X' is used to concentrate sunlight in solar furnace and Mirror 'Y' is fitted on the side of the vehicle to see the traffic behind the driver. Which of the following statements are true for the two mirrors ? (i) The image formed by mirror 'X' is real, diminished and at its focus. (ii) The image formed by mirror 'Y' is virtual, diminished and erect. (iii) The image formed by mirror 'X' is virtual, diminished and erect. (iv) The image formed by mirror 'Y' is real, diminished and at its focus. (A) (i) and (ii) (B) (iii) and (iv) (C) (ii) and (iii) (D) (i) and (iv)	1
26	An electric bulb is connected to a power supply of 220 V. If the current drawn by the bulb from the supply is 500 mA, the power of the bulb is : (A) 11 W (B) 110 W (C) 220 W (D) 1100 W	1
27	In the given figure the angle of incidence and the angle of deviation respectively are : (A) 1 and 5 (B) 7 and 6 (C) 7 and 4 (D) 1 and 6	1
28	A wire of length 'l' is gradually stretched so that its length increases to 3l. If its original resistance is R, then its new resistance will be : (A) 3R (B) 6R (C) 9R (D) 27R	1
The following question consists 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.		
29	Assertion (A) : A human child bears all the basic features of human beings. Reason (R) : It looks exactly like its parents, showing very little variations.	1

30	Assertion (A) : When ciliary muscles contract, eye becomes thin. Reason (R) : Ciliary muscles control power of the eye lens.	1
31	As shown in the diagram, an electric circuit consisting of an ammeter, a voltmeter, 4 cells of 1·5 V each, a plug key with a gap XY was set up. Voltmeter and ammeter readings were recorded in the observation table for four arrangements as given below : Arrangement No. 1 – only resistor R1 in gap XY Arrangement No. 2 – only resistor R2 in gap XY Arrangement No. 3 – Resistors R1 and R2 in series in gap XY Arrangement No. 4 – Resistors R1 and R2 in parallel in gap XY  Based on the observations, four V – I graphs A, B, C and D as shown in figure were drawn. Study these graphs.  (a) Which one of the graphs represents the series combination of R1 and R2 ? (1) (b) Which one of these graphs represents the parallel combination of R1 and R2 ? (1) (C) A battery of 6 V is connected with a series combination of five resistors of 0·1 Ω, 0·2 Ω, 0·3 Ω, 0·4 Ω and 0·5 Ω. How much current would flow through the 0·3 Ω resistor ? (2)	4