



B.K. BIRLA CENTRE FOR EDUCATION

SARALA BIRLA GROUP OF SCHOOLS
A CBSE DAY-CUM-BOYS' RESIDENTIAL SCHOOL



TERM-1 EXAM 2026-27

SCIENCE

SET-II

MARKING SCHEME

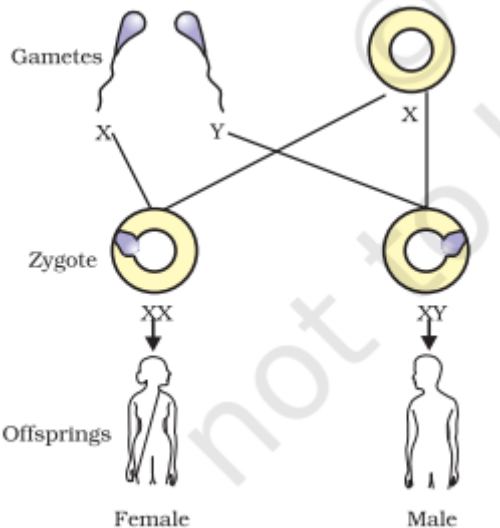
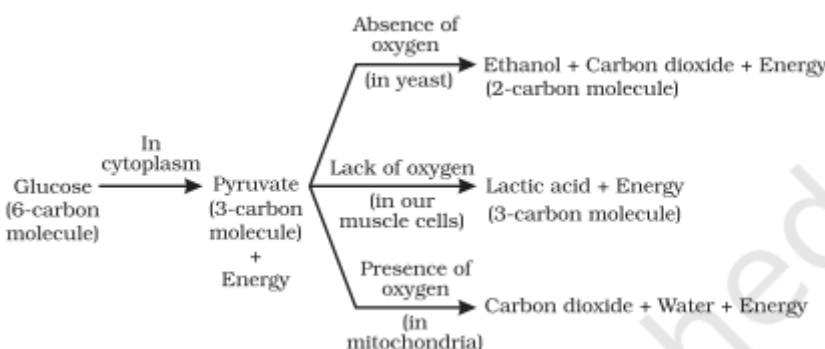
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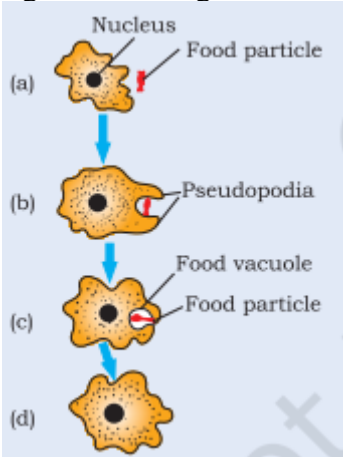
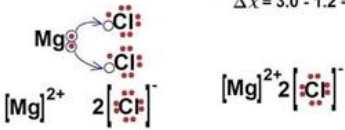
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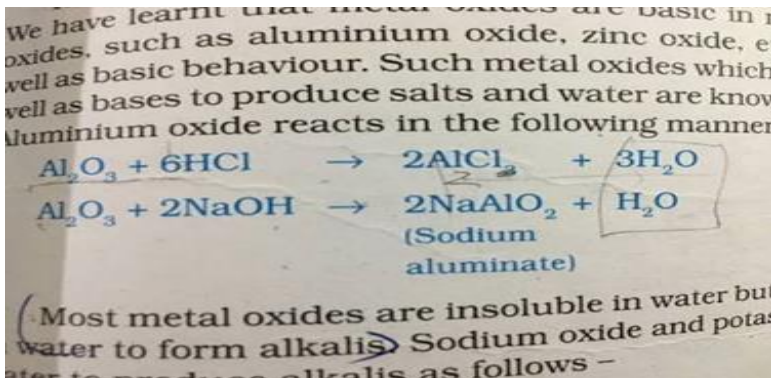
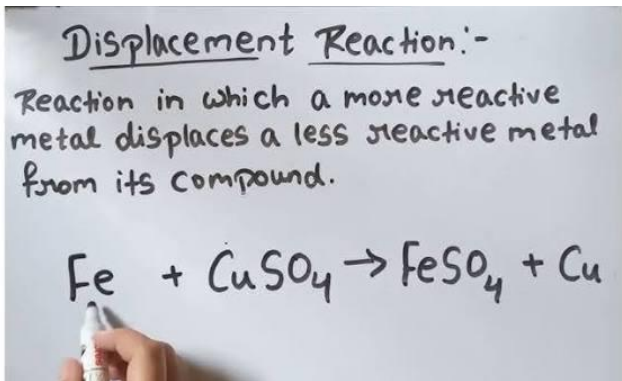
Time: 3 hours

Max Marks: 80

Section-A BIOLOGY		
1	(b) Parasitic nutrition	1
2	(c) Multiple fission	1
3	(d) Ovulation	1
4	(c) 100%; 75%	1
5	(a) Iron is essential for the synthesis of thyroxin	1
6	(d) (ii) and (iv)	1
7	(c) Pollination → Fertilisation → Embryo → Seedling	1
8	C. A is true but R is false.	1
9	A. Both A and R are true, and R is the correct explanation of A.	1
10	(a) Barrier method • Prevents sperm from reaching the egg. • Example: Condom. (b) Surgical method • Permanent method that blocks the transport of gametes. • Example: Vasectomy (male) or Tubectomy (female).	2
11	Pea plants have many contrasting characters. They are naturally self-pollinating but can also be cross-pollinated easily.	2
12	Herbivores eat cellulose-rich food, which takes longer to digest; therefore, they have a longer small intestine. The hydrochloric acid and digestive enzymes would damage the stomach lining, causing ulcers.	2
13	(i) Positive phototropism: Shoot grows towards light. (ii) Negative phototropism: Root grows away from light. (iii) Positive geotropism: Root grows downward into the soil. (iv) Negative geotropism: Shoot grows upward away from gravity. (v) Hydrotropism: Roots grow towards water. (vi) Chemotropism: Pollen tube grows towards the ovule.	3

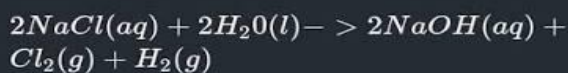
14	 The diagram illustrates the process of human sex determination. At the top, two gametes are shown: one labeled 'X' and one labeled 'Y'. These gametes combine with an 'X' gamete from the other parent to form a zygote. If the zygote is 'XX', it develops into a female offspring. If the zygote is 'XY', it develops into a male offspring.	3
15	Placenta: A temporary organ connecting the foetus to the mother's uterus. Functions: • Supplies oxygen and nutrients to the foetus. • Removes carbon dioxide and waste products from the foetus. • Produces hormones to support pregnancy. (b) What happens to the lining of uterus? (i) Before implantation of a fertilised egg: • The uterine lining becomes thick, soft and rich in blood vessels. (ii) If no fertilisation occurs: • The lining breaks down and is shed as menstruation. OR (c) Name two bacterial and two viral STIs. Bacterial: • Gonorrhoea • Syphilis Viral: • AIDS (HIV infection) • Genital herpes	4
16	 The flowchart shows the process of cellular respiration. Glucose (6-carbon molecule) is broken down in the cytoplasm into Pyruvate (3-carbon molecule) and Energy. Pyruvate then enters the mitochondria. In the absence of oxygen (in yeast), it produces Ethanol + Carbon dioxide + Energy (2-carbon molecule). In the lack of oxygen (in our muscle cells), it produces Lactic acid + Energy (3-carbon molecule). In the presence of oxygen (in mitochondria), it produces Carbon dioxide + Water + Energy. a. A(ii). Effect on the rate of photosynthesis (i) Cloudy days: Decreases. (ii) No rainfall (water shortage): Decreases. (iii) Good manuring: Increases. (iv) Stomata blocked by dust: Decreases. OR B. Nutrition in Amoeba Steps:	5

	1. Ingestion: Amoeba engulfs food using pseudopodia. 2. Digestion: Food is digested inside the food vacuole. 3. Absorption: Digested food is absorbed into the cytoplasm. 4. Assimilation: Absorbed food is used for growth and energy. 5. Egestion: Undigested food is expelled through the cell membrane.  b.	
Section-B Chemistry		
17	(b) 100°C	1
18	(a) 5	1
19	(c) Decomposition	1
20	(b) Sodium zincate and hydrogen gas	1
21	(a) washing soda	1
22	(b) HCl	1
23	(c) 2:1	1
24	A. Both A and R are true, and R is the correct explanation of A.	1
25	How can we write the equations? metal + acid → salt + water + carbon dioxide carbonate calcium + hydrochloric → calcium + water + carbon carbonate acid chloride dioxide $\text{CaCO}_3 + 2\text{HCl} \rightarrow \text{CaCl}_2 + \text{H}_2\text{O} + \text{CO}_2$ zinc + sulphuric → zinc + water + carbon carbonate acid sulphate dioxide $\text{ZnCO}_3 +$	2
26	Magnesium Chloride MgCl_2 $\text{Mg} \Rightarrow 2e^- \quad \chi_{\text{Mg}} = 1.2$ $\text{Cl} \Rightarrow 7e^- \quad \chi_{\text{Cl}} = 3.0$ $\Delta\chi = 3.0 - 1.2 = 1.8$  $[\text{Mg}]^{2+} \quad 2[:\ddot{\text{Cl}}:]^- \quad [\text{Mg}]^{2+} 2[:\ddot{\text{Cl}}:]^-$	3

	OR As it is an ionic compound it is very strong in solid state . In molten state the strong forces of attraction have overcome due to heat as a result the ions moves to carry electrons to conduct electricity while they dos't do in solid state.	
27	 We have learnt that metal oxides are basic in nature. Such metal oxides, such as aluminium oxide, zinc oxide, etc., exhibit basic behaviour. Such metal oxides which exhibit basic behaviour, as well as bases to produce salts and water are known as basic oxides. Aluminium oxide reacts in the following manner $\text{Al}_2\text{O}_3 + 6\text{HCl} \rightarrow 2\text{AlCl}_3 + 3\text{H}_2\text{O}$ $\text{Al}_2\text{O}_3 + 2\text{NaOH} \rightarrow 2\text{NaAlO}_2 + \text{H}_2\text{O}$ (Sodium aluminate) (Most metal oxides are insoluble in water but react with water to form alkalis) Sodium oxide and potassium oxide react with water to produce alkalis as follows -	3
28	(a)  <u>Displacement Reaction</u>:- Reaction in which a more reactive metal displaces a less reactive metal from its compound. $\text{Fe} + \text{CuSO}_4 \rightarrow \text{FeSO}_4 + \text{Cu}$ (b)	4

	What is double displacement reaction ? Explain with the help of an example. Defⁿ:- Those reactions in which two compounds react by an exchange of ions to form two new compounds are called double displacement reactions. Ex:- $\text{AgNO}_3(\text{aq}) + \text{NaCl}(\text{aq}) \rightarrow \text{AgCl} + \text{NaNO}_3$ Silver nitrate Sodium chloride Silver chloride Sodium nitrate  © Exothermic Reaction The chemical reactions which proceed with the evolution of heat energy are called exothermic reactions. Examples: Carbon burns in oxygen to form carbon dioxide and heat energy is produced. $\text{C} + \text{O}_2 \rightarrow \text{CO}_2 + \text{Heat}$ 	
29	(i) A (ii) C (b)	5

(a) When electricity is passed through an aqueous solution of Sodium Chloride (called brine), it decomposes to form Sodium hydroxide. The process is called the Chlor-alkali process



(b) Chlorine gas (Cl_2) is given off at anode and Sodium hydroxide (NaOH) is formed near the Cathode

(c) Base Which is Soluble in Water is known as alkali

Example :- Sodium Hydroxide (NaOH)

OR

⇒ Bacteria present in mouth produces acids by decaying the food particles present in our mouth which is left in mouth after eating.

⇒ The acid is so strong that it attacks the enamel (strongest and toughest tissue in human body) can start to decay under its action.

⇒ Tooth enamel, made up of calcium phosphate. It is not soluble in water.

⇒ The enamel gets corroded in pH less than 5.5 and tooth begins to decay.

⇒ To prevent this we should brush our teeth with toothpaste because it contains base.

- Rinse mouth after intake of food
- Brush with fluoride paste after eating
- Eat healthy foods
- Have dental hygiene

) (i)

(ii) hydrochloric acid Acetic acid, water

(b)

	a) $\text{CaOCl}_2 \rightarrow$ Bleaching powder. By passing chlorine into dry slaked lime. $\text{Ca(OH)}_2 + \text{Cl}_2 \rightarrow \text{CaOCl}_2$ * 1. Used for bleaching the wood pulp in paper industry. 2. Used for disinfecting drinking water. i) Chemical name of washing soda $\rightarrow$ Sodium carbonate [hydrated] $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$ * By heating baking soda, Sodium carbonate is obtained. its recrystallisation gives washing soda. $2\text{NaHCO}_3 \xrightarrow{\Delta} \text{Na}_2\text{CO}_3 + \text{H}_2\text{O} + \text{CO}_2$ $\text{Na}_2\text{CO}_3 + 10\text{H}_2\text{O} \rightarrow \text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$ doubtnut	
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Section-C Physics

30	(a) 25 cm	1
31	(b) ohm-metre	1
32	A. Both A and R are true, and R is the correct explanation of A.	1
33	$1/f = 1/v + 1/u$ $1/f = 1/(-60) + 1/(-30)$ $1/f = -1/20$ $f = -20 \text{ cm}$ $m = -2$ Or the ability to bend light rays, measured as the reciprocal of its focal length in meters, and its SI unit is the dioptre. $f = 100/(-4) = -25 \text{ cm}$	2
34	Resistivity is the intrinsic property of a material that measures how strongly it opposes the flow of electric current. The resistance of wire A is one-fourth the resistance of wire B, $r_A/r_B = 1/4$.	2
35	$1/f = 1/v - 1/u$ $1/(20) = 1/v - 1/(-30)$ $1/v = 1/20 - 1/30$ $1/v = 1/60$ $V = 60 \text{ cm}$ $m = v/u = 60/-30 = -2$ Real, Inverted and Enlarged	3
36	This vision defect is myopia, or near-sightedness. A common cause is the elongation of the eyeball or excessive curvature of the cornea. A concave lens corrects it. The near point of the eye is the closest distance at which the eye can see an object clearly without strain. Defect Details Name: Myopia (near-sightedness).	3

	- Condition: Distant objects appear blurry. Nearby objects look clear. Cause and Correction - Cause: The eyeball becomes too long, or the eye lens curves too much. - Result: Light rays focus in front of the retina instead of directly on it. - Correction: A concave lens spreads out light rays before they enter the eye. Near Point of the Eye - Definition: The minimum distance where the eye focuses sharply. - Normal value: About 25 centimetres for a young adult with normal vision.	
37	$R = \rho L/A$ since volume is constant if $l = 2L$ $a = A/2$ $R' = 4R$ $R = 40\Omega$	3
38	(i) Atmospheric refraction is the bending of light or other waves as they pass through layers of air with different temperatures and densities (ii) Stars twinkle because they are far away and act as single points of light. Earth's moving air bends this thin light stream. Planets do not twinkle because they are close and look like tiny discs. Light from different parts of the disc balances out to steady light. (iii) The Sun is visible about two minutes before actual sunrise because of atmospheric refraction. As light from the Sun passes from the thin vacuum of space into the denser layers of Earth's atmosphere, it bends. This bending makes the Sun appear higher in the sky than its true geometric position, letting us see it even when it is still below the horizon. Or The Sun appears flattened or oval-shaped near the horizon because of atmospheric refraction. Light rays from the lower edge of the Sun pass through denser, thicker air and bend upward more than the rays from the upper edge. This unequal bending compresses the vertical height while the horizontal width stays the same.	4
39	(a) The centre of curvature of a spherical mirror or lens system is the centre of the imaginary hollow sphere (or spheres) from which the reflecting or refracting surface is made. For a spherical mirror specifically, it is the exact centre of the single sphere that the mirror's surface forms a part of (b) $1/v = 1/f + 1/u$ $1/v = 1/15 + 1/(-30)$	5

$$1/v = 1/30$$

$$v = 30 \text{ cm}$$

$$h_i/h_o = v/u$$

$$h_i = 5 \times 30 / (-30) = -5 \text{ cm}$$

OR

- (a) The laws of refraction of light state that the incoming ray, the bent ray, and the normal line all lie in the same plane. Additionally, the ratio of the sine of the angle of incidence to the sine of the angle of refraction is always constant, known as Snell's Law.

(b) $1/v = 1/f + 1/u$

$$1/v = 1/10 + 1/(-20)$$

$$1/v = -1/20$$

$$v = -20 \text{ cm}$$

nature real and inverted size 2 cm