

CCE RF/RR/PF/PR

A

ಕರ್ನಾಟಕ ಶಾಲಾ ಪರೀಕ್ಷೆ ಮತ್ತು ಮೌಲ್ಯನಿರ್ಣಯ ಮಂಡಲಿ, ಮಲ್ಲೇಶ್ವರಂ, ಬೆಂಗಳೂರು - 560 003

**KARNATAKA SCHOOL EXAMINATION AND ASSESSMENT BOARD,
MALLESHWARAM, BENGALURU - 560 003**

ಮೇ 2026 ರ ಪರೀಕ್ಷೆ - 2

MAY 2026 EXAMINATION - 2

ಮಾದರಿ ಉತ್ತರಗಳು

MODEL ANSWERS

ಸಂಕೇತ ಸಂಖ್ಯೆ : 83-E

CODE NO. : 83-E

ವಿಷಯ : ವಿಜ್ಞಾನ

Subject : SCIENCE

(ಭೌತ ವಿಜ್ಞಾನ, ರಸಾಯನ ವಿಜ್ಞಾನ ಮತ್ತು ಜೀವ ವಿಜ್ಞಾನ / Physics, Chemistry & Biology)

**(ಶಾಲಾ ಅಭ್ಯರ್ಥಿ / ಶಾಲಾ ಪುನರಾವರ್ತಿತ ಅಭ್ಯರ್ಥಿ / ಖಾಸಗಿ ಅಭ್ಯರ್ಥಿ /
ಖಾಸಗಿ ಪುನರಾವರ್ತಿತ ಅಭ್ಯರ್ಥಿ)**

(Regular Fresh / Regular Repeater / Private Fresh / Private Repeater)

(ಭೌತ ವಿಜ್ಞಾನ / Physics)

(ಇಂಗ್ಲಿಷ್ ಮಾಧ್ಯಮ / English Medium)

ದಿನಾಂಕ : 19. 05. 2026]

[ಗರಿಷ್ಠ ಅಂಕಗಳು : 80

Date : 19. 05. 2026]

[Max. Marks : 80

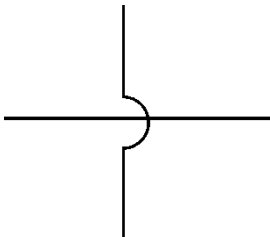
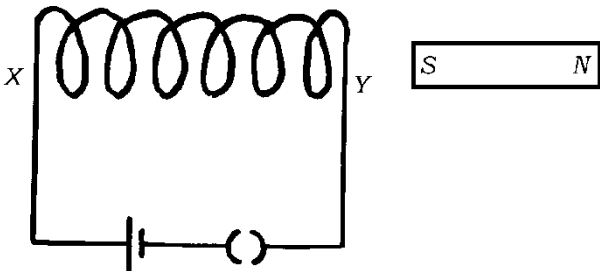
PART - A

(Physics)

Qn. Nos.	Value Points	Total
I.	Multiple choice questions : 2 × 1 = 2	
1.	The SI unit of electric current is (A) ampere (B) ohm (C) volt (D) watt Ans. : (A) ampere	1

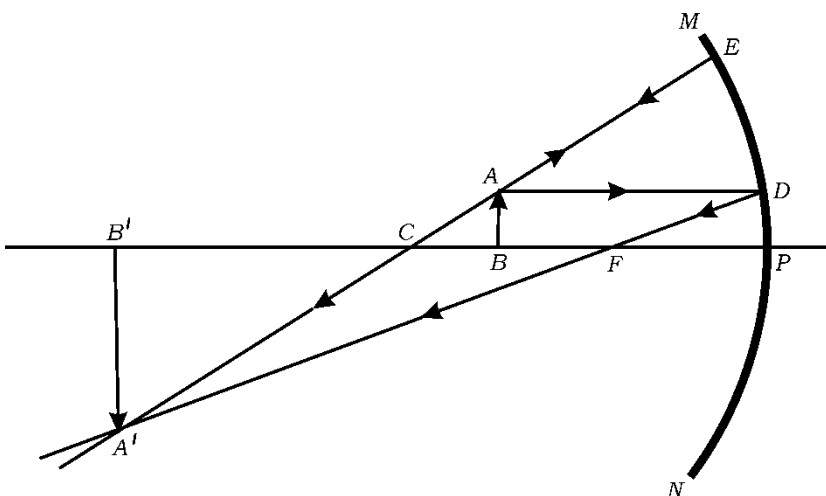
E-2/1102 (MA) PHY

[Turn over

Qn. Nos.	Value Points	Total
2.	If a ray of light enters from denser medium to a rarer medium obliquely, then the correct statement related to the speed and bending of that light ray in the rarer medium is (A) speed decreases and bends towards the normal (B) speed increases and bends away from the normal (C) speed decreases and bends away from the normal (D) speed increases and bends towards the normal Ans. : (B) speed increases and bends away from the normal	1
II.	Answer the following questions : 2 × 1 = 2	
3.	Write the symbol diagram of the wire crossing without joining used in an electric circuit. Ans. : 	1
4.	Observe the below figure. When switch is put on, does the Y end of the solenoid repel the S pole of the bar magnet ? Clarify the answer.  Ans. : No, / it will not repel. / It attracts the S pole. Because, the Y end of solenoid behaves like north pole	$\frac{1}{2} + \frac{1}{2}$ 1

Qn. Nos.	Value Points	Total
III.	Answer the following questions : $3 \times 2 = 6$	
5.	Explain the Newton's experiment that shows the recombination of spectrum of white light. <i>Ans. :</i> ★ Newton obtained a spectrum of white light using glass prism. Then allowed the spectrum through identical prism placed in an inverted position with respect to first prism. 1 ★ He found white light ray emerging from the other side of second prism. This shows the recombination spectrum of white light. 1	2
6.	What is the function of earth wire ? Mention any two precautionary measures to be taken to avoid overloading in domestic electric circuit. <i>Ans. :</i> a) If any leakage of current occurs in the electrical appliances, earth wire keeps their potential difference the same as to that of the earth/provides a low resistance conducting path for the current. 1 Precautionary measures to avoid overload : ★ Fuse should be used in electric circuit ★ Should avoid the direct contact of live wire and neutral wire ★ Avoid the damage of insulation of wire ★ Should repair any faults in the electrical appliances ★ Should not connect too many appliances to a single socket. (Any two) $2 \times \frac{1}{2}$	2

Qn. Nos.	Value Points	Total
7.	2 Ω and 4 Ω resistors are connected in parallel in an electric circuit. If 6 Ω resistor is used instead of 4 Ω, then find the difference between the total resistance obtained in both of these arrangements. Ans. : $R_1 = 2 \Omega$ $R_2 = 4 \Omega$ $\frac{1}{R_{p_1}} = \frac{1}{R_1} + \frac{1}{R_2}$ $= \frac{1}{2} + \frac{1}{4}$ $= \frac{2+1}{4}$ $\frac{1}{R_{p_1}} = \frac{3}{4}$ Therefore $R_{p_1} = \frac{4}{3} = 1.33 \Omega$ Now $R_1 = 2 \Omega$ $R_2 = 6 \Omega$ $\frac{1}{R_{p_2}} = \frac{1}{R_1} + \frac{1}{R_2}$ $= \frac{1}{2} + \frac{1}{6}$ $= \frac{3+1}{6}$ $\frac{1}{R_{p_2}} = \frac{4}{6}$ Therefore $R_{p_2} = \frac{6}{4} = 1.5 \Omega$ $R_{p_2} - R_{p_1} = 1.5 - 1.33$ $= 0.17 \Omega$	1 $\frac{1}{2}$ $\frac{1}{2}$ 2

Qn. Nos.	Value Points	Total
IV.	Answer the following questions : 3 × 3 = 9 8. Draw the ray diagram for the image formation in a concave mirror when the object is placed between 'C' and 'F'. Mention the position and size of the image formed. [C : Centre of curvature, F : Principal focus] Ans. : Ray diagram of image of the object kept between C and F of concave mirror.  Mirror : $\frac{1}{2}$ Correct position of the object : $\frac{1}{2}$ Correct position of the image : $\frac{1}{2}$ Correct rays : $\frac{1}{2}$ Position of image — formed beyond C $\frac{1}{2}$ Size of image — Enlarged $\frac{1}{2}$ 3 9. a) How does rainbow form in the atmosphere ? Explain. b) What is Tyndall effect ? OR What is power of accommodation of the eye ? What is myopia (near-sightedness) ? Mention the causes for this defect.	

Qn. Nos.	Value Points	Total
	<i>Ans. :</i> a) ★ Rainbow is caused by the dispersion of sunlight by tiny water droplets present in the atmosphere. $\frac{1}{2}$ ★ Water droplets act like small prisms, they refract and disperse the sunlight, then reflect internally and finally refract when it comes out of water drops. 1 ★ Due to dispersion of light and internal reflection, different colours reach the observer's eye. $\frac{1}{2}$ b) The phenomenon of scattering of light by tiny particles of a colloid is called Tyndall effect. 1 OR ★ The ability of the eye lens to adjust its focal length is called power of accommodation. 1 ★ Myopia (near-sightedness) is the ability to see nearby objects clearly but not distant objects distinctly. 1 <i>Causes :</i> i) excessive curvature of the eye lens $\frac{1}{2}$ ii) elongation of the eyeball. $\frac{1}{2}$	3
10.	Explain an activity of drawing magnetic field lines around a bar-magnet using a compass needle. OR Explain an experiment to show that 'a current carrying conductor when kept in the magnetic field experiences a force'.	

Qn. Nos.	Value Points	Total
	<i>Ans. :</i> ★ Take a small compass and a bar magnet $\frac{1}{2}$ ★ Place the bar magnet on a white sheet attached to a drawing sheet and mark the boundary around the bar magnet. $\frac{1}{2}$ ★ Place the compass near the north pole of the bar magnet and mark the position of the two ends of the compass. $\frac{1}{2}$ ★ The compass should be moved so that the south pole of the compass occupies the position previously occupied by the north pole of the compass $\frac{1}{2}$ ★ Similarly, the compass should be continued until it reaches the south pole of the bar magnet. The marked points should be joined by a smooth curve. This represents the magnetic lines of force. 1 OR ★ Suspend a small rod of aluminium with the help of two conducting wires. $\frac{1}{2}$ ★ Take a powerful horseshoe magnet with its magnetic field facing upwards and place the small rod between the two poles. $\frac{1}{2}$ ★ Connect the aluminium rod in series to a battery, switch and rheostat. $\frac{1}{2}$ ★ Now, current is passed through the aluminium rod in a particular direction. $\frac{1}{2}$ ★ Then the rod is displaced in one direction. $\frac{1}{2}$ ★ When the direction of the current in the rod is changed, it is displaced in the opposite direction. $\frac{1}{2}$	3

Qn. Nos.	Value Points	Total
V.	Answer the following questions : 2 × 4 = 8	
11.	a) An image of an object is formed at a distance of 20 cm from a concave lens of focal length 30 cm. Then find the object distance. b) An object of height 4 cm is placed perpendicular to the principal axis of a convex lens. If the image distance and the object distance are 60 cm and 30 cm respectively, then find the height and magnification of the image. <i>Ans. :</i> a) Image distance $v = -20$ cm Focal length $f = -30$ cm Object distance $u = ?$ Since $\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$ $\frac{1}{2}$ $\frac{1}{u} = \frac{1}{f} - \frac{1}{v}$ $= \frac{1}{-30} - \frac{1}{(-20)}$ $= \frac{-1}{30} + \frac{1}{20}$ $= \frac{-3+2}{60}$ $\frac{1}{u} = \frac{-1}{60}$ or $u = -60$ m Thus, the object distance is 60 cm. $\frac{1}{2}$ b) Height of the object $h = 4$ cm Image distance $v = 60$ cm Object distance $u = -30$ cm Height of the image $h' = ?$ Magnification $m = ?$ Since $m = \frac{h'}{h} = \frac{v}{u}$ $\frac{1}{2}$	

Qn. Nos.	Value Points	Total
	Height of the image $h' = h \left(\frac{v}{u} \right)$ $h' = 4 \left(\frac{+60}{-30} \right)$ $h' = -8 \text{ cm}$ $\frac{1}{2}$ Therefore the height of image is 8 cm Magnification $m = \frac{v}{u}$ $\frac{1}{2}$ $= \frac{60 \text{ cm}}{-30 \text{ cm}}$ $m = -2$ $\frac{1}{2}$ So, magnification is -2.	4
12.	a) State Joule's law of heating and name any one appliance that works on the heating effect of electricity. b) Give reason : i) The tungsten is used in the filament of electric lamps ii) Copper and aluminium wires are usually used for electricity transmission. OR a) State Ohm's law. List the factors on which the resistance of a conductor depends. b) "The potential difference between two points of a current carrying conductor is 1V." Mention the meaning of this statement. Ans. : a) According to Joule's law the heat generated in a resistor i) is directly proportional to the square of current for a given resistance	

Qn. Nos.	Value Points	Total
	ii) is directly proportional to resistance for a given current iii) is directly proportional to the time for which the current flows through the resistor [Note : If $H = I^2 RT$ formula written, credit 1 mark) Appliances which work on heating effect of electricity ★ Electric fan ★ Electric heater ★ Electric iron ★ Electric bulb ★ Electric kettle ★ Electric stove (Any one)	1
b)	i) Due to high resistivity and high melting point, and does not melt at high temperature tungsten almost used for filament of electric lamps. 1 ii) Copper and aluminium are wires of metal or alloy of appropriate melting point having less resistance and helps in electricity transmission. 1	4
	OR	
a)	Ohm's law : The potential difference across the ends of a metallic wire (resistor) in an electric circuit is directly proportional to the current flowing through it, provided its temperature remains the same. 1 The resistance of a conductor depends on the following factors : ★ Its length $\frac{1}{2}$	

Qn. Nos.	Value Points	Total
	★ Its area of cross-section $\frac{1}{2}$ ★ The nature of its material $\frac{1}{2}$ ★ Temperature $\frac{1}{2}$	
b)	If 1 joule (1J) of work is done to move a charge of 1 coulomb (1C) from one point to another point in a current carrying conductor, then the potential difference between two points is 1 volt (1V).	4

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MAY 2026 EXAMINATION - 2

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MODEL ANSWERS

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CODE No. : 83-E

ವಿಷಯ : ವಿಜ್ಞಾನ

Subject : SCIENCE

(ಭೌತ ವಿಜ್ಞಾನ, ರಸಾಯನ ವಿಜ್ಞಾನ ಮತ್ತು ಜೀವ ವಿಜ್ಞಾನ / Physics, Chemistry & Biology)

**(ಶಾಲಾ ಅಭ್ಯರ್ಥಿ / ಶಾಲಾ ಪುನರಾವರ್ತಿತ ಅಭ್ಯರ್ಥಿ / ಖಾಸಗಿ ಅಭ್ಯರ್ಥಿ /
ಖಾಸಗಿ ಪುನರಾವರ್ತಿತ ಅಭ್ಯರ್ಥಿ)**

(Regular Fresh / Regular Repeater / Private Fresh / Private Repeater)

(ರಸಾಯನ ವಿಜ್ಞಾನ / Chemistry)

(ಇಂಗ್ಲಿಷ್ ಮಾಧ್ಯಮ / English Medium)

ದಿನಾಂಕ : 19. 05. 2026]

[ಗರಿಷ್ಠ ಅಂಕಗಳು : 80

Date : 19. 05. 2026]

[Max. Marks : 80

PART - B

(Chemistry)

Qn. Nos.	Value Points	Total
VI.	Multiple choice questions : 3 × 1 = 3	
13.	An example for the chemical change among the following is (A) Dissolving of salt in water (B) Tearing of paper (C) Rusting of iron (D) Boiling of water Ans. : (C) Rusting of iron	1

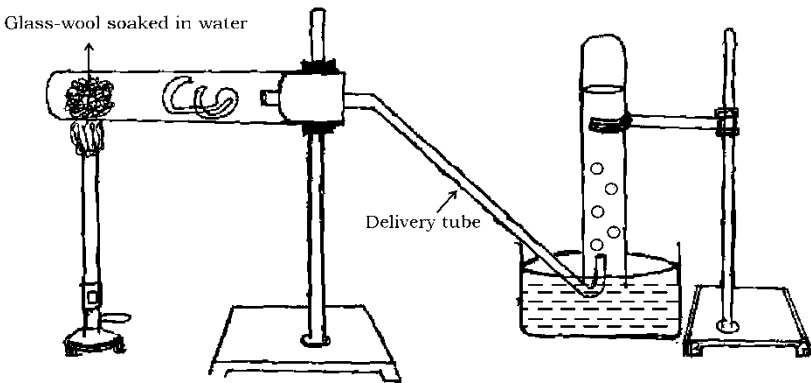
E-2/1102 (MA) CHE

[Turn over

Qn. Nos.	Value Points	Total
14.	The gas released when metals react with dilute acids is (A) H_2 (B) CO_2 (C) SO_2 (D) NO_2 Ans. : (A) H_2	1
15.	The difference between molecular formula of two successive compounds in a homologous series is (A) C_2H_4 (B) CH_4 (C) C_2H_2 (D) CH_2 Ans. : (D) CH_2	1
VII.	Answer the following questions : $3 \times 1 = 3$	
16.	The pH values of four solutions P, Q, R and S are 10, 13.7, 7 and 1.2 respectively. Which solution among these can be used to prepare an antacid ? Why ? Ans. : ★ 'P' ★ 'P' is a mild base $2 \times \frac{1}{2}$	1
17.	"Aluminium articles do not corrode easily like iron articles." Justify this statement. Ans. : A protective oxide layer of aluminium prevents aluminium articles to undergo further oxidation.	1
18.	Compound X reacts with concentrated sulphuric acid to produce compounds Y and Z. If Y is the first member of alkene, identify the compound X. Ans. : X is ethanol which undergoes dehydration with conc. H_2SO_4 to produce ethene. $ \begin{array}{c} C_2H_5OH \xrightarrow[\Delta]{\text{Conc. } H_2SO_4} \begin{array}{c} \text{OR} \\ \begin{array}{c} H \backslash \\ C = C / \\ H / \end{array} \begin{array}{c} H \\ \backslash \\ H \end{array} + H_2O \\ \text{(X)} \qquad \qquad \qquad \text{(Y)} \qquad \qquad \text{(Z)} \\ \qquad \qquad \qquad \text{(Any one)} \end{array} $	1

Qn. Nos.	Value Points	Total						
VIII.	Answer the following questions : 3 × 2 = 6							
19.	Acid rain water conducts electric current but distilled water does not. Why ? Ans. : ★ Rain water contains dissolved salts which dissociate into ions. These ions carry electric current. 1 ★ Distilled water has no ions to conduct electricity. 1	2						
20.	Write the differences between calcination and roasting. OR Explain the formation of ionic bond between sodium and chlorine atoms. Ans. : <table><tr><th>Calcination</th><th>Roasting</th></tr><tr><td>★ Carbonate ore is heated strongly in limited air to convert ore into metal oxide</td><td>★ Sulphide ore is heated strongly in the presence of excess air to convert ore into metal oxide.</td></tr><tr><td>★ $\text{ZnCO}_3 \rightarrow \text{ZnO} + \text{CO}_2$</td><td>★ $\text{ZnS} + \text{O}_2 \rightarrow \text{ZnO} + \text{SO}_2$</td></tr></table> 1 + 1 OR ★ Sodium loses one valence electron and becomes Na^+ . $\frac{1}{2}$ ★ Chlorine gains one electron from sodium and becomes Cl^- . $\frac{1}{2}$	Calcination	Roasting	★ Carbonate ore is heated strongly in limited air to convert ore into metal oxide	★ Sulphide ore is heated strongly in the presence of excess air to convert ore into metal oxide.	★ $\text{ZnCO}_3 \rightarrow \text{ZnO} + \text{CO}_2$	★ $\text{ZnS} + \text{O}_2 \rightarrow \text{ZnO} + \text{SO}_2$	2
Calcination	Roasting							
★ Carbonate ore is heated strongly in limited air to convert ore into metal oxide	★ Sulphide ore is heated strongly in the presence of excess air to convert ore into metal oxide.							
★ $\text{ZnCO}_3 \rightarrow \text{ZnO} + \text{CO}_2$	★ $\text{ZnS} + \text{O}_2 \rightarrow \text{ZnO} + \text{SO}_2$							

Qn. Nos.	Value Points	Total
	★ Sodium and chloride ions have opposite charges and attract each other and form NaCl due to strong electrostatic force of attraction. 1 $\text{Na} \longrightarrow \text{Na}^+ + \text{e}^-$ $\text{Cl} + \text{e}^- \longrightarrow \text{Cl}^-$ $\text{Na}^* + \cdot\ddot{\text{Cl}}\cdot \longrightarrow [\text{Na}^+] [\cdot\ddot{\text{Cl}}\cdot:]^-$	2
21.	Write the molecular formula and structure of the following carbon compounds : i) Cyclopentane ii) Propanol. Ans. : i) Cyclopentane. C_5H_{10} $\frac{1}{2}$ $\frac{1}{2}$ ii) Propanol. $\text{C}_3\text{H}_7\text{OH}$ $\frac{1}{2}$ $\frac{1}{2}$	2
IX.	Answer the following questions : 3 × 3 = 9	
22.	Draw the diagram of the arrangement of apparatus used to show the action of steam on a metal. Label the following parts :	

Qn. Nos.	Value Points	Total
	i) Glass wool soaked in water ii) Delivery tube. Ans. :  Diagram — 2 Label — $\frac{1}{2} + \frac{1}{2}$ 1 3	
23.	Write the molecular formula and two uses of each of the following compounds : i) Baking soda ii) Plaster of Paris. OR Name the products of chlor-alkali process. Write one use of each. Ans. : i) Baking Soda : NaHCO_3 . $\frac{1}{2}$ Uses : ★ For making baking powder. ★ As an antacid to neutralise excess acid in the stomach. ★ Used in soda-acid fire extinguishers. (Any two) $\frac{1}{2} + \frac{1}{2}$	

Qn. Nos.	Value Points	Total
ii)	Plaster of Paris — $\text{CaSO}_4 \cdot \frac{1}{2} \text{H}_2\text{O}$ Uses : ★ Doctors use as plaster for supporting fractured bones in the right position ★ For making toys ★ For making materials for decoration ★ For making surfaces smooth. (Any two)	$\frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$
OR		
	Products of chlor-alkali process.	
i)	NaOH — (Sodium hydroxide)	$\frac{1}{2}$
ii)	Cl_2 (Chlorine) gas	$\frac{1}{2}$
iii)	H_2 (Hydrogen) gas	$\frac{1}{2}$
	Uses of NaOH : ★ De-greasing metals ★ Preparation of soaps and detergents ★ Paper making ★ Making artificial fibres. (Any one)	$\frac{1}{2}$
	Uses of Cl_2 : ★ Water treatment ★ In swimming pools ★ In PVC manufacture ★ As disinfectant ★ In the preparation of CFCs ★ In the preparation of pesticides. (Any one)	$\frac{1}{2}$
	Uses of Hydrogen : ★ Used as fuel ★ Used for making margarine ★ In the preparation of ammonia for making fertilizers. (Any one)	$\frac{1}{2}$
		3

Qn. Nos.	Value Points	Total
24.	Balance the following chemical equations : i) $\text{N}_2 + \text{H}_2 \longrightarrow \text{NH}_3$ ii) $\text{H}_2\text{O} \longrightarrow \text{H}_2 + \text{O}_2$ iii) $\text{MnO}_2 + \text{HCl} \longrightarrow \text{MnCl}_2 + \text{H}_2\text{O} + \text{Cl}_2$ Ans. : i) $\text{N}_2 + 3\text{H}_2 \longrightarrow 2\text{NH}_3$ ii) $2\text{H}_2\text{O} \longrightarrow 2\text{H}_2 + \text{O}_2$ iii) $\text{MnO}_2 + 4\text{HCl} \longrightarrow \text{MnCl}_2 + 2\text{H}_2\text{O} + \text{Cl}_2$	1 1 1 3
X.	Answer the following question :	1 × 4 = 4
25.	a) Carbon atoms do not form C^{4-} anion or C^{4+} cations. Why ? b) Write any two differences between saturated and unsaturated hydrocarbons. OR a) Explain the cleaning action of soaps. b) Which salts are responsible for hardness of water ? The detergents are effective even in hard water. Why ? Ans. : a) ★ It could gain four electrons forming C^{4-} anion. But for the nucleus with six protons to hold on ten electrons will be difficult. 1 ★ It could loss four electrons forming C^{4+} cation. But it would require a large amount of energy to remove four electrons. 1	

Qn. Nos.	Value Points		Total
b	<i>Saturated Hydrocarbons</i>	<i>Unsaturated Hydrocarbons</i>	
	★ Have single bond between carbon-carbon atoms	★ Have double or triple bonds between carbon-carbon atoms	
	★ Less reactive	★ More reactive	
	★ Undergo substitution reaction	★ Undergo addition and substitution reactions	
	★ Give blue flame on combustion	★ Give yellow/red flame on combustion.	
(Any two) 1 + 1			4
OR			
a)	★ The ionic end of soap interacts with water while the carbon chain interacts with oil or dirt. $\frac{1}{2}$ ★ The soap molecules thus form structures called micelles, where hydrocarbon end of the molecules is towards the oil droplet while ionic end faces outside. $\frac{1}{2}$ ★ This forms emulsion in water $\frac{1}{2}$ ★ The soap micelle thus helps in pulling out the dirt in water. $\frac{1}{2}$		
b)	Calcium salts and magnesium salts cause hardness of water. $\frac{1}{2} + \frac{1}{2}$ Detergents do not form insoluble precipitates with the calcium and magnesium ions in hard water. Thus, they remain effective in hard water. 1		4

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CODE No. : 83-E

ವಿಷಯ : ವಿಜ್ಞಾನ

Subject : SCIENCE

(ಭೌತ ವಿಜ್ಞಾನ, ರಸಾಯನ ವಿಜ್ಞಾನ ಮತ್ತು ಜೀವ ವಿಜ್ಞಾನ / Physics, Chemistry & Biology)

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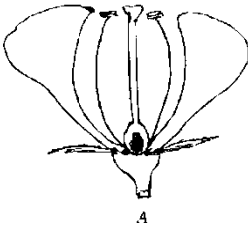
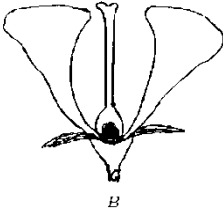
PART - C

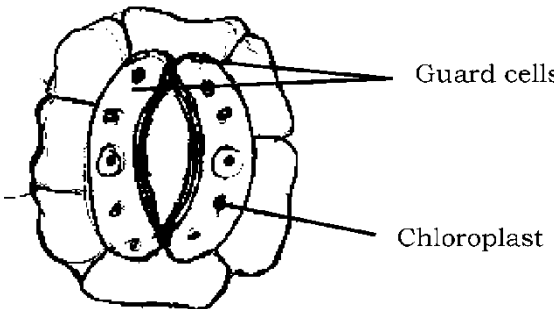
(Biology)

Qn. Nos.	Value Points	Total
XI.	Multiple choice questions :	3 × 1 = 3
26.	The structural and functional unit of kidney is (A) Neuron (B) Nephron (C) Cyton (D) Muscle cell Ans. : (B) Nephron	1
27.	A common bacterial infection that spreads through sexual contact in human beings is	

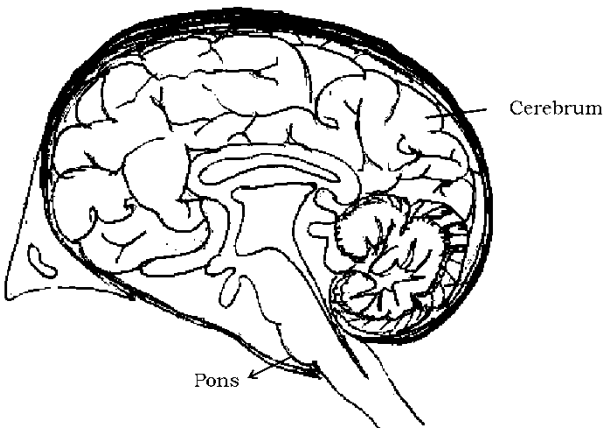
E-2/1102 (MA) BIO

[Turn over

Qn. Nos.	Value Points	Total
	<i>Ans. :</i> ★ <i>X</i> — Grows towards the earth in downward direction. $\frac{1}{2}$ ★ Radical '<i>X</i>' shows positive geotropism. Hence bends and grows towards the earth. $\frac{1}{2}$	1
31.	Observe the figures of flower <i>A</i> and <i>B</i> given below. Which flower undergoes only cross pollination ? Justify your answer.   <i>Ans. :</i> ★ Flower '<i>B</i>' will undergo only cross pollination. $\frac{1}{2}$ ★ In flower '<i>B</i>', there is no stamens. Hence it must undergo cross pollination. $\frac{1}{2}$	1
XIII.	Answer the following questions :	2 × 2 = 4
32.	How does adrenaline hormone help an athlete to prepare for running ? OR How do auxins promote the growth of tendrils of a climber plant around a support ? <i>Ans. :</i> - Adrenaline increases the heart beat rate, which results in more oxygen being delivered to the muscles. 1 - It also dilates blood vessels in the legs, allowing blood from stomach to be supplied to the leg muscles. Due to this, more energy will be available to athlete. 1 OR ★ Tendrils of a climber are sensitive to touch. $\frac{1}{2}$ ★ 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 tendrils away from the object. 1	2

Qn. Nos.	Value Points	Total						
	★ This causes the tendrils to circle around the object and thus cling to it. 1/2	2						
33.	Draw the diagram showing the structure of open stomata and label the following parts : i) Guard cells ii) Chloroplast Ans. :  Diagram — 1 Label 1/2 + 1/2 1	2						
XIV.	Answer the following questions : 3 × 3 = 9							
34.	Write the differences between biodegradable and non-biodegradable substances with an example. OR Construct a food chain by using the organisms : snake, frog, grass and grasshopper. Which organism has more accumulation of harmful chemicals in this food chain ? Why ? Ans. : <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;"><i>Biodegradable substances</i></th> <th style="text-align: center;"><i>Non-biodegradable substances</i></th> </tr> </thead> <tbody> <tr> <td>★ Breakdown by biological processes</td> <td>★ Do not breakdown by biological processes</td> </tr> <tr> <td>★ Do not remain intact in the environment for a long time</td> <td>★ Remain intact in the environment for a long time</td> </tr> </tbody> </table>	<i>Biodegradable substances</i>	<i>Non-biodegradable substances</i>	★ Breakdown by biological processes	★ Do not breakdown by biological processes	★ Do not remain intact in the environment for a long time	★ Remain intact in the environment for a long time	
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Qn. Nos.	Value Points		Total									
35.	★ Less harmful	★ More harmful	3									
	★ Less polluting	★ More polluting.										
	(Any two) 2											
	Examples : Cow dung, vegetable peels, fruits. (Any one suitable example)	Examples : DDT, Plastic, Metal scrap (Any one suitable example)										
	1											
	OR											
	Food chain :											
	Grass → Grasshopper → Frog → Snake. 1											
	Snake has more toxic chemicals. 1											
	Due to biological magnification, toxic chemicals are accumulated in the each trophic level progressively. Hence snake in the last trophic level has maximum chemicals. 1											
OR		3										
Due to biological magnification snake has maximum accumulation of toxic chemicals.												
Yellow seed producing (YY) pea plant is crossed with green seed producing (yy) pea plant. Show the results obtained in F ₂ generation with the help of checker board. Mention the phenotypic and genotypic ratio of the plants produced here.												
Ans. : F ₂ generation :												
	<table><tr><td>Gametes</td><td>Y</td><td>y</td></tr><tr><td>Y</td><td>YY</td><td>Yy</td></tr><tr><td>y</td><td>Yy</td><td>yy</td></tr></table>	Gametes	Y	y	Y	YY	Yy	y	Yy	yy	2	3
Gametes	Y	y										
Y	YY	Yy										
y	Yy	yy										

Qn. Nos.	Value Points	Total
	Phenotypic ratio : Yellow : Green $3 : 1 \quad \frac{1}{2}$ Genotypic ratio : Pure yellow : Mixed yellow : Pure green $1 : 2 : 1 \quad \frac{1}{2}$	
36.	Draw the diagram showing the structure of human brain. Label the following parts : i) Cerebrum ii) Pons. Ans. :  For diagram — 2 Label — $\frac{1}{2} + \frac{1}{2}$ 1	3
XV.	Answer the following question :	1 × 4 = 4
37.	a) What is the role of following enzymes in the human digestive canal ? i) Trypsin ii) Amylase iii) Lipase. b) What is transpiration ? Ans. : a) Role of enzymes : i) Trypsin : Digests proteins. 1 ii) Amylase : Breaks starch into simple sugar. 1 iii) Lipase : It breaks down the emulsified fats. 1	

Qn. Nos.	Value Points	Total
	b) Transpiration : The loss of water in the form of vapour from the aerial parts of the plant is known as transpiration. 1	4
XVI.	Answer the following question : $1 \times 5 = 5$	
38.	a) List the functions of the vas deferens and prostate gland in the human male reproductive system. b) What are the changes that occur in a flower after the fertilization ? OR a) How are reproductive processes different in Hydra and Planaria ? Explain. b) How does the uterus prepare to receive a fertilized egg in women ? What happens if the egg is not fertilized ? Explain. <i>Ans. :</i> a) Functions : i) Vas deferens : Sperms are carried to urethra. 1 ii) Prostate gland : Produces a secretion that helps to transport sperms and provides nutrition to the sperms. 1 b) After the fertilisation, ★ the zygote divides several times to form an embryo within the ovule 1 ★ The ovule develops a tough coat and is gradually converted into seed 1 ★ The ovary grows rapidly and ripens to form a fruit. $\frac{1}{2}$ ★ Meanwhile, other parts – petals, sepals, stamens, style and stigma may shrivel and fall off. $\frac{1}{2}$	5
	OR	

Qn. Nos.	Value Points	Total
	a) In Hydra : ★ A bud develops as an outgrowth due to repeated cell division at one specific site (Budding). $\frac{1}{2}$ ★ These buds develop and detach from parent after maturation. $\frac{1}{2}$ In Planaria : ★ Specialised cells proliferate and make large number of cells which develop into various cells and tissue (Regeneration). $\frac{1}{2}$ ★ These changes take place in an organised sequence called as development. $\frac{1}{2}$ (Any four) b) ★ The uterus prepares itself every month to receive a fertilized egg. $\frac{1}{2}$ ★ Uterine lining becomes thick and spongy to nourish the embryo $\frac{1}{2}$ ★ If the egg is <i>not fertilized</i>, uterine lining slowly breaks and $\frac{1}{2}$ ★ It comes out through the vagina as blood and mucous. $\frac{1}{2}$ ★ This cycle takes place every month and is known as menstruation. $\frac{1}{2}$ ★ It usually lasts for about two to eight days. $\frac{1}{2}$	5