CCE RR/PR/PF/NSR/NSPR
FULL SYLLABUS

A

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

KARNATAKA SCHOOL EXAMINATION AND ASSESSMENT BOARD, MALLESHWARAM, BENGALURU – 560 003

ಆಗಸ್ಟ್ 2024 ರ ಪರೀಕ್ಷೆ - 3

AUGUST 2024 EXAMINATION - 3

ಮಾದರಿ ಉತ್ತರಗಳು

MODEL ANSWERS

ಸಂಕೇತ ಸಂಖ್ಯೆ : **83-E (Phy)** CODE NO. : **83-E (Phy)**

ವಿಷಯ : ವಿಜ್ಞಾನ

Subject : SCIENCE

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

(ಶಾಲಾ ಪುನರಾವರ್ತಿತ ಅಭ್ಯರ್ಥಿ / ಖಾಸಗಿ ಪುನರಾವರ್ತಿತ ಅಭ್ಯರ್ಥಿ / ಖಾಸಗಿ ಅಭ್ಯರ್ಥಿ / ಎನ್.ಎಸ್.ಆರ್. / ಎನ್.ಎಸ್.ಪಿ.ಆರ್.)

(Regular Repeater / Private Repeater / Private Fresh / NSR / NSPR)

(ಭೌತಶಾಸ್ತ್ರ / **Physics**)

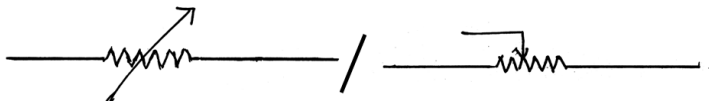
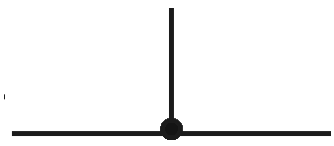
(ಇಂಗ್ಲಿಷ್ ಮಾಧ್ಯಮ / English Medium)

ದಿನಾಂಕ : **05. 08. 2024]** [ಗರಿಷ್ಠ ಅಂಕಗಳು : **80**

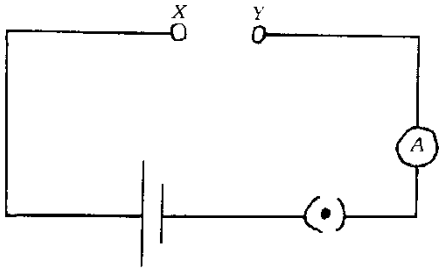
Date : 05. 08. 2024] **[Max. Marks : 80**

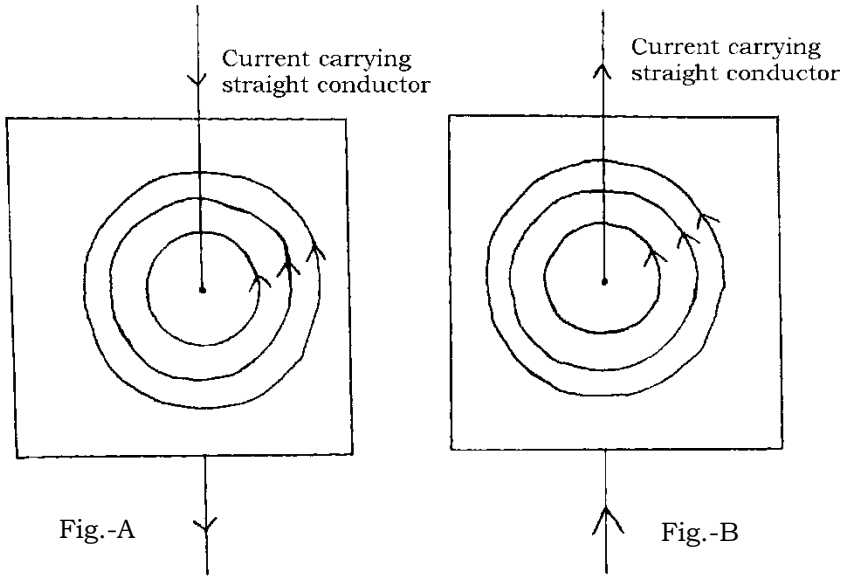
PART – A
(Physics)

Qn. Nos.	Value Points	Total
I.	**Multiple choice questions :** **3 × 1 = 3**	
1.	SI unit of electric charge is (A) coulomb (B) ampere (C) joule (D) volt *Ans.* : (A) coulomb	1

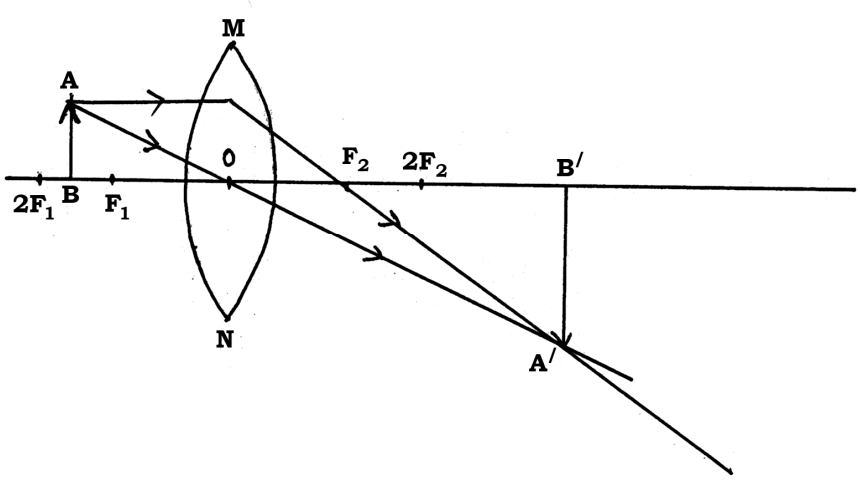
Qn. Nos.	Value Points	Total
2.	In Fleming's left hand rule the middle finger represents the direction of (A) magnetic field (B) current (C) movement of conductor (D) induced current *Ans.* : (B) current	1
3.	Type of the mirror used in vehicles as rear view mirror is (A) plane mirror (B) concave mirror (C) convex mirror (D) planoconcave mirror *Ans.* : (C) convex mirror	1
II.	**Answer the following questions :** **2 × 1 = 2**	
4.	Write the symbols of the following components used in an electric circuit. i) A rheostat ii) A wire joint. *Ans.* : i)  ii)  $\frac{1}{2}+\frac{1}{2}$	1
5.	What is spectrum of white light ? *Ans.* : The band of the coloured components of a white light beam is called spectrum of white light.	1

Qn. Nos.	Value Points	Total
III.	**Answer the following questions :** **3 × 2 = 6**	
6.	Give reason :	
	a) The tungsten is used in filaments of electric lamps.	
	b) In domestic circuits the electric devices are not connected in series.	
	OR	
	Placing a 'fuse' in electric circuits is essential. Why ? Explain.	
	Ans. :	
	a) The melting point and resistivity of tungsten are very high. It does not melt readily at a high temperature. The electric lamps glow at very high temperature. Hence tungsten is mainly used as heating element of electric bulbs. $\frac{1}{2}+\frac{1}{2}$	
	b) In domestic electric circuits, the different electric components need widely different electric current values to operate properly. When one component fails, the circuit is broken and none of the components works. Therefore the series arrangement is not used for domestic electric circuits. 1	2
	OR	
	Fuse is a safety device which protects electric circuits and electric appliances by stopping the flow of any unduly high electric current. It is a piece of wire made of a metal or an alloy of appropriate melting point, placed in series with the device. If current larger than the specified value flows, the temperature of fuse wire increases. This melts the fuse wire and breaks the circuit. Thus placing of fuse is must in electric circuits. 1 + 1	2

Qn. Nos.	Value Points	Total
7.	Observe the following electric circuit :  When a wire of resistance *'R'* Ω is connected between *'X'* and *'Y'*, then the ammeter reading is 3A. If *'R'* Ω resistance is replaced by *'2R'* Ω in the same circuit, what would be the reading in ammeter ? Give scientific reason for your answer. *Ans.* : If $R = R\,\Omega$ $I = 3A$ $V = IR$ $\therefore \quad V = (3A)\,R$ $= 3R.$ $\frac{1}{2}$ If $R\,\Omega$ is replaced by $2R\,\Omega$ $R = 2R\,\Omega$ $I = ?$ $V = 3R$ $V = IR$ $\therefore \quad I = \frac{V}{R} = \frac{3\cancel{R}}{2\cancel{R}} =$ $= \frac{3}{2}$ $= 1{\cdot}5\ A$ The ammeter reading is 1·5 A 1 Reason : If the resistance is doubled, the current gets halved. $\frac{1}{2}$	2

Qn. Nos.	Value Points	Total
8.	Observe the given figures and answer the questions that follow :  Fig.-A Fig.-B i) Which of the above figures shows the correct direction of magnetic field ? ii) Name and state the rule that helped to choose the correct figure. *Ans.* : i) Figure (b) shows the correct direction of magnetic field. $\frac{1}{2}$ ii) Right hand thumb rule helps to choose the correct figure. $\frac{1}{2}$ Statement : Holding a current carrying straight conductor in right hand such that the thumb indicates the direction of current and the fingers wrapping around the conductor indicates direction of field lines of the magnetic field. 1	2

Qn. Nos.	Value Points	Total
IV.	**Answer the following questions :** **3 × 3 = 9**	
9.	A concave lens has focal length of 30 cm. At what distance should the object from the lens be placed so that it forms an image at 20 cm from the lens ?	
	OR	
	a) Find the focal length of a convex mirror whose radius of curvature is 6 cm.	
	b) Find the power of convex lens of focal length 0.2 m.	
	Ans. :	
	$v = -20$ (concave lens forms virtual and erect image)	
	$f = -30$ (Image is on the same side of object in concave lens)	
	u = ?	
	Since $\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$ $\frac{1}{2}$	
	$\frac{1}{u} = \frac{1}{v} - \frac{1}{f}$ $\frac{1}{2}$	
	$= \frac{1}{-20} - \frac{1}{(-30)}$ $\frac{1}{2}$	
	$= \frac{1}{-20} + \frac{1}{30}$ $\frac{1}{2}$	
	$= \frac{3-2}{-60}$ $\frac{1}{2}$	
	$= \frac{1}{-60}$	
	$\therefore \quad u = -60$ cm $\frac{1}{2}$	
	Thus the object distance is 60 cm.	3
	OR	

Qn. Nos.	Value Points	Total
	a) R = + 6.00 cm (for convex mirror) f = ? $f = \frac{R}{2}$ $\frac{1}{2}$ $= \frac{6}{2}$ $\frac{1}{2}$ = 3 cm. $\frac{1}{2}$ b) f = 0·2 m (convex lens) P = ? $P = \frac{1}{f}$ $\frac{1}{2}$ $= \frac{1}{0 \cdot 2}$ $\frac{1}{2}$ = + 5 D $\frac{1}{2}$	3
10.	Draw the ray diagram for the image formation in a convex lens when the object is placed between $2F_1$ and F_1. Mention the position and nature of the image formed. [F_1 : Principal focus of the lens] *Ans.* :  Diagram — 2 The nature of image is — Real and inverted — $\frac{1}{2}$ Position of image is — Beyond $2F_2$ — $\frac{1}{2}$	3

Qn. Nos.	Value Points	Total
11.	What are the characteristics of a good source of energy ? Write any two uses of solar cells. **OR** What are the advantages and disadvantages of nuclear energy ? *Ans.* : Characteristics of a good source of energy would be one ★ which would do large amount of work per unit volume or mass $\frac{1}{2}$ ★ be easily accessible $\frac{1}{2}$ ★ be easy to store and transport, and $\frac{1}{2}$ ★ must be economical. $\frac{1}{2}$ Uses of solar cells : In ★ artificial satellites and space probes, ★ radio or wireless transmission or TV relay stations, ★ traffic signals, ★ calculators ★ toys ★ streetlights ★ vehicles ★ watches etc. (Any *two*) $2 \times \frac{1}{2}$ **OR**	3

Qn. Nos.	Value Points	Total
	Advantages ★ tremendous amount of energy is released $\frac{1}{2}$ ★ used in nuclear weapon manufacturing $\frac{1}{2}$ ★ used in generation of electrical energy. $\frac{1}{2}$ *Disadvantages* ★ improper nuclear-waste storage and disposal resulting environmental contamination. $\frac{1}{2}$ ★ risk of accidental leakage $\frac{1}{2}$ ★ high cost of installation $\frac{1}{2}$	3
V.	**Answer the following questions : 2 × 4 = 8**	
12.	Explain Faraday's experiment related to the electromagnetic induction. *Ans.* : Faraday made an important breakthrough by discovering how a moving magnet can be used to generate electric current. ★ Take a coil of wire having a large number of turns. $\frac{1}{2}$ ★ Connect the ends of the coil to a galvanometer $\frac{1}{2}$ ★ Take a strong bar magnet and move its north pole towards the one end of the coil $\frac{1}{2}$ ★ There is a momentary deflection in the needle of the galvanometer. This indicates the presence of a current in the coil. The moment, when the motion of magnet stops, the deflection becomes zero. $\frac{1}{2}$	

Qn. Nos.	Value Points	Total
	★ Withdraw the north pole away from the coil. The needle of galvanometer is deflected towards left showing the current is now set up in the opposite direction to the first. $\frac{1}{2}$ ★ Keeping the north pole stationary near the coil and when coil is moved towards the north pole, we see the galvanometer needle deflects towards right. Similarly the needle moves toward left when the coil is moved away. $\frac{1}{2}$ ★ When the coil is kept stationary with respect to magnet, the deflection drops to zero. $\frac{1}{2}$ ★ It is thus clear from the experiment that motion of magnet with respect to coil produces an induced potential difference which sets up an induced electric current in the circuit. $\frac{1}{2}$	4
13.	a) How does the eye accommodate to see far and near objects ? b) Why do stars twinkle ? Explain. *Ans.* : a) The eye lens is composed of a fibrous, jelly like material. Its curvature can be modified to some extent by the ciliary muscles. The change in curvature of the eye lens can thus change its focal length. When the muscles are relaxed, the lens becomes thin, thus focal length increases. This enables us to see distant objects clearly. 1	

Qn. Nos.	Value Points	Total
	When you are looking at objects closer to the eyes, the ciliary muscles contract. This increases the curvature of the eyes lens. The eye lens becomes thicker. Consequently, the focal length of the eye lens decreases. This enables us to see nearby objects clearly. 1	
	b) The twinkling of star is due to atmospheric refraction of sunlight. $\frac{1}{2}$	
	The starlight, on entering the earth's atmosphere, undergoes refraction continuously before it reaches the earth. The atmospheric refraction occurs in a medium of gradually changing refractive index. $\frac{1}{2}$	
	Since the atmosphere bends starlight towards the normal, the apparent position of the star is slightly different from its actual position. This apparent position is not stationary, but keeps on changing slightly. $\frac{1}{2}$	
	Since the stars are very distant, they approximate point sized sources of light. As the path of rays of light coming from the stars goes on varying slightly, the apparent position of the stars fluctuates and the amount of starlight entering the eye flickers — the star sometimes appears brighter, and at some other time, fainter, which is the twinkling effect. $\frac{1}{2}$	4

CCE RR/PR/PF/NSR/NSPR
FULL SYLLABUS

A

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

KARNATAKA SCHOOL EXAMINATION AND ASSESSMENT BOARD, MALLESHWARAM, BENGALURU – 560 003

ಆಗಸ್ಟ್ 2024 ರ ಪರೀಕ್ಷೆ - 3

AUGUST 2024 EXAMINATION - 3

ಮಾದರಿ ಉತ್ತರಗಳು

MODEL ANSWERS

ಸಂಕೇತ ಸಂಖ್ಯೆ : **83-E (Chem.)** **CODE NO. : 83-E (Chem.)**

ವಿಷಯ : ವಿಜ್ಞಾನ

Subject : SCIENCE

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

(ಶಾಲಾ ಪುನರಾವರ್ತಿತ ಅಭ್ಯರ್ಥಿ / ಖಾಸಗಿ ಪುನರಾವರ್ತಿತ ಅಭ್ಯರ್ಥಿ / ಖಾಸಗಿ ಅಭ್ಯರ್ಥಿ / ಎನ್.ಎಸ್.ಆರ್. / ಎನ್.ಎಸ್.ಪಿ.ಆರ್.)

(Regular Repeater / Private Repeater / Private Fresh / NSR / NSPR)

(ರಸಾಯನಶಾಸ್ತ್ರ / **Chemistry**)

(ಇಂಗ್ಲಿಷ್ ಮಾಧ್ಯಮ / English Medium)

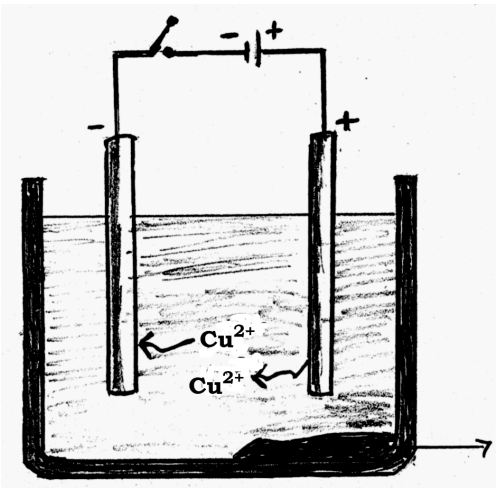
ದಿನಾಂಕ : **05. 08. 2024]** [ಗರಿಷ್ಠ ಅಂಕಗಳು : **80**

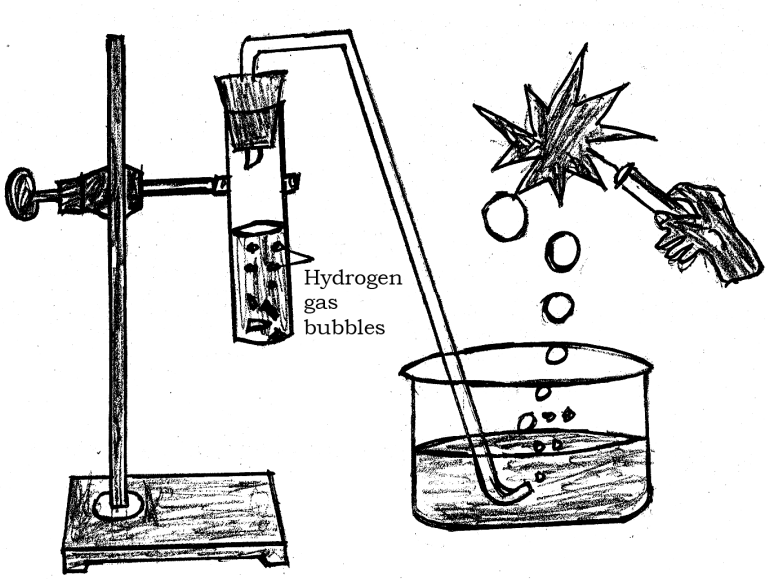
Date : 05. 08. 2024] **[Max. Marks : 80**

PART – B
(Chemistry)

Qn. Nos.	Value Points	Total
VI.	**Multiple choice questions :** **3 × 1 = 3**	
14.	In the electrolysis of water the gases that are released at cathode and anode and their ratio respectively are, (A) Hydrogen : Oxygen ; 1 : 2 (B) Oxygen : Hydrogen ; 2 : 1 (C) Hydrogen : Oxygen : 2 : 1 (D) Oxygen : Hydrogen ; 1 : 2 *Ans.* : (C) Hydrogen : Oxygen ; 2 : 1	1

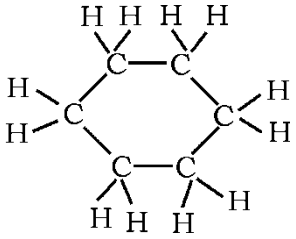
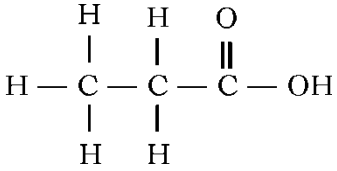
Qn. Nos.	Value Points	Total
15.	The compound used to remove the permanent hardness of water is (A) sodium carbonate (B) sodium hydroxide (C) sodium hydrogen carbonate (D) sodium chloride *Ans.* : (A) sodium carbonate	1
16.	A limitation of Mendeleev's classification of elements among the following is (A) keeping two elements in the same slot (B) this classification is only applied up to calcium (C) this classification worked only for lighter elements (D) no fixed position is given to hydrogen in the periodic table. *Ans.* : (D) no fixed position is given to hydrogen in the periodic table.	1
VII.	**Answer the following questions :** **3 × 1 = 3**	
17.	The molecular formula of the fourth member of a homologous series is C_5H_{10}. Then, determine and write the molecular formulae of first two members of the same series. *Ans.* : Molecular formulae : i) C_2H_4 $\frac{1}{2}$ ii) C_3H_6. $\frac{1}{2}$	1
18.	What are redox reactions ? *Ans.* : A chemical reaction in which one reactant gets oxidised while the other gets reduced is called redox reaction.	1

Qn. Nos.	Value Points	Total
19.	250 ml of water is taken in each of beaker *'A'* and beaker *'B'*. About 5 gm of sodium metal is added to the beaker *'A'* and about 5 gm of calcium metal is added to beaker *'B'*. What are the reasons for the observations that have been noticed here ? *Ans.* : Beaker *'A'* — Since the reaction between sodium and water is so violent and exothermic, the evolved hydrogen immediately catches fire. $\frac{1}{2}$ Beaker *'B'* — The reaction of calcium with water is less violent and the heat evolved is not sufficient for the hydrogen to catch fire. $\frac{1}{2}$	1
VIII.	**Answer the following questions :** **3 × 2 = 6**	
20.	Draw the diagram to show the arrangement of the apparatus used in the refining of copper and label 'anode mud'. *Ans.* :  For figure : $1\frac{1}{2}$ Labelling : $\frac{1}{2}$	2
21.	An iron nail is immersed in copper sulphate solution. Then what type of chemical reaction happens here ? Write the balanced chemical equation for this reaction. **OR**	

Qn. Nos.	Value Points	Total
	Balance the following equations : i) $CH_4 + O_2 \rightarrow CO_2 + H_2O$ ii) $Pb(NO_3)_2 \xrightarrow{Heat} PbO + NO_2 + O_2$ *Ans.* : Displacement reaction. 1 $Fe + CuSO_4 \rightarrow FeSO_4 + Cu$ 1 **OR** i) $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$ 1 ii) $2Pb(NO_3)_2 \xrightarrow{Heat} 2PbO + 4NO_2 + O_2$ 1	2 2
22.	Draw the diagram of the arrangement of apparatus showing the reaction of zinc granules with dilute sulphuric acid and testing of hydrogen gas by burning and label the hydrogen gas bubbles. *Ans.* :  For Diagram : $1\frac{1}{2}$ Labelling : $\frac{1}{2}$	2

Qn. Nos.	Value Points	Total
IX.	**Answer the following questions :** **3 × 3 = 9**	
23.	What are ionic compounds ? Write any four properties of ionic compounds.	
	OR	
	What are alloys ? Write any four physical properties of metals.	
	Ans. :	
	The compounds formed by the transfer of electrons from a metal to a non-metal. 1	
	Properties :	
	★ Physical nature : Solid / hard $\frac{1}{2}$	
	★ Melting and boiling points : High. $\frac{1}{2}$	
	★ Solubility : Soluble in water. $\frac{1}{2}$	
	★ Conduction of electricity : Conduct electricity in molten state. $\frac{1}{2}$	3
	OR	
	Homogeneous mixture of two *or* more metals *or* a metal and a non-metal. 1	
	Physical properties :	
	★ Hard	
	★ Lustrous surface	
	★ Ductility	
	★ Malleability	
	★ Good conductors of heat	
	★ Good conductors of electricity	
	★ Sonorous. (Any *four*) $4 \times \frac{1}{2}$	3

Qn. Nos.	Value Points	Total
24.	Solutions *'A', 'B', 'C'* and *'D'* are having pH values of 2, 6, 8 and 13 respectively. Then i) which solution has more H^+ and which solution has more OH^- ions concentration ? Why ? ii) which solutions can be made to react each other to get neutral salts ? *Ans.* : i) Solution *'A'* has more H^+ ions concentration. $\frac{1}{2}$ *Reason* : If pH value is less, then H^+ concentration is more. $\frac{1}{2}$ Solution *'D'* has more OH^- ions concentration. $\frac{1}{2}$ *Reason* : As the pH value increases from 7 to 14, there is an increase in OH^- ions concentration. $\frac{1}{2}$ ii) ★ Solutions *'A'* and *'D'*. ★ Solutions *'B'* and *'C'*. $\frac{1}{2}+\frac{1}{2}$	3
25.	Observe the given part of periodic table and answer the following questions : Elements: *a* | *b* | *c* | *d* | *e* Atomic Number: 3 | 4 | 10 | 11 | 18 i) Which elements have + 1 valency ? ii) Which elements belong to the group of noble gases ? Why ? iii) Mention the place of element *'b'* in the modern periodic table. *Ans.* : i) Elements *'a'* and *'d'*. 1 ii) Elements *'c'* and *'e'*. $\frac{1}{2}$ They are having octet configuration (ns^2 , np^6). $\frac{1}{2}$ iii) Period – 2 $\frac{1}{2}$ Group – 2 $\frac{1}{2}$	3

Qn. Nos.	Value Points	Total
X.	**Answer the following question :** **1 × 4 = 4**	
26.	a) Write the structures for the following carbon compounds. i) Cyclohexane ii) Propanoic acid b) Write any two differences between saturated and unsaturated carbon compounds. *Ans.* : a) i)  Cyclohexane 1 ii)  Propanoic acid 1 b)	

Saturated carbon compounds	*Unsaturated carbon compounds*
★ Single bond between carbon atoms	★ One *or* more double *or* triple bond
★ Less reactive	★ More reactive
★ Burn with a clean flame	★ Burn with a yellow flame with black smoke
★ Undergo substitution and addition reaction	★ Undergo addition reaction.

(Any *two*) 1 + 1 | 4

CCE RR/PR/PF/NSR/NSPR
FULL SYLLABUS

A

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

KARNATAKA SCHOOL EXAMINATION AND ASSESSMENT BOARD, MALLESHWARAM, BENGALURU – 560 003

ಆಗಸ್ಟ್ 2024 ರ ಪರೀಕ್ಷೆ - 3

AUGUST 2024 EXAMINATION - 3

ಮಾದರಿ ಉತ್ತರಗಳು

MODEL ANSWERS

ಸಂಕೇತ ಸಂಖ್ಯೆ : **83-E (Bio)** **CODE NO. : 83-E (Bio)**

ವಿಷಯ : ವಿಜ್ಞಾನ

Subject : SCIENCE

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

(ಶಾಲಾ ಪುನರಾವರ್ತಿತ ಅಭ್ಯರ್ಥಿ / ಖಾಸಗಿ ಪುನರಾವರ್ತಿತ ಅಭ್ಯರ್ಥಿ / ಖಾಸಗಿ ಅಭ್ಯರ್ಥಿ / ಎನ್.ಎಸ್.ಆರ್. / ಎನ್.ಎಸ್.ಪಿ.ಆರ್.)

(Regular Repeater / Private Repeater / Private Fresh / NSR / NSPR)

(ಜೀವಶಾಸ್ತ್ರ / **Biology**)

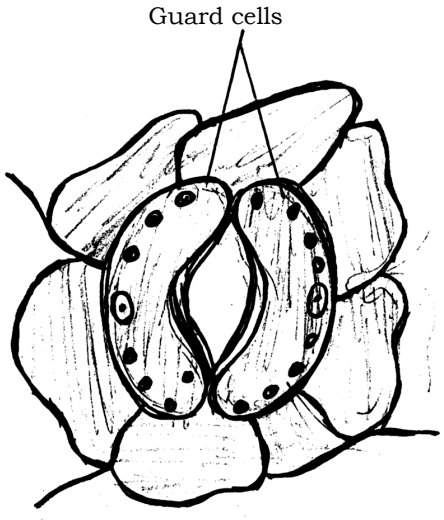
(ಇಂಗ್ಲಿಷ್ ಮಾಧ್ಯಮ / English Medium)

ದಿನಾಂಕ : **05. 08. 2024]** [ಗರಿಷ್ಠ ಅಂಕಗಳು : **80**

Date : 05. 08. 2024] **[Max. Marks : 80**

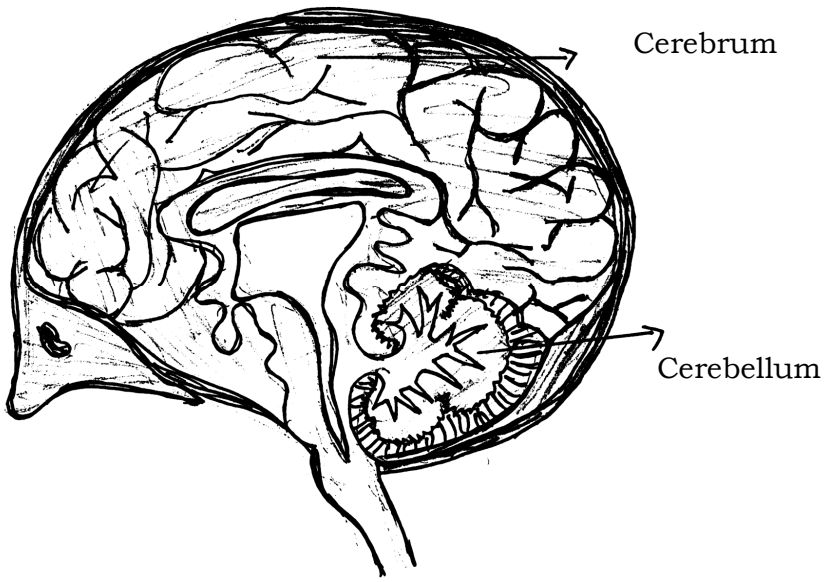
PART – C
(Biology)

Qn. Nos.	Value Points	Total
XI.	**Multiple choice questions :** **2 × 1 = 2**	
27.	The hormone secreted by the pancreas, (A) regulates metabolic activities (B) regulates blood sugar level (C) stimulates the growth in the body organs (D) increases breathing rate *Ans.* : (B) regulates blood sugar level	1

Qn. Nos.	Value Points	Total
28.	Suction pressure in plants is required to, (A) remove the difference in concentrations of ions between the root and soil (B) transport food in two directions (C) take up the water to the highest parts (D) eliminate excess of water from the leaves *Ans.* : (C) take up the water to the highest parts	1
XII.	**Answer the following questions :** **3 × 1 = 3**	
29.	"Reflex arcs are more efficient for quick responses in animals." Justify this statement. *Ans.* : ★ In animals the thinking process of the brain is not fast enough. $\frac{1}{2}$ ★ Animals have very little *or* none of the complex neuron network needed for thinking. $\frac{1}{2}$	1
30.	Draw the diagram of open stomata and label the guard cells. *Ans.* :  Diagram — $\frac{1}{2}$ Labelling — $\frac{1}{2}$	1

Qn. Nos.	Value Points	Total
31.	Is self pollination possible in flowers having only stamen ? Clarify your answer. *Ans.* : Not possible. $\frac{1}{2}$ *Reason* : For self pollination a flower must have stamen and pistil / a flower must be a bisexual. $\frac{1}{2}$	1
XIII.	**Answer the following questions :** **2 × 2 = 4**	
32.	The body size of a person is changed due to exercises. Is this change can be seen in next generation ? Mention your answer with reason. *Ans.* : This change cannot be seen in next generation. 1 *Reason* : Change in non-reproductive tissues cannot be passed on to the DNA of the germ cells. 1	2
33.	Observe the given food chain and answer the following questions : Green plants (T_1) ⟶ Deer (T_2) ⟶ Tiger (T_3) i) What is the amount of energy do green plants have if the energy available to the tiger is 700 kJ ? ii) The organism of which trophic level has the maximum accumulation of harmful chemicals ? Why ? *Ans.* : i) Green plants are having the amount of energy – 70000 kJ (Law of 10%) 1 ii) T_3 / Tiger. $\frac{1}{2}$ These chemicals are not degradable and get accumlated at each trophic level and hence the top level in any food chain the maximum concentration of these chemicals is accumulated. $\frac{1}{2}$	2

Qn. Nos.	Value Points	Total
XIV.	**Answer the following questions :** **3 × 3 = 9**	
34.	How are the process of reproduction in hydra and planaria different from each other ? Explain. **OR** How does a fertilized egg in the uterus develop into an embryo ? How does this embryo get nourishment in the mother's womb ? Explain. *Ans.* : *Hydra* : ★ Reproduction is by budding $\frac{1}{2}$ ★ A bud develops as an outgrowth due to repeated cell division at one specific site. $\frac{1}{2}$ ★ The bud develops into an independent individual. $\frac{1}{2}$ *Planaria* : ★ Reproduction by regeneration ★ Specialised cells proliferate & make large number of cells. ★ Different cells undergo changes to become various tissues / development. ★ Many pieces of planaria grow into separate individuals. (Any *three*) $3 \times \frac{1}{2}$ **OR** ★ The fertilised egg (Zygote) starts dividing and forms an embryo. $\frac{1}{2}$ ★ The embryo is implanted in the lining of the uterus. $\frac{1}{2}$ ★ It continues to grow and develop organs to become foetus. $\frac{1}{2}$	3

Qn. Nos.	Value Points	Total
	Nourishment : ★ With the help of a special disc shaped tissue called placenta. $\frac{1}{2}$ ★ It contains villi on the embryo's side and blood spaces on the mother's side. $\frac{1}{2}$ ★ This provides glucose and oxygen to the developing embryo. $\frac{1}{2}$	
35.	Draw the diagram showing the structure of human brain. Label the following parts : i) Cerebrum ii) Cerebellum *Ans.* :  For diagram — 2 Labelling — $\frac{1}{2}+\frac{1}{2}$	3

Qn. Nos.	Value Points	Total
36.	Forests are 'biodiversity hot spots'. How ? Local people are the stakeholders of forests. Why ? Explain. *Ans.* : ★ Since in the forest area various number of species are found more / the range of different life forms are found. (bacteria, fungi, ferns, flowering plants, nematodes, insects, birds, reptiles and so on) 1 ★ The local people need large quantities of firewood, timber and thatch. ★ Need of bamboo to make slats for huts and baskets. ★ Wood for making implements for agriculture, fishing and hunting. ★ Gathering fruits, nuts and medicines from the forests. ★ Fodder for cattle. (Any *four*) $4 \times \frac{1}{2}$	3
XV.	**Answer the following question : 1 × 4 = 4**	
37.	a) What is speciation ? List the factors responsible for the speciation. b) What are fossils ? Mention the ways of dating fossils. **OR** a) According to Mendel what are dominant traits and recessive traits ? b) What is dihybrid cross ? What is the ratio of plant types obtained in the F_2 generation of Mendel's dihybrid experiment ? *Ans.* : a) *Speciation* : Rise of a new species. 1 *Factors* : ★ gene flow/genetic drift ★ natural selection ★ geographical separation ★ change in the number of chromosomes ★ change in DNA. 1	

Qn. Nos.	Value Points	Total
	b) *Fossils* : Preserved traces of ancient organisms. 1 *Ways* : ★ Relative method $\frac{1}{2}$ ★ By detecting the ratios of different isotopes of the same element in the fossil material (carbon dating). $\frac{1}{2}$ **OR** a) *Dominant traits* : Out of the two copies of each trait expressed visible character more in progeny is dominant trait. 1 *Recessive trait* : Out of the two copies of each trait does not express visible character less in progeny is recessive trait. 1 b) *Dihybrid cross* : If parents showing two different characteristics are crossed then it is called dihybrid cross. 1 Ratio — 9 : 3 : 3 : 1 1	4 4
XVI.	**Answer the following question : 1 × 5 = 5**	
38.	a) How does glucose converts into energy molecule during aerobic respiration ? What is the role of alveoli in the process of respiration ? b) What are the different excretory strategies found in plants ? *Ans.* : a) ★ In cytoplasm the glucose breaks down into pyruvate. 1 ★ In mitochondria the pyruvate breaks down into carbon dioxide and water. 1 ★ The energy released during the respiration is used to synthesize ATP molecule. / $\frac{1}{2}$ ★ Glucose $\xrightarrow{\text{Cytoplasm}}$ pyruvate	

Qn. Nos.	Value Points	Total
	★ Pyruvate $\xrightarrow{\text{Mitochondria}}$ $CO_2 + H_2O$ + energy ★ ADP + P $\xrightarrow{\text{Energy}}$ ATP. ★ The walls of alveoli contains network of blood vessels, provide a surface for exchange of gases. $\frac{1}{2}$ b) ★ Plants get rid of excess water by transpiration. ★ Many plant waste products are stored in cellular vacuoles. ★ Waste products may be stored in leaves that fall off. ★ Waste products are stored as resins and gums in old xylem. ★ For waste plants use tissues consisting of dead cells and that they lose some parts such as leaves. ★ Plants also excrete some waste substances into the soil around them. (Any *four*) $4 \times \frac{1}{2}$	5