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

ಜೂನ್ 2024 ರ ಪರೀಕ್ಷೆ - 2

JUNE 2024 EXAMINATION – 2

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 : 20. 06. 2024] **[ಗರಿಷ್ಠ ಅಂಕಗಳು : 80**

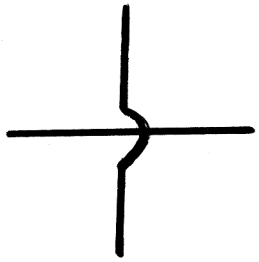
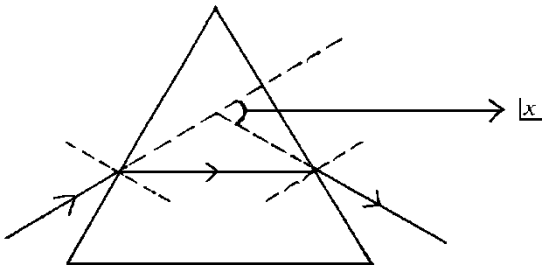
Date : 20. 06. 2024] **[Max. Marks : 80**

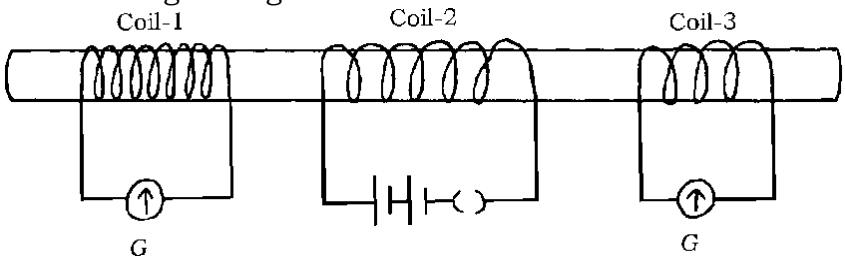
PART – A

(Physics)

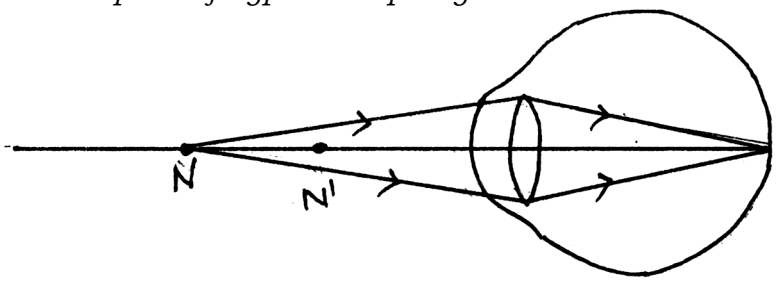
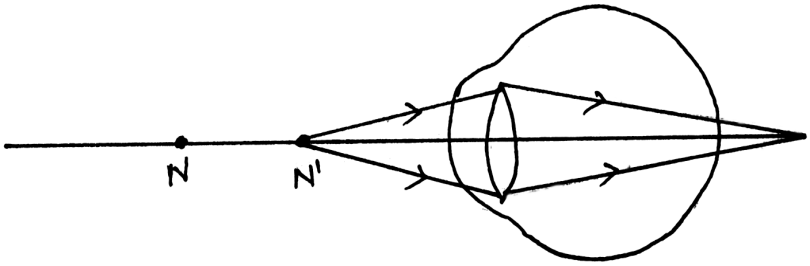
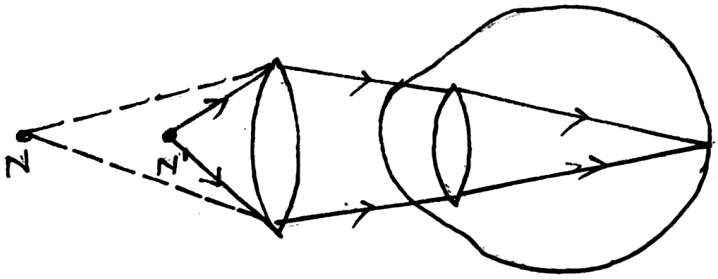
Qn. Nos.	Value Points	Total
I.	**Multiple choice questions :** **4 × 1 = 4**	
1.	To get virtual and erect image by a convex lens, an object is to be placed (A) beyond $2F_1$ (B) between F_1 and $2F_1$ (C) at focus F_1 (D) between focus F_1 and optical centre O *Ans.* : (D) between focus F_1 and optical centre O	1

Qn. Nos.	Value Points	Total
2.	The colour that is least scattered by fog and smoke is (A) orange (B) blue (C) red (D) violet *Ans.* : (C) red	1
3.	The magnetic field inside a long straight solenoid carrying current (A) is the same at all points (B) is zero (C) decreases as we move towards its end (D) increases as we move towards its end *Ans.* : (A) is the same at all points	1
4.	Identify the wrong statement among the following statements regarding refraction and dispersion of light. (A) Stars twinkle (B) Sky appears blue to an astronaut flying at very high altitudes (C) The sun is visible to us about two minutes before the actual sunrise (D) Planets do not twinkle *Ans.* : (B) Sky appears blue to an astronaut flying at very high altitudes	1

Qn. Nos.	Value Points	Total
II.	**Answer the following questions :** **2 × 1 = 2**	
5.	Write the symbols of the following components used in an electric circuit. i) Wires crossing without joining ii) Voltmeter *Ans.* : i)  ii)  $\frac{1}{2}+\frac{1}{2}$	1
6.	Observe the below figure showing the refraction of light through a glass prism.  Name the angle represented as $\angle x$ and give reason for the formation of that angle. *Ans.* : ★ $\angle X \rightarrow$ Angle of deviation $\frac{1}{2}$ ★ The peculiar shape of the prism makes the emergent ray bend at an angle to the direction of the incident ray $\frac{1}{2}$	1

Qn. Nos.	Value Points	Total
III.	**Answer the following questions :** **2 × 2 = 4**	
7.	Observe the given figure :  If the key connected to Coil-2 is plugged, in which of the other two coils more current is induced ? Why ? *Ans.* : ★ More current is induced in Coil-1. 1 ★ Coil-1 has more number of turns than Coil-3 ★ As the number of turns increases the current induced also increases. (Any *one* point) 1	2
8.	State two laws of reflection of light. *Ans.* : i) The angle of incidence is equal to the angle of reflection. 1 ii) The incident ray, the normal to the mirror at the point of incidence and the reflected ray, all lie in the same plane 1	2

Qn. Nos.	Value Points	Total
IV.	**Answer the following questions :** **3 × 3 = 9**	
9.	A concave lens has focal length of 25 cm. At what distance should the object from the lens be placed so that it forms an image at 20 cm from the lens ? Find the magnification of the image produced by the lens.	
	Ans. :	
	Here, $v = -20$ cm, $f = -25$ cm, $u = ?$	
	$\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$	
	$\therefore \quad -\frac{1}{u} = \frac{1}{f} - \frac{1}{v}$	
	$\therefore \quad \frac{1}{u} = -\frac{1}{f} + \frac{1}{v}$	
	$\therefore \quad \frac{1}{u} = \frac{1}{v} - \frac{1}{f}$	
	$\therefore \quad \frac{1}{u} = \frac{1}{-20} - \frac{1}{-25}$	
	$\therefore \quad \frac{1}{u} = -\frac{1}{20} + \frac{1}{25}$	
	$\therefore \quad \frac{1}{u} = \frac{-5+4}{100}$	
	$\therefore \quad \frac{1}{u} = -\frac{1}{100}$	
	$\therefore \quad u = -100$ cm 2	
	$\therefore$ Object distance = 100 cm	
	Magnification, $m = \frac{v}{u}$	
	$= \frac{-20}{-100}$	
	$= \frac{1}{5}$ 1	
	$\therefore \quad m = +0{\cdot}2$	3

Qn. Nos.	Value Points	Total
10.	Draw the ray diagrams that show : i) Near point of hypermetropic eye ii) Hypermetropic eye iii) Correction for hypermetropic eye. *Ans.* : i) *Near point of hypermetropic eye* :  1 ii) *Hypermetropic eye* :  1 iii) *Correction for hypermetropic eye* :  1	3
11.	a) Mention the function of digester present in bio-gas plant. b) Mention four properties to support that the bio-gas is an excellent fuel. **OR** a) Mention any *four* properties of a good source of energy. b) Mention the principal advantages of solar cells.	

Qn. Nos.	Value Points	Total
	Ans. : a) *Function of digester present in bio-gas plant :* Anaerobic micro-organisms here decompose the complex compounds of the cow-dung slurry. The decomposition process here completes and generates bio-gas. 1 b) ★ Bio-gas contains up to 75% methane. ★ It burns without smoke and leaves no residue ★ Its heating capacity is very high ★ It is also used for lighting ★ The slurry left behind is used as excellent manure ★ The large scale utilisation of bio-waste and sewage material provides a safe and efficient method of waste-disposal. (Any *four* points) $4 \times \frac{1}{2} = 2$ **OR** a) *Properties of a good source of energy :* ★ It should do a large amount of work per unit volume or mass. $\frac{1}{2}$ ★ It should be easily accessible. $\frac{1}{2}$ ★ It should be easy to store and transport $\frac{1}{2}$ ★ It should be economical. $\frac{1}{2}$	3

Qn. Nos.	Value Points	Total
	b) *Principal advantages of solar cells* : ★ They have no moving parts. ★ They require little maintenance. ★ Work quite satisfactorily without the use of any focussing device. ★ They can be set up in remote and inaccessible hamlets or in areas in which laying a power transmission line may be expensive and not commercially viable. (Any *two* points) $\frac{1}{2} + \frac{1}{2} = 1$	3
V.	**Answer the following questions :** **1 × 4 = 4**	
12.	a) Explain an experiment of drawing magnetic field lines around a bar magnet with the help of a compass needle. b) Mention two properties of magnetic field lines. **OR** a) Explain an experiment to show that a current carrying conductor experiences the force in a magnetic field. b) How is a simple electric motor converted into a commercial motor ?	
	Ans. : a) *Drawing magnetic field lines around a bar magnet using a compass needle* : ★ Place a bar magnet on a white paper and mark the boundary of the magnet $\frac{1}{2}$	

Qn. Nos.	Value Points	Total
	★ Place the compass needle near the north pole of the magnet. The south pole of the compass needle directs towards the north pole of the magnet. Mark it with a point. $\frac{1}{2}$ ★ Move the needle to a new position such that its south pole occupies the position previously occupied by its north pole. Mark it with a point. $\frac{1}{2}$ ★ In this way proceed step by step till you reach the south pole of the magnet. $\frac{1}{2}$ ★ Join the points marked on the paper by a small curve. $\frac{1}{2}$ ★ This curve represents a field line. $\frac{1}{2}$ b) *Properties of magnetic field lines* : ★ Field lines emerge from north pole of a magnet and merge at south pole. ★ Inside the magnet the direction of the field lines is from its south pole to north pole. ★ Magnetic field lines are closed curves. ★ Magnetic field is stronger where the field lines are crowded. ★ No two field-lines are found to cross each other. (Any *two*) $\frac{1}{2} + \frac{1}{2} = 1$ **OR** a) ★ Take a small aluminium rod and suspend it horizontally using connecting wires. $\frac{1}{2}$	4

Qn. Nos.	Value Points	Total
	★ Place a strong horse-shoe magnet in such a way that rod lies between the two poles with the magnetic field directed upwards. $\frac{1}{2}$ ★ Connect the aluminium rod in series with a battery, a key and a rheostat. $\frac{1}{2}$ ★ Now pass the current through the aluminium rod in one particular direction. $\frac{1}{2}$ ★ The rod displaces towards one side. $\frac{1}{2}$ ★ Reverse the direction of current flowing through the rod. The rod displaces towards the opposite side. $\frac{1}{2}$ Hence a current carrying conductor experiences a force perpendicular to its length in a magnetic field.	
	b) ★ By replacing permanent magnet with an electromagnet. ★ By increasing the number of turns of the conducting wire in the current-carrying coil. ★ By using a soft iron core on which the coil is wounded. (Any *two*) $\frac{1}{2} + \frac{1}{2} = 1$	4
VI.	**Answer the following question :** **1 × 5 = 5**	
13.	a) What is resistance of a conductor ? On what factors does the resistance of a conductor depend ?	
	b) It is advantageous to connect electrical devices in parallel instead of connecting them in series. Why ? Explain.	

Qn. Nos.	Value Points	Total
	Ans. :	
	a) ★ Resistance of a conductor is a property that resists the flow of electron charges in the conductor. 1	
	★ The resistance of a conductor depends on : i) its length $\frac{1}{2}$ ii) its area of cross-section $\frac{1}{2}$ iii) the nature of its material $\frac{1}{2}$ iv) temperature. $\frac{1}{2}$	
	b) ★ Parallel circuit divides the current through the electrical devices connected.	
	★ This is helpful particularly when each device has different resistance and requires different current to operate properly.	
	★ But in a series circuit when one component fails the current is broken and none of the components works. (Any *two*) 1 + 1	5

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

ಜೂನ್ 2024 ರ ಪರೀಕ್ಷೆ - 2

JUNE 2024 EXAMINATION – 2

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)

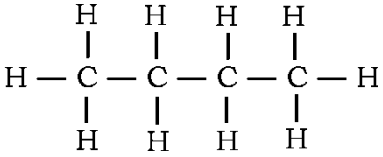
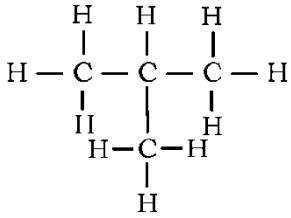
(ಇಂಗ್ಲಿಷ್ ಮಾಧ್ಯಮ / English Medium)

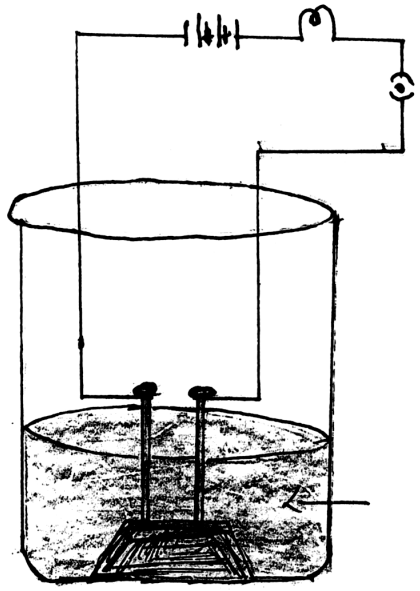
ದಿನಾಂಕ : 20. 06. 2024] **[ಗರಿಷ್ಠ ಅಂಕಗಳು : 80**

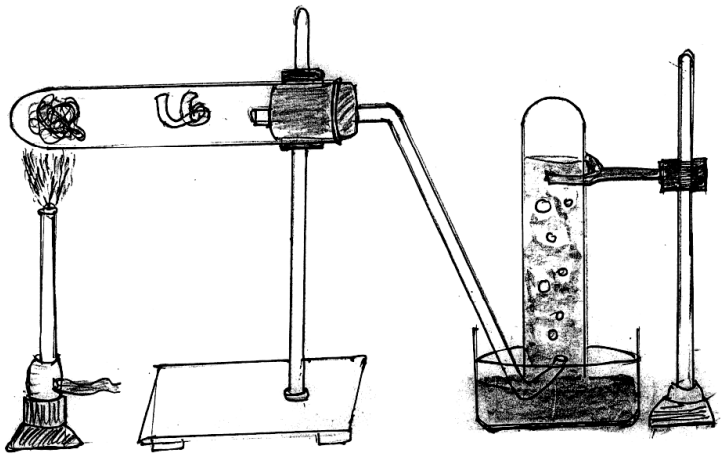
Date : 20. 06. 2024] **[Max. Marks : 80**

PART – B
(Chemistry)

Qn. Nos.	Value Points	Total
VII.	**Multiple choice questions :** **2 × 1 = 2**	
14.	The molecular formula of propanal is (A) C_2H_5COOH (B) C_2H_5CHO (C) C_3H_5CHO (D) C_3H_5COOH *Ans.* : (B) C_2H_5CHO	1

Qn. Nos.	Value Points	Total
15.	Aluminium, Iron, Magnesium and Zinc metals react with dilute hydrochloric acid. The series that indicates decreasing order of reactivity of these metals is (A) Mg > Al > Zn > Fe (B) Al > Mg > Fe > Zn (C) Fe > Zn > Al > Mg (D) Fe > Mg > Zn > Al *Ans.* : (A) Mg > Al > Zn > Fe	1
VIII.	**Answer the following questions :** **4 × 1 = 4**	
16.	1M acetic acid is mixed with 1M sodium hydroxide solution. Determine the nature of the salt forms here with suitable reason. *Ans.* : ★ It is a basic salt. $\frac{1}{2}$ ★ Because sodium hydroxide is a strong base. $\frac{1}{2}$	1
17.	Write the structures of isomers of butane. *Ans.* :   $\frac{1}{2}+\frac{1}{2}$	1
18.	Generally ionic compounds have high melting points and boiling points. Why ? *Ans.* : Ionic compounds require considerable amount of energy to break the strong inter-ionic attraction.	1
19.	"Detergents are better cleansers than soaps." Justify this statement. *Ans.* : They clean dirt even in hard water without forming a scum.	1

Qn. Nos.	Value Points	Total
IX.	**Answer the following questions :** **3 × 2 = 6**	
20.	Draw the diagram of arrangement of apparatus to show that acidic solution in water conducts electricity and label dilute HCl solution. *Ans.* :  Drawing : $1\frac{1}{2}$ Labelling : $\frac{1}{2}$	2
21.	What are alloys ? Name two alloys of copper. **OR** What are amphoteric oxides ? Give two examples. *Ans.* : ★ Alloys are homogeneous mixtures of two or more metals, or metal and non-metals. 1 ★ Alloys of copper — bronze and brass. $\frac{1}{2} + \frac{1}{2}$ **OR**	2

Qn. Nos.	Value Points	Total
	Metallic oxides that react with both acids as well as bases to produce salt and water are called amphoteric oxides. 1 *Ex.* : Aluminium oxide (Al_2O_3) $\frac{1}{2}$ Zinc oxide (ZnO) $\frac{1}{2}$	2
22.	Draw the diagram of arrangement of apparatus to show the action of steam on metal. *Ans.* : Arrangement of apparatus showing action of metal on steam. 	2
X.	**Answer the following questions :** **3 × 3 = 9**	
23.	a) What is the chemical formula of bleaching powder ? Write any two uses of this salt. b) Name the acid present in the following substances. i) Curd ii) Gastric juice *Ans.* : a) Bleaching powder : $CaOCl_2$ 1 *Uses* : ★ Used as bleaching agent in paper, cloth & laundry industries ★ Used as oxidising agent in chemical industries ★ Used as disinfectant. (Any *two*) $\frac{1}{2} + \frac{1}{2}$	

Qn. Nos.	Value Points	Total
	b) i) Curd : Lactic acid $\frac{1}{2}$	
	ii) Gastric juice : Hydrochloric acid [HCl] $\frac{1}{2}$	3
24.	Observe the given part of the modern periodic table and answer the following questions :	

Elements	*p*	*q*	*r*	*s*
Atomic No.	4	5	3	7

i) Find the valence electrons of the elements *'q'* and *'r'*.

ii) Which element has larger atomic size and why ?

iii) Find the most electronegative element and give reason.

OR

The electronic configuration of the three elements *x, y* and *z* are 2,8,7 ; 2,8,8 and 2,8,1 respectively.

i) Which element is the most electropositive and why ?

ii) Which element has zero valency and why ?

iii) Predict the type of the chemical bond that forms when *'x'* and *'z'* elements react each other and mention the reason.

Ans. :

i) $q \rightarrow$ K L 2 3 , Valence electrons = 3 $\frac{1}{2}$

$r \rightarrow$ 2 1 , Valence electron = 1 $\frac{1}{2}$

ii) $r \rightarrow$ Across the period from left to right size of the atom decreases. Only one valence electron is found in outer most shell $\frac{1}{2} + \frac{1}{2}$

iii) $s \rightarrow$ Across the period electronegativity increases. $\frac{1}{2} + \frac{1}{2}$ 3

OR

i) $z \rightarrow$ Electropositivity decreases across the period from left to right. Easily donates one valence electron of outer shell. $\frac{1}{2} + \frac{1}{2}$

ii) $y \rightarrow$ Outermost shell has octet / $ns^2\, np^6$ arrangement of electrons. $\frac{1}{2} + \frac{1}{2}$

iii) Ionic bond. Because of complete transfer of electrons. $\frac{1}{2} + \frac{1}{2}$ 3

Qn. Nos.	Value Points	Total
25.	a) If the molecular formula of first member of a homologous series is C_2H_2, then write the names and the molecular formulae of the next two members of the same series. b) Generally vegetable oils are subjected to hydrogenation. Why ? *Ans.* : a) → C_3H_4 : Propyne $\frac{1}{2}+\frac{1}{2}$ → C_4H_6 : Butyne $\frac{1}{2}+\frac{1}{2}$ b) To increase the shelf life of vegetable oils / to prevent oxidation of oils / to prevent rancidity. 1	3
XI.	**Answer the following question : 1 × 4 = 4**	
26.	a) Write the balanced chemical equations for the following reactions : i) Calcium carbonate on heating produces calcium oxide and carbon dioxide. ii) Burning of natural gas (methane) produces carbon dioxide and water. b) Give reason : i) Articles made of copper lose their shiny surface when exposed to air. ii) An iron nail placed in copper sulphate solution slowly turns to brown colour. *Ans.* : a) i) $CaCO_3 \rightarrow CaO + CO_2$ 1 ii) $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$. 1	

Qn. Nos.	Value Points	Total
	b) i) Copper reacts with atmospheric air to form copper oxide (CuO) or Copper carbonate [$CuCO_3$] / copper oxidises / copper undergoes corrosion (Any *one*) 1	
	ii) Displacement reaction takes place. / Iron displaces copper from copper sulphate solution. (Any *one*) 1	4

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

A

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

ಜೂನ್ 2024 ರ ಪರೀಕ್ಷೆ - 2

JUNE 2024 EXAMINATION – 2

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**)

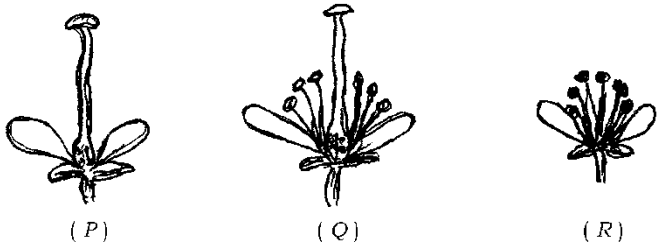
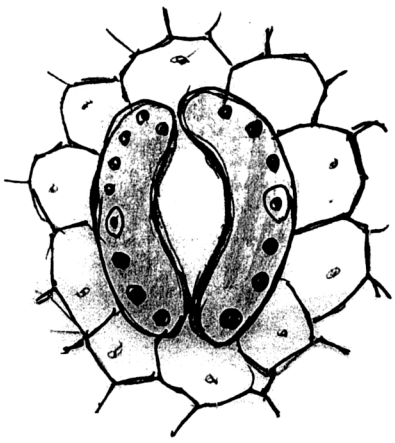
(ಇಂಗ್ಲಿಷ್ ಮಾಧ್ಯಮ / English Medium)

ದಿನಾಂಕ : **20. 06. 2024]** **[ಗರಿಷ್ಠ ಅಂಕಗಳು : 80**

Date : 20. 06. 2024] **[Max. Marks : 80**

PART – C
(Biology)

Qn. Nos.	Value Points	Total
XII.	**Multiple choice questions :** **2 × 1 = 2**	
27.	The material transported by xylem tissue in plants is (A) food (B) oxygen (C) water (D) carbon dioxide *Ans.* : (C) water	1

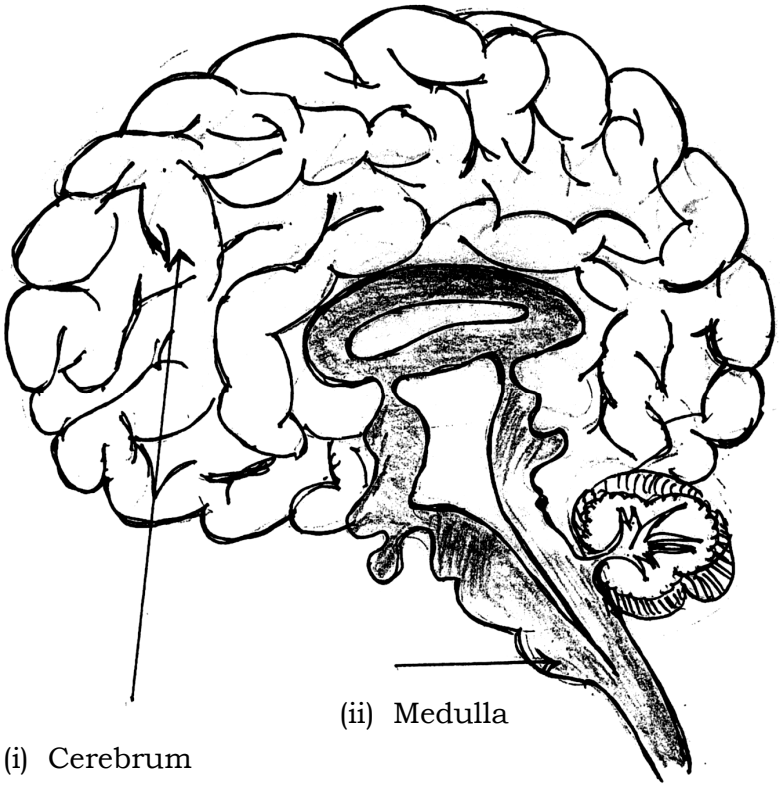
Qn. Nos.	Value Points	Total
28.	The flower that can undergo self pollination among below given figures of flower is  (*P*) (*Q*) (*R*) (A) *'P'* only (B) *'R'* only (C) Both *'P'* and *'R'* (D) *'Q'* only *Ans.* : (D) *'Q'* only	1
XIII.	**Answer the following questions :** **2 × 1 = 2**	
29.	Draw the diagram to show the structure of open stomata. *Ans.* : 	1
30.	Use of CFCs in refrigerant units is strictly prohibited. Why ? *Ans.* : CFCs cause depletion of the ozone layer.	1
XIV.	**Answer the following questions :** **3 × 2 = 6**	
31.	a) "Re-use is better practice than recycle." Give reason. b) What needs of the local people are fulfilled by the forests ? **OR**	

Qn. Nos.	Value Points	Total
	a) "Paperless work is a better practice." Give reason. b) List any two advantages of constructing check dams in agricultural lands. *Ans.* : a) ★ The process of recycling utilises some energy. $\frac{1}{2}$ [Consider relevant point] b) ★ The local people get firewood, small timber and thatch. ★ To make slats for huts, and baskets for collecting and storing food materials, for this purpose they use bamboo. ★ They use some wood for making agricultural equipment and fishing. ★ They get food and medicine from forests. ★ They also depend on forests for cattle feed. (Any *three*) $\frac{1}{2} + \frac{1}{2} + \frac{1}{2}$ **OR** a) More utilisation of papers leads deforestation. 1 (Consider other suitable points) b) ★ Check dams by keeping moisture in the surrounding agriculture area enhances the yield. $\frac{1}{2}$ ★ Increase the underground water level. $\frac{1}{2}$ (Any other suitable points)	2 2

Qn. Nos.	Value Points	Total
32.	How father is responsible to determine sex of a child in humans ? Explain. *Ans.* : ★ In father the sex chromosomes are odd pair called *'X'* and *'Y'*. ★ But in mother both chromosomes are in a perfect pair called *'XX'* ★ So, if the child gets *'X'* chromosome inherited by father, the sex of a child will be female (*XX*). ★ If the child gets inherited by *'Y'* chromosome, the sex of a child will be male. Hence, the father determines the sex of a child in human beings.	2
	OR	
	★ Parents Father Mother (*XY*) (*XX*) Gametes *X* *Y* *X* *X* Zygote *XX* *XX* *XY* *XY* Female Female Male Male	

Qn. Nos.	Value Points	Total
33.	In an aquatic eco-system the organisms such as fishes, birds, insect larvae and diatoms are found. Construct a food chain using these organisms. If 10 calories of energy is available to the tertiary consumers in this food chain, what amount of energy was produced in the first trophic level ? *Ans.* : *Food Chain* : ★ *Diatoms → Insect larvae → Fishes → Birds* 1 Producers → Pri. Consumer → Sec. Consumer → Ter. Consumer ↓ → 10,000 calories → 1000 calories → 100 calories → 10 calories ★ Organisms in the first trophic level that produced the energy was 10,000 calories 1	2
XV.	**Answer the following questions : 3 × 3 = 9**	
34.	a) How does 'touch-me-not' plant respond to touch ? Explain. b) Mention any one function each of 'auxin' and 'abscissic acid' hormones. **OR** a) How muscle cells respond for a nerve impulse ? b) Mention the function each of 'insulin' and 'estrogen' hormones in humans. *Ans.* :	

Qn. Nos.	Value Points	Total
	a) ★ The parts of the plants that are being touched, use electro-chemical impulses for a movement. $\frac{1}{2}$ ★ For this movement plant cells change their shape by changing the amount of water in them. 1 ★ As a result of this change plant cells either swells or shrinks and therefore change the shape of leaves. $\frac{1}{2}$ b) *Auxins* : They increase cell elongation in the tip of stems. $\frac{1}{2}$ *Abscissic acid* : Inhibits the growth of plants. $\frac{1}{2}$ **OR** a) ★ Muscle cells receive nerve impulses from neurons. $\frac{1}{2}$ ★ Muscle cells convert received electric impulses into chemical signals. $\frac{1}{2}$ ★ Then the special proteins in the muscle cells change their shape and arrangement $\frac{1}{2}$ ★ Due to this new arrangement of proteins the muscle cells either elongate or become short. $\frac{1}{2}$ b) *Insulin* : Controls the sugar level in blood. $\frac{1}{2}$ *Estrogen* : Promotes development of sex-organs in females / regulates menstruation cycle. $\frac{1}{2}$	3 3
35.	Draw the diagram showing the structure of longitudinal section of the human brain and label the following parts : i) Cerebrum ii) Medulla.	

Qn. Nos.	Value Points	Total
	Ans. : Structure of L.S. of Human brain.  (i) Cerebrum (ii) Medulla For diagram — 2 Labelling — $\frac{1}{2}+\frac{1}{2}$	3
36.	Red flowering (*RR*) 4 O'clock plant is crossed with white flowering (*WW*) 4 O'clock plant. There are 25% red flowering, 25% white flowering and 50% hybrids are obtained in F_2 generation. Then, i) What are the characteristics of plants of F_1 generation ? ii) Show the results of F_2 generation with the help of a checker board and mention the genotypic ratio.	

Qn. Nos.	Value Points	Total

iii) Determine the trait that can be considered either as 'dominant' or 'recessive' by analysing the results of both F_1 and F_2 generations.

OR

Read, analyse the given situations and answer the questions given below :

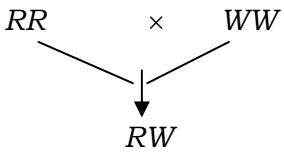
Situation 1 : Many vegetables and fruits are now available in different colours and sizes.

Situation 2 : The colour of the wings in the population of Drosophila insects is turning to black due to the increase of carbon in some industrial areas.

i) In which of the situations the genetic drift happens fastly and why ?

ii) Are traits inherit in both of the situations or not ? Justify your answer.

Ans. :

i) 

F_1 generation [All are hybrids] $\frac{1}{2}$

ii) F_2 generation :

Gametes	*R*	*W*
R	*RR*	*RW*
W	*RW*	*WW*

1

Qn. Nos.	Value Points	Total
	Genotype ratio ; 1 : 2 : 1 $\frac{1}{2}$ iii) In F_1-generation 100% hybrids In F_2-generation 50% hybrids So, that neither red colour nor, white colour is dominant / recessive. 1	3
	OR i) In situation (1) $\frac{1}{2}$ Because, the changes illustrated here are done by artificial selection. / To get different varieties crossing has been conducted artificially. 1 ii) In situation (1), traits inheritance may happen or may not happen. $\frac{1}{2}$ But, in the situation (2), the genetic variations and their flow will take place. Since it is natural selection and traits can be inherited. 1	3
XVI.	**Answer the following questions : 2 × 4 = 8**	
37.	a) What is asexual reproduction ? Name the type of asexual reproduction that takes place in 'planaria' and 'rhizopus'. b) What is the role of 'testis' and 'prostate' gland in human male reproductive system ?	
	Ans. : a) Production of young ones without fusion of gametes. 1 *Planaria* — Regeneration. $\frac{1}{2}$ *Rhizopus* — Spore formation. $\frac{1}{2}$	

Qn. Nos.	Value Points	Total
	b) *Testis* : ★ Production of sperms / male gametes ★ Controls the production of testosterone. 1 *Prostate gland* : Provides nutritional media for the movement of sperm cells by its secretion. 1	4
38.	a) Briefly explain the formation of urine in nephrons. b) How food materials are transported in higher plants ? Explain. *Ans.* : a) *Formation of urine in nephrons* : ★ Nephron is structural and functional unit of a kidney. ★ The thin walled capillaries are the filtration units in the kidney. $\frac{1}{2}$ ★ Each capillary cluster in the kidney associated with cup shaped structure of nephron and takes part in the filtration of blood. $\frac{1}{2}$ ★ In this stage some substances in the initial filtrate, such as glucose, amino acids, salts and major amount of water are selectively re-absorbed. 1 The liquid by-product that forms after this process is urine.	

Qn. Nos.	Value Points	Total
	b) ★ Phloem is a food conducting tissue. $\frac{1}{2}$ ★ Phloem translocates soluble products of photo-synthesis, amino acids and other substances from the leaves to all the parts of the plants. $\frac{1}{2}$ ★ Translocation takes place in sieve tube, with the help of companion cell, both in upward and downward directions. $\frac{1}{2}$ ★ Osmotic pressure helps to move the materials from phloem to other tissues of having low pressure. $\frac{1}{2}$	4