ಕರ್ನಾಟಕ ಶಾಲಾ ಪರೀಕ್ಷೆ ಮತ್ತು ಮೌಲ್ಯನಿರ್ಣಯ ಮಂಡಲಿ

ಮಲ್ಲೇಶ್ವರಂ, ಬೆಂಗಳೂರು – 560 003

KARNATAKA SCHOOL EXAMINATION AND ASSESSMENT BOARD
Malleshwaram, Bengaluru - 560 003

2026–27 ರ ಎಸ್.ಎಸ್.ಎಲ್.ಸಿ. ಮಾದರಿ ಪ್ರಶ್ನೆಪತ್ರಿಕೆ – 1

S.S.L.C. MODEL QUESTION PAPER – 1 : 2026-27

ಮಾದರಿ ಉತ್ತರಗಳು

MODEL ANSWERS

ಸಂಕೇತ ಸಂಖ್ಯೆ : **83-E** **Code No. : 83-E**

ವಿಷಯ : **ವಿಜ್ಞಾನ**

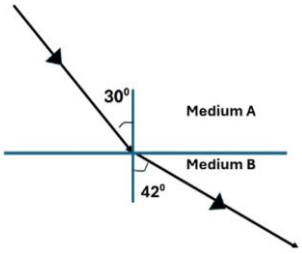
Subject: SCIENCE

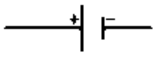
(ಭೌತ ವಿಜ್ಞಾನ, ರಸಾಯನ ವಿಜ್ಞಾನ ಮತ್ತು ಜೀವ ವಿಜ್ಞಾನ / Physics, Chemistry and Biology)

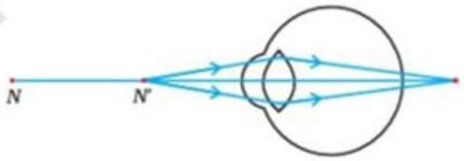
(ಆಂಗ್ಲ ಮಾಧ್ಯಮ / English Medium)

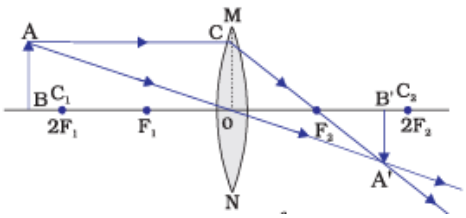
(ಭೌತ ವಿಜ್ಞಾನ / Physics)

[Max. Marks: 80

Q.No.	Value Points	Total
	Part - A	
	(Physics)	
I.	**Multiple-choice questions:** **2 x 1 = 2**	
1.	In an electric circuit, the ammeter and voltmeter are generally connected as follows: (A) Both are connected in parallel (B) Both are connected in series (C) Ammeter is connected in series, and voltmeter is connected in parallel (D) Ammeter is connected in parallel, and voltmeter is connected in series ***Answer:*** (C) Ammeter is connected in series, and voltmeter is connected in parallel	1
2.	The given image shows the entry of light from medium A to medium B (angle of incidence ∠i = 30° and angle of refraction ∠r = 42°). The correct statement with respect to this image is:  	1

Q.No.	Value Points		Total
	(A) A is denser medium (B) A is rarer medium (C) B is denser medium (D) The speed of light is higher in medium A ***Answer:*** (A) A is denser medium		
II.	**Answer the following questions:** **2 x 1 = 2**		
3.	Write the symbols for the following components used in the electric circuit: (i) Closed key (ii) Electric Cell ***Answer:*** (i)  (ii) 	½ ½	1
4.	A current carrying conducting wire is kept perpendicular to the magnetic field. If the flow of current is doubled, then what change will happen in the direction and the magnitude of the force acting on the conductor according to Fleming's left hand rule? ***Answer:*** According to Fleming's Left-Hand Rule, the direction of the force does not change, but the magnitude of the force doubles.	1	1
III.	**Answer the following questions :** **3 x 2 = 6**		
5.	What is a solenoid? How can this be converted into an electromagnet? ***Answer:*** o Definition of Solenoid: A coil of many circular turns of insulated copper wire wrapped closely in the shape of a cylinder is called a solenoid. o Conversion into Electromagnet: It can be converted into an electromagnet by placing a piece of magnetic material, such as a soft iron core, inside the coil when a strong electric current passes through it.	1 1	2
6.	Connecting a fuse in domestic electric circuits is essential. Why? Explain. Answer. o A fuse is an essential safety device used to protect domestic electrical circuits and expensive appliances from damage caused by overloading, short-circuiting, or unexpected voltage/current surges. o When a current larger than the specified safe rating flows through the circuit, the temperature of the fuse wire rises significantly due to Joule heating ($H = I^2Rt$). This causes the low-melting-point fuse wire to melt and break the circuit, stopping the excessive current flow immediately.	1 1	2

Q.No.	Value Points		Total
7.	A person who has the defect as shown in the given figure purchases spectacles with a lens power of -2.0 D. Is the use of this lens suitable for this defect? Analyse. 		
	Answer:		
	○ As shown in the image, the person has a vision defect requiring a -2.00 D lens; the negative (-) sign indicates a concave lens.	1	
	○ However, the remedy for this condition is to use a convex lens (converging lens) of appropriate power. The lens power must have a positive (+) sign, as the plus sign indicates a convex lens; therefore, this vision defect cannot be corrected with spectacles of -2.00 D power.	1	2
IV.	**Answer the following questions :** **3 x 3 = 9**		
8.	Name the phenomena of light responsible for causing the following effects:		
	(i) Splitting white light into its constituent colours.		
	(ii) For the twinkling of stars.		
	(iii) Appearance of the clear sky in the blue colour.		
	Answer:		
	(i) Splitting white light into its constituent colours: Dispersion of light	1	
	(ii) Twinkling of stars: Atmospheric refraction	1	
	(iii) Appearance of the clear sky in blue colour: Scattering of light	1	3
9.	Explain an activity to mark magnetic field lines around a bar magnet using a compass needle.		
	OR		
	Explain an activity of indicating magnetic field lines using iron filings in a straight current-carrying conductor.		
	Answer:		
	○ Fix a sheet of white paper on a drawing board using adhesive tape and place a bar magnet in the centre. Mark the boundary of the magnet.	½	
	○ Place a small plotting compass needle near the North (N) pole of the bar magnet. The south pole of the needle points towards the north pole of the magnet.	½	
	○ Mark the positions of two ends (north and south poles) of the compass needle using a pencil.	½	
	○ Move the compass needle to a new position such that its south pole occupies the position previously occupied by its north pole.	½	
	○ Repeat this step-by-step until you reach the South (S) pole of the bar		

Q.No.	Value Points		Total
	magnet.	½	
	○ Join the marked pencil dots on the paper with a smooth curved line. This continuous curve represents a magnetic field line. Repeat from different starting points to obtain the full magnetic field pattern.	½	.
	OR		
	○ Take a 12 V battery, a plug key, an ammeter (0-5 A), a variable resistance (rheostat), and a thick, straight copper wire.	½	
	○ Insert the thick copper wire vertically through the center of a flat rectangular cardboard placed horizontally, ensuring it stays firmly fixed.	½	
	○ Connect the ends of the copper wire in series with the battery, key, ammeter, and rheostat.	½	
	○ Sprinkle some iron filings uniformly and lightly over the surface of the cardboard around the conductor.	½	
	○ Close the plug key so that a steady current flows through the copper wire.	½	
	○ Gently tap the cardboard a few times with your finger.	½	
	Observation: The iron filings align themselves in a distinct pattern of concentric circles centered at the wire, representing the magnetic field lines around a straight current-carrying conductor (direction governed by Right-Hand Thumb Rule).		3
10.	Draw a ray diagram to show the image formation when an object is kept beyond $2F_1$ in front of a convex lens. Mention the nature and position of the image formed.		
	Answer:		
			
	Ray diagram –	2	
	○ Nature of Image: Real, inverted, and diminished	½	
	○ Position of Image: Between F_2 and $2F_2$	½	3
V.	**Answer the following questions :**	**2 x 4 = 8**	
11.	An electrical heater of power 1100 W is connected to a 220 V source. Find the current drawn by the heater and calculate the heat generated by the heater in one minute.		
	OR		
	Three resistors R_1, R_2, and R_3 of resistance 4 Ω, 6 Ω, and 12 Ω respectively are connected in parallel to a 12 V battery in an electric circuit, then		

Q.No.	Value Points	Total
	calculate: (i) The total resistance in the circuit (ii) The current flowing through each resistor. ***Answer:*** Given Data: [1 Mark] P = 1100 W V = 220 V t = 1 minute = 60 seconds	1
	Current drawn by the heater (I): P = V × I I = P / V I = 1100 / 220 = 5 A Therefore, Current drawn (I) = 5 Amperes (A)	1
	Heat generated in one minute (H): Find the value of R: $R = \frac{V}{I} = \frac{220}{5} = 44\ \Omega$	1
	$H = I^2Rt$ $= (5)^2 \times 44 \times 60$ = 66,000 Joules = 66 kJ	1
	OR Given: $R_1 = 4\ \Omega$, $R_2 = 6\ \Omega$, $R_3 = 12\ \Omega$, V = 12 V (i) Total Effective Resistance in the Circuit (R_p): $\frac{1}{R_p} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$ $\frac{1}{R_p} = \frac{1}{4} + \frac{1}{6} + \frac{1}{12}$ $\frac{1}{R_p} = \frac{3+2+1}{12}$ $\frac{1}{R_p} = \frac{6}{12} = \frac{1}{2}$ $\boldsymbol{R_p = 2\ \Omega}$ Therefore, Total Resistance in the circuit = 2 Ω.	1
	(ii) Current Flowing Through Each Resistor: In a parallel circuit, potential difference across every branch remains constant: V = 12 V. By Ohm's Law (I = V / R):	

Q.No.	Value Points		Total
	• Current through R_1 (4 Ω): $I_1 = \frac{V}{R_1} = \frac{12}{4} = 3$ A	1	
	• Current through R_2 (6 Ω): $I_2 = \frac{V}{R_2} = \frac{12}{6} = 2$ A	1	
	• Current through R_3 (12 Ω): $I_3 = \frac{V}{R_3} = \frac{12}{12} = 1$ A	1	4
12.	Explain the New Cartesian Sign Convention while dealing with the reflection of light by spherical mirrors.		
	Answer:		
	○ Pole as Origin: The pole (P) of the spherical mirror is taken as the origin.	½	
	○ The principal axis is taken as the x-axis.	½	
	○ Object Placement: The object is always placed to the left of the mirror. This means that light from the object falls on the mirror from the left-hand side.	½	
	○ Measurement of Distances: All distances parallel to the principal axis are strictly measured from the pole (P) of the mirror.	½	
	○ Distances in Direction of Incident Light (+ve): Distances measured in the same direction as the incident light (to the right of the pole / along +x axis) are taken as POSITIVE (+).	½	
	○ Distances Opposite to Incident Light (-ve): Distances measured against the direction of incident light (to the left of the pole / along -x axis) are taken as NEGATIVE (-). Consequently, object distance (u) is always negative.	½	
	○ Heights Above Principal Axis (+ve): Distances measured perpendicular to and upward above the principal axis (along +y axis) are taken as POSITIVE (+). Erect images and standard objects have positive heights.	½	
	○ Heights Below Principal Axis (-ve): Distances measured perpendicular to and downward below the principal axis (along -y axis) are taken as NEGATIVE (-). Real and inverted images have negative heights.	½	

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S.S.L.C. MODEL QUESTION PAPER – 1 : 2026-27

ಮಾದರಿ ಉತ್ತರಗಳು

MODEL ANSWERS

ಸಂಕೇತ ಸಂಖ್ಯೆ : **83-E** **Code No. : 83-E**

ವಿಷಯ : **ವಿಜ್ಞಾನ**

Subject: SCIENCE

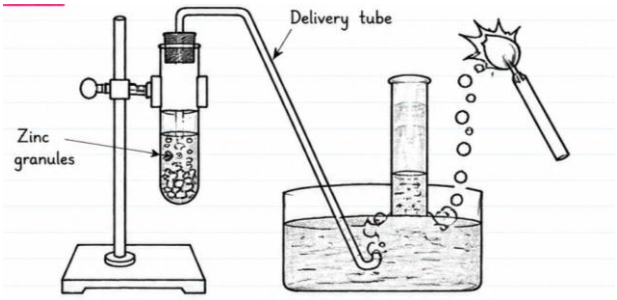
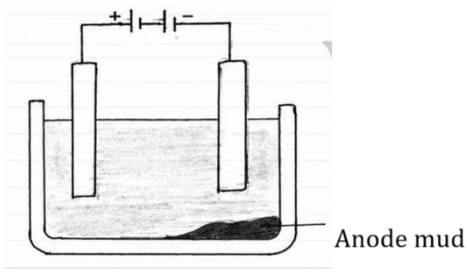
(ಭೌತ ವಿಜ್ಞಾನ, ರಸಾಯನ ವಿಜ್ಞಾನ ಮತ್ತು ಜೀವ ವಿಜ್ಞಾನ / Physics, Chemistry and Biology)

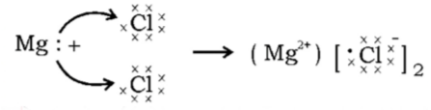
(ಆಂಗ್ಲ ಮಾಧ್ಯಮ / English Medium)

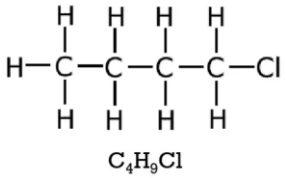
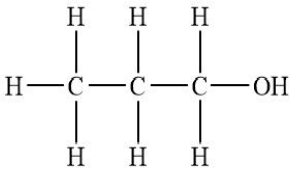
(ರಸಾಯನ ವಿಜ್ಞಾನ / Chemistry)

[Max. Marks: 80

Q.No.	Value Points	Total
	Part - B	
	(Chemistry)	
VI.	**Multiple-choice questions:** **3 x 1 = 3**	
13.	The most ductile metal is (A) Gold (B) Silver (C) Copper (D) Iron ***Answer:*** (A) Gold.	1
14.	$Fe_2O_3 + 2Al \rightarrow Al_2O_3 + 2Fe$ Choose the correct answer confirming displacement (A) Aluminium changes into a gas (B) Iron is obtained as a product. (C) Oxygen is release (D) Water is formed. ***Answer:*** (B) Iron is obtained as a product.	1
15.	Carbon bonds with other carbon atoms to form large molecules. This unique property of carbon is : (A) Saponification (B) Catenation (C) Hydrogenation (D) Esterification ***Answer:*** (B) Catenation	1

Q.No.	Value Points		Total
VII.	**Answer the following questions :** **3 x 1 = 3**		
16.	What is an amphoteric oxide? ***Answer:*** An amphoteric oxide is an oxide that reacts with both acids and bases to form salt and water.		1
17.	If one of the component of an alloy is mercury, then it is called as? ***Answer:*** An alloy that contains mercury as one of its components is called amalgam.		1
18.	Which among the alkane, alkene and alkynes generally undergo substitution reaction? ***Answer:*** Alkanes (unsaturated) generally undergo substitution reaction in the presence of sunlight.		1
VIII.	**Answer the following questions :** **3 x 2 = 6**		
19.	Draw the diagram of the arrangement of apparatus used to show the reaction of Zinc granules with dilute sulphuric acid and label the 'delivery tube'. ***Answer:***  For diagram – For part -	1 ½ ½	2
20.	What is hydrogenation? Mention its industrial application. ***Answer:*** Hydrogenation is the addition of hydrogen to unsaturated organic compounds such as alkenes or alkynes in the presence of a catalyst like Nickel or Palladium. Industrial application: It is used in the hydrogenation of vegetable oils to make vanaspathi ghee.	1 1	2
21.	Draw the diagram showing the electrolytic refining of copper and label 'anode mud'. ***Answer:***  For diagram – For part -	1 ½ ½	2

Q.No.	Value Points		Total
IX.	**Answer the following questions :** **3 x 3 = 9**		
22.	$MnO_2 + 4HCl \rightarrow MnCl_2 + 2H_2O + Cl_2$ Is the above reaction, redox reaction? Justify your answer. ***Answer:*** ○ Yes, the reaction is a redox reaction. ○ Oxidation: Chloride ion (Cl^-) in HCl is oxidized to Cl_2. ○ Reduction: Manganese (Mn) in MnO_2 is reduced to $MnCl_2$. Since oxidation and reduction occur simultaneously, it is a redox reaction. **OR** Write the balanced chemical equations for the following: i. Hydrogen + Oxygen → Water ii. Zinc Sulphate + Copper → Copper sulphate + Zinc iii. Zinc carbonate → Zinc Oxide + Carbon dioxide ***Answer:*** i. $2H_2O + O_2 \rightarrow 2H_2O$ ii. $ZnSO_4 + Cu \rightarrow CuSO_4 + Zn$ iii. $ZnCO_3 \rightarrow ZnO + CO_2$	1 1 1 1 1 1	3
23.	Four solutions P, Q, R and S when tested with universal indicator showed pH as 8, 1, 6 and 7 respectively. Among these which of the solution i) has more hydronium ions? ii) is neutral? iii) is the weak base? ***Answer:*** i) Q ii) S iii) P	 1 1 1	3
24.	Explain the formation of an ionic bond by transfer of electrons between magnesium and chlorine atoms. ***Answer:*** $Mg \rightarrow Mg^{2+} + 2e^-$ $Cl + e^- \rightarrow Cl^-$  The atomic number of Magnesium is 12 (2, 8, 2). By losing 2 valence electrons it becomes cation Mg^{2+} (2, 8)		

Q.No.	Value Points		Total
	The atomic number of Chlorine is 17 (2, 8, 7). By gaining one electron each it forms Cl^- ions and forms anion (2, 8, 8)	1+ ½+½+1	
	OR		
	What is ionic bond? List any four properties of ionic compounds.		
	Answer: Ionic bond: The bond formed by the electrostatic attraction between oppositely charged ions is called an ionic bond.	1	
	Properties of ionic compounds:		
	○ They are hard and crystalline solids. They are brittle and generally break into pieces when pressure is applied.	½	
	○ They have high melting and boiling points.	½	
	○ They are soluble in water but insoluble in organic solvents.	½	
	○ They conduct electricity in molten state or in aqueous solution, but not in solid state.	½	2
X.	**Answer the following questions :**	**1 x 4 = 4**	
25.	a) Write the molecular formula and structural formula of the following carbon compounds. i) Chlorobutane ii) Propanol		
	b) How does soap clean dirt? Explain.		
	Answer:		
	a) i) Chlorobutane: Molecular formula: C_4H_9Cl		
	 C_4H_9Cl	1	
	ii) Propanol: Molecular formula: C_3H_7OH		
		1	
	b) When soap molecules react with water they form structures called micelles.	1	
	The hydrocarbon end of this molecule is towards the dirt and the ionic end is towards water. When washed with water these micelles help to remove dirt.	1	
	OR		
	a) Carbon atoms do not form C^{4-} anion and C^{4+} cation. Why?		
	b) Write any two differences between saturated and unsaturated compounds.		

Q.No.	Value Points		Total
	Answer:		
	a)		
	• Carbon cannot form C^{4+} cation because of removal of 4 electrons from a carbon atom would require a large amount of energy.	1	
	• Carbon cannot form C^{4-} anion because it would be difficult for the nucleus with 6 protons to hold onto 10 electrons.	1	
	b)		

Saturated compounds	Unsaturated compounds
They contain only single covalent bonds between carbon atoms.	They contain one or more double or triple bonds between carbon atoms.
They are less reactive.	They are more reactive.
They undergo substitution reaction (Any 2 relevant answer)	They undergo addition reaction (Any 2 relevant answer)

(Any two) 1+1 4

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MODEL ANSWERS

ಸಂಕೇತ ಸಂಖ್ಯೆ : **83-E** **Code No. : 83-E**

ವಿಷಯ : **ವಿಜ್ಞಾನ**

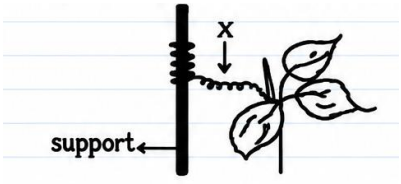
Subject: SCIENCE

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

(ಆಂಗ್ಲ ಮಾಧ್ಯಮ / English Medium)

(ಜೀವ ವಿಜ್ಞಾನ / Biology)

[Max. Marks: 80

Q.No.	Value Points	Total
	Part - C	
	(Biology)	
XI.	**Multiple-choice questions:** **3 x 1 = 3**	
26.	The blood vessels that carries oxygenated blood from the heart is (A) Pulmonary vein (B) Superior vena cava (C) Aorta (D) Pulmonary artery ***Answer:*** (C) Aorta	1
27.	Evolution occurs mainly due to the accumulation of: (A) Similarities (B) Selected variations (C) Acquired traits (D) DNA duplication ***Answer:*** (B) Selected variations	1
28.	Observe the given diagram. The response shown by part X is  (A) Positive thigmotropism and directional movement	

Q.No.	Value Points	Total
	(B) Positive geotropism and independent movement (C) Positive phototropism and non-directional movement (D) Positive chemotropism and independent movement ***Answer:*** (A) Positive thigmotropism and directional movement	1
XII.	**Answer the following questions :** **3 x 1 = 3**	
29.	A person's blood contains less amount of Red blood cells than the normal level, which life process of the person will be directly affected? ***Answer:*** Haemoglobin in red blood cells plays a crucial role in the transport of oxygen during the process of respiration.	1
30.	Write the differences between male sex chromosomes and female sex chromosomes in humans? ***Answer:***	

Male sex chromosomes (XY)	Female sex chromosomes (XX)
• One X chromosome and one Y chromosome are present • They are heteromorphic or dissimilar in size and shape • Responsible for determining male sex.	• Two X chromosomes are present. • They are homologous or similar in size and shape. • Responsible for determining female sex.

(Any one) 1

31.	An organism of a specific species reproduces only through asexual reproduction. What major limitation may arise if environment conditions suddenly change? ***Answer:*** Organisms reproducing asexually have less genetic variation. So, adapting to changing environment is difficult. Therefore, if environment conditions suddenly change, the organism population may decrease or the species may face the risk of extinction.	1
XIII.	**Answer the following questions :** **2 x 2 = 4**	
32.	Name the enzyme present in saliva. Write its function. ***Answer:*** Enzyme in saliva: Salivary amylase. 1 Function: It breaks down starch (a complex carbohydrate) into simpler sugars. 1 **OR** Write any two methods used by plants to eliminate waste materials. Answer: o Excretion through leaves: Some waste materials like resins, gums, tannins, etc., are stored in old leaves which later fall off. 1	

Q.No.	Value Points		Total
	○ Excretion through stomata and lenticels: Waste gases like carbon dioxide and water vapour are eliminated through stomata in leaves and lenticels in stems.	1	2
33.	How is the action of heartbeat different from reflex action?		
	Answer:		
	○ Heartbeat is a continuous automatic action controlled by the brain.	1	
	○ Reflex action is a quick response controlled by the spinal cord through a reflex arc.	1	
	OR		
	What is reflex arc? In many organisms' reflex arcs are considered as efficient ways of functioning. Why?		
	Answer:		
	○ Reflex arc is a rapid pathway for reflex action.	1	
	○ It is efficient because it produces quick, automatic response that protect the body and help in survival.	1	2
XIV.	**Answer the following questions :** **3 x 3 = 9**		
34.	Grass → Insect → Frog → Snake → Eagle.		
	In this food chain, if the frog population decreases drastically,		
	(i) predict one possible change in the insect and snake population		
	(ii) In this food chain, if organisms of one trophic level gets destroyed, what are the effects on that ecosystem?		
	Answer:		
	i) Insect population will increase and snake population will decrease.	½+½	
	ii) In this food chain, different trophic levels depend on each other for nutrition.	1	
	Hence, if one trophic level is destroyed organisms in the remaining trophic level will also be destroyed.	1	
35.	Pea plants producing yellow (YY) seeds are crossed with pea plants with green (yy) seeds.		
	Then write the checkerboard that shows the results obtained in F_2 generation with		
	i) Phenotype ratio and		
	ii) Genotype ratio		
	Answer:		
	a)		

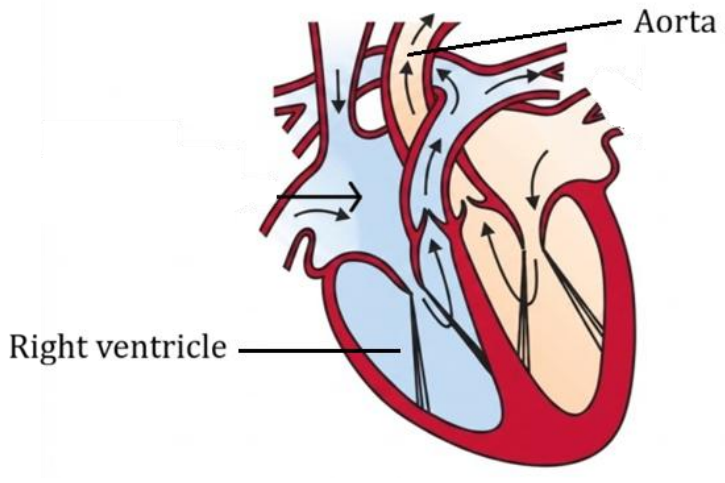
F_2 generation	Y	y
Y	YY	Yy
y	Yy	yy

	2	3

Q.No.	Value Points		Total
	i) Phenotype ratio and - 3 : 1	½	
	ii) Genotype ratio - 1 : 2 : 1	½	
	OR		
	Red flowering tall pea plant (TTRR) is hybridised with white flowering short pea plant (ttrr). Then write a checkerboard showing the results obtained in F_2 generation.		

Female / Male	TR	Tr	tR	tr
TR	TTRR	TTRr	TrRR	TtRr
Tr	TTRr	TTrr	TtRr	Ttrr
tR	TtRR	TtRr	ttRR	ttRr
tr	TtRr	Ttrr	ttRr	ttrr

36.	What is the role of insulin, testosterone and thyroxin hormones in our body?		
	Answer:		
	Insulin: Regulates blood sugar level in the body.	1	
	Testosterone: Promotes production of sperms and development of secondary sexual characteristics in males.	1	
	Thyroxin: Regulates metabolism of carbohydrates, proteins, fats and balances the growth of the body.	1	3
XV.	**Answer the following questions :** **1 x 4 = 4**		
37.	Draw a diagram showing the schematic sectional view of the human heart. Label the following parts. (i) Aorta (ii) Right ventricle		
	Answer:		



For diagram –	3	
For parts –	½+½	4

Q.No.	Value Points	Total
XVI.	**Answer the following questions :** **1 x 5 = 5**	
38.	a) What are the functions of ovaries in female reproductive system?	
	b) What changes are found among the boys at the time of sexual maturation?	
	c) What happens if the egg is not fertilized in women? Explain	
	Answer:	
	a) * Ovaries produce the female gametes (ova or eggs). ½	
	* They secrete the hormones oestrogen and progesterone. ½	
	b)	
	o Growth of beard and moustache.	
	o Voice cracks, hair grows in the armpits and pubic region	
	o Shoulders broaden and muscles develop	
	o Increase in height and weight	
	o Development of reproductive organs and production of sperms.	
	(Any four) 4x½	
	c)	
	o If the egg is not fertilized, the thickened lining of the uterus breaks down. ½	
	o This lining along with blood and mucous is expelled out through the vagina. This process is called menstruation (periods). ½	
	OR	
	a) Testes are in the lower abdomen in men. Why? Explain	
	b) Explain the role of placenta in the development of embryo.	
	c) List any two differences between the methods of reproduction found in hydra and planaria.	
	a) Sperm production requires a temperature 2 – 3^0C lower than the normal body temperature. Hence, testes are in the lower abdomen in men. 1	
	b) It provides oxygen and nutrients from the mother to the embryo. 1	
	It removes waste products and carbon dioxide from the embryo. 1	
	c)	

Hydra	Planaria
Reproduces by budding.	Reproduces by regeneration.
A small outgrowth (bud) develops on the parent body, grows and separates to form a new individual.	If the body is cut into pieces, each piece grows into a complete new planaria.

(Any two) 1+1

5