Full marks – 50 **BIOLOGY** **Time - 1hr**

Question 1

(a) Name the following: [5]

(i) The respiratory pigment found in erythrocytes.
(ii) The hormone that regulates the basal metabolic rate.
(iii) The part of the chloroplast where the light reaction of photosynthesis takes place.
(iv) The Vehicular Standard for controlling air pollution.
(v) The gaseous plant hormone.

(b) State whether the following statements are ***true*** or ***false***. If false, rewrite the correct form of the statement by changing the first word only: [2]

(i) The Beta cells of the pancreas secrete insulin.
(ii) Guttation is the loss of water in the form of water droplets from hydathodes.

(c) Match the items of Column A with those in Column B and rewrite the correct matching pairs: [5]

Column A		**Column B**
(i) Diabetes mellitus	–	Hyper secretion of thyroxine
(ii) Diabetes insipidus	–	Hypo secretion of thyroxine
(iii) Cretinism	–	Hyperglycaemia
(iv) Insulin shock	–	Hypo secretion of growth hormone
(v) exophthalmic goitre	–	Hypoglycaemia
	–	Hypo secretion of ADH
	–	Over secretion of Adrenalin

(c) Give technical terms for the following: [3]

(i) Plasma devoid of fibrinogen.
(ii) Movement of water molecules across the cell membrane from hypertonic to hypotonic solution.
(iii) The stage where chromosomes lie on the equator of the achromatic spindle.

(d) Explain the following terms: [5]

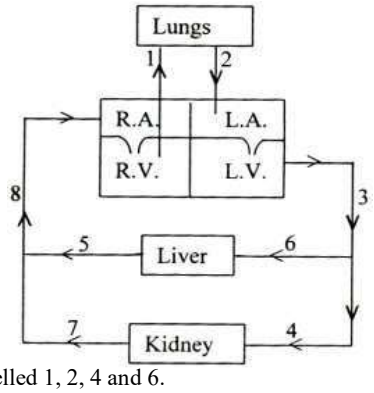
(i) Photolysis
(ii) Apical dominance
(iii) Trophic hormone
(iv) Osmotic pressure
(v) SAN

(e) Differentiate between the following pairs on the basis of what is given in brackets: [5]

(i) Lymphocytes and Neutrophils. (structure of the nucleus)
(ii) Hydrotropism and Thigmotropism [stimulus]
(iii) Mitosis and meiosis (the nature of action)
(iv) Tricuspid valve and Mitral valve. (function)
(v) Simple goitre and exophthalmic goitre. (cause of the disorder)

Question 2

(a) Given below is a diagrammatic representation of a certain part of the process of circulation of blood in man. Study the same and then answer the questions that follow: [5]



(i) Name the parts labelled 1, 2, 4 and 6.

(ii) Give the number and name of the vessel which contains the maximum amount of urea a few hours after a protein rich meal.

(iii) Draw a neat, labelled diagram of the cross sectional view of the blood vessel numbered 3.

(iv) Mention *two* structural differences between blood vessels '3' and '8'.

Question 3

(a) Complete the following table by filling in the numbered blanks with an appropriate term/answer: [5]

Gland	**Hormone produced**	**Function**
Thyroid	1	2
3	4	Dilates pupil of eye
5	Insulin	6
7	ADH	8
9	10	Conversion of glycogen to glucose

Question 4

(a) A homozygous purple flower variety of pea plant [PP] is crossed with white flower variety of pea [pp]. Answer the questions that follow: [5]

(i) Mention the phenotype and genotype of the Fl generation of offspring.

(ii) If the off springs of the Fl generation are crossed, what will be the phenotypic and genotypic ratios of the F2 generation?

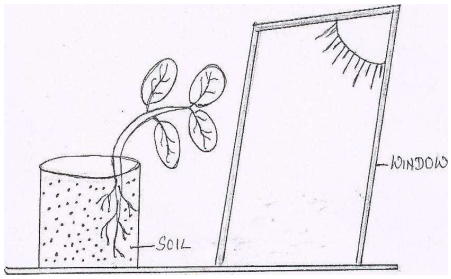
(iii) State Mendel's law of dominance.

(iv) What is the scientific name of pea plants?

(v) Name two genetic diseases in humans.

Question 5

(a) The diagram given below represents a plant growing in a glass jar. The glass jar is placed near a window. Study the diagram and answer the questions that follow: [5]



(i) Name the tropic movements shown by the shoot and roots.

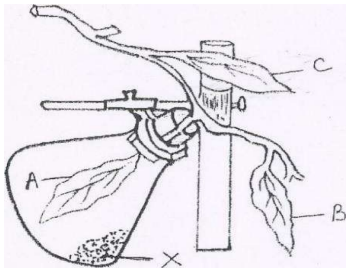
(ii) What is the stimulus that made the shoot bend towards the window?

(iii) Which plant hormone caused the above effect?

(iv) Explain the role of the hormone in bending the shoot towards the window.

Question 6

(a) The diagram below represents an experiment to demonstrate a particular aspect of a physiological process in plants. Study the diagram and answer the questions that follow: [5]



(i) What is the aim of the experiment?

(ii) What is the chemical substance named X in the diagram? What is the special condition created inside the flask due to the presence of the substance X?

(iii) In what way will the three leaves A, B and C differ at the end of the experiment when tested with iodine solution?

(iv) Write the overall chemical equation for the process mentioned in

(v) Explain the term 'Destarching'