SECTION – I (40 MARKS)

Answer all questions from this section.

1. (a) Name the following:

(i) The respiratory pigment found in erythrocytes.
(ii) The organ that produces urea.
(iii) The part of the chloroplast where the light reaction of photosynthesis takes place.
(iv) The vehicular standard for controlling air pollution.
(v) The part of the ovary that produces progesterone.

(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:

(i) Cones are photoreceptor cells that are sensitive to dim light.
(ii) The beta cells of the pancreas secrete insulin.
(iii) Tubectomy is the surgical method of sterilization in man.
(iv) Guttation is the loss of water in the form of water droplets
(v) Nephrons are the basic unit of the brain. from hydathodes.

(c) Give technical terms for the following:

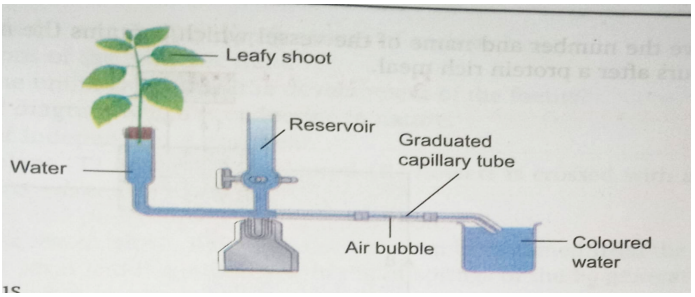
(1) Plasma devoid of fibrinogen.
(ii) Movement of water molecules across the cell membrane from hypertonic to hypotonic solution.
(iii) The stage where chromosomes lie on the equator of the achromatic spindle.
(iv) Alternative form of a gene on a pair of homologous chromosome.
(v) Period of complete intrauterine development of the foetus.

(d) Given below are five sets with four terms each. In each set one term is odd. Choose the odd one out of the following terms given and name the category to which the others belong:

SET	ODD TERM	CATEGORY
(i) Sneezing, coughing, blinking, typing		
(ii) ADH, TSH, NADPH, ACTH		
(iii) Detergents, sewage, X-rays; oil spills.		
(iv) Stoma, stroma, lamellae, quantasome.		
(v) Basophil, neutrophil, Eosinophil, lymphocyte.		

(e) Given below is an apparatus used to study a particular process in plants.

Study the same and answer the questions that follow:



(i) Name the apparatus.
(ii) Mention one limitation of this apparatus.
(ii) Which phenomenon is studied with the help of this apparatus?

(iv) What is the function of the part marked reservoir?
(v) What is the role of the air bubble in the experiment?

(f) Choose the correct alternative from the choices given below each statement so as to complete its meaning:

(i) The number of daughter cells formed at the end of melosis from a cell are:

(a) 2 haploid cells (b) 2 diploid cells

(c) 4 haploid cells (d) 4 diploid cells

(ii) Which of the following is not a part of the female reproductive system in human beings?

(a) Uterus (b) Ovary

(c) Ureter (d) Fallopian tube

(ii) Ovulation occurs:

(a) at the beginning of menstrual cycle

(b) in the mid of the menstrual cycle

(c) at the end of the menstrual cycle

(d) during any time of the menstrual cycle

(iv) Phototrophic mode of nutrition requires:

(a) chlorophyll (b) sunlight

(c) CO_2 and water (d) all of these

(v) Plasmolysis identifies the process of:

(a) imbibition (b) diffusion

(c) active transport (d) osmosis

(h) Given below are five sets of terms. In each case, arrange and rewrite each set so as to be in logical sequence.

(1) Tympanum, stapes, malleus, incus, fenestra ovalis.

(ii) Graafian follicle, uterus, oviducal funnel, fallopian tube, ovum.

(iii) Soil, water, root hair, xylem, cortex, endodermis.

(iv) Association neuron, effector, motor neuron, receptor, sensory neuron.

(v) Lens, pupil, conjunctiva, yellow spot, cornea.

(h) Explain the following terms:

(i) Antiseptic (ii) Photolysis (iii) Growth rate of population

(iv) Pollutant (v) Trophic hormone

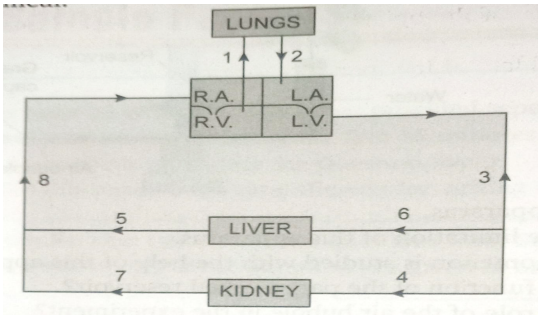
SECTION – II (40 MARKS)

Attempt any four questions from this section.

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:

(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".

(b) Differentiate between the following pairs on the basis of what is given in brackets:

(1) Lymphocytes and neutrophils. (structure of the nucleus)

(ii) Beginning of the ventricular systole and the end of ventricular systole. (type of heart sound)

(i) Prostate gland and Cowper's gland. (the nature of secretion)

(iv) Rod cells and cone cells. (pigment)

(v) Simple goitre and exophthalmic goitre. (cause of the disorder)

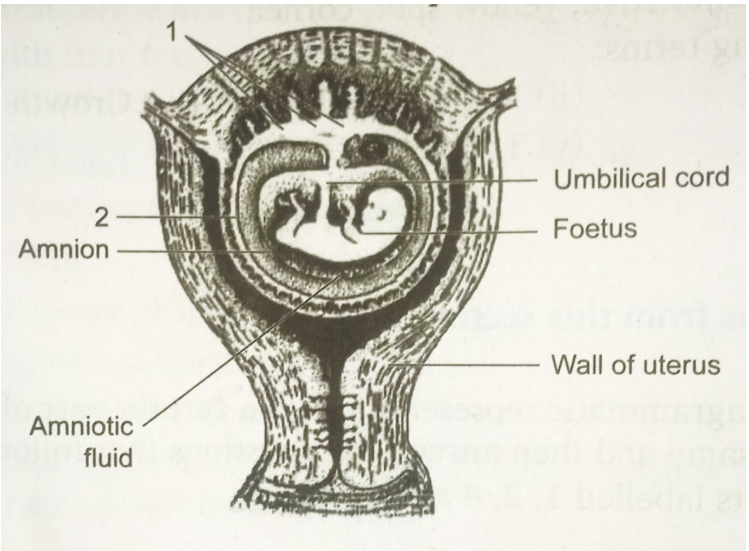
3. (a) Complete the following table by filling in the numbered blanks with an appropriate term/answer:

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

(b) (i) Draw a neat diagram of a single Malpighian corpuscle and label the following parts: Glomerulus, Bowman's capsule, Afferent arteriole, and Efferent arteriole.

(ii) Name and explain the process that occurs in the glomerulus.

4. (a) Study the diagram given below and then answer the questions that follow:



(1) Name the parts labelled 1 and 2. State the functions of each part

(ii) State any two functions of the amniotic fluid.

(iii) What is the role of the umbilical cord in the development of the foetus?

(iv) Name the part in the diagram which is endocrine in nature.

(b) (1) State Mendel's law of Independent Assortment.

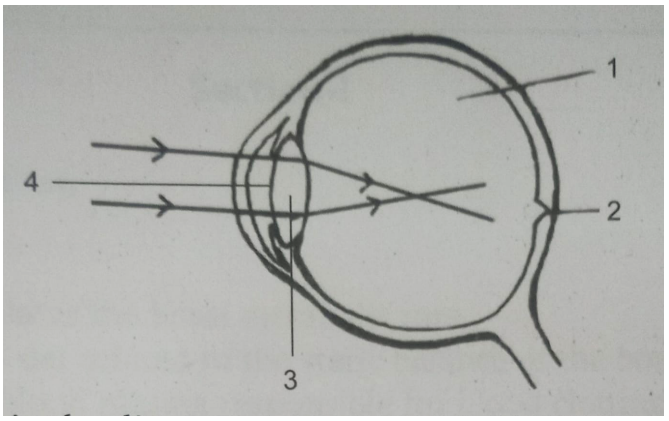
(ii) A homozygous tall plant (T) bearing red coloured (R) flowers is crossed with a homozygous dwarf plant (t) bearing white flowers (r):

(1) Give the genotype and phenotype of the F_1 generation.

(2) Give the possible combinations of the gametes that can be obtained from the F_1 hybrid.

(3) Give the dihybrid ratio and the phenotype of the offsprings of the F_2 generation when two plants of the F_1 generation above are crossed.

5. (a) Given below is a diagram depicting a defect of the human eye. Study the same and then answer the questions that follow:



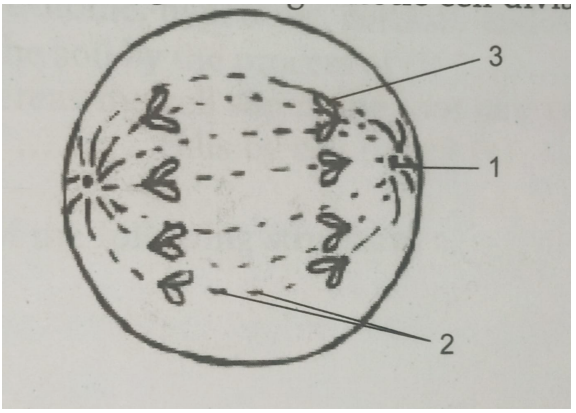
(i) Name the defect shown in the diagram.
(ii) Name two possible reasons for this defect of the eye in human beings.
(iii) Name the parts labelled 1 to 4.
(iv) Draw a labelled diagram to show how the above mentioned defect is rectified using an appropriate lens.

(b)(i) Mention three reasons for the increase in population in India.
(ii) Write the full forms of NADP and BCG.
(iii) Explain the term antibiotic. Give an example of an antibiotic.
(iv) State any three functions of the World Health Organization.

6. (a) (i) Explain the term plasmolysis. Give one application of this phenomenon in our daily lives.
(ii) Enu merate the steps involved in testing a green leaf for the presence of starch.
(iii) Mention any three causes of soil pollution.

(b) (i) Draw a neat labelled diagram of the membranous labyrinth found in the inner ear. Name the part of the structure that is responsible for static balance in human beings.
(ii) Name the tube which connects the cavity of the middle ear with the throat.
(iii) Name any two microbial diseases and the vaccines used as preventive measures for each.

7.(a) The diagram given below represents a stage during mitotic cell division in an animal cell:



(i) Identify the stage. Give a reason to support your answer.
(ii) Name the parts labelled 1, 2 and 3.
(iii) What is the chromosome number of the cell?
(iv) Draw a neat, labelled diagram of the cell as it would appear in the next stage. Name the stage.

(b) Give reasons for the following:
(i) Plants begin to die when excess of soluble fertilizers are added to the soil.
(ii) Injury to the medulla oblongata results in death.
(iii) Gametes have a haploid number of chromosomes.
(iv) Green leaves are thin and broad.
(v) There is a need to check the present rate of urbanisation.