Alternative No: **Index No:**

Supervising Examiner's/Invigilator's initial:

Paper 3 (Biology) **Writing Time: $1\frac{1}{2}$ Hours**

Total Marks : 80

READ THE FOLLOWING DIRECTIONS CAREFULLY:

1. Do **not** write for the first **fifteen minutes**. This time is to be spent reading the questions. After having read the questions, you will be given **one and a half hours** to answer all questions.
2. Write your **index number** in the space provided on the **top right hand corner of this cover page only**.
3. In this paper, there are **two** sections: A and B. Section **A** is compulsory. You are expected to attempt **any four** questions from Section **B.**
4. The intended marks for questions or parts of questions, are given in brackets [ ].
5. Read the directions to each question carefully and write **all** your answers in the space provided in the **question booklet** itself.
6. Remember to write **quickly** but **neatly**.
7. **Do not** remove or tear off any pages from the question booklet.
8. **Do not** leave the examination hall before you have made sure that you have answered all the questions.

For Chief Marker's and Markers' Use Only

Question Number															**Total**	**Chief Marker's Signature ↓**
Award																
Markers' initial →																

SECTION A (40 Marks)

Compulsory: *Answer* ***ALL*** *parts in this section.*

Question 1

(a) Name the following: **[8]**

(i) The immunity which develops after vaccination.

……

(ii) The tube which collects urine from nephron.

……

(iii) The layer of skin which is hard and resistant to bacterial invasion.

……

(iv) A part of neuron which receives impulse.

……

(v) The tissue which conducts manufactured food from the leaves to the other parts of a plant.

……

(vi) A condition which makes the cell limp due to deficiency of turgor.

……

(vii) A heart disease in which a clot may be formed in the artery supplying blood to the heart.

……

(viii) Loss of water from a cut end of a well watered plant.

……

(b) Complete the following statements (I) to (VIII) by choosing the correct alternative from those given in brackets. **[8]**

I. A cord containing blood vessels that connects the placenta with the foetus (umbilical cord, fallopian tube, ureter, villi)……..

II. The point of crossing over between two non-sister chromatids of a homologous chromosome is known as (centromere, telomere, spindle, hiasmata)……

III. Sterilization in the female involves cutting and tying of the (ureter, uterus, oviduct, urethra) ……

IV. The gaseous pollutant which causes acid rain is (carbon monoxide,

carbon dioxide, nitrogen dioxide, nitrogen monoxide)……

V. The number of autosomes in human cell is (43, 44, 45, 46) ……..

VI. The insecticide which causes water pollution (phenol, lysol, carbolic acid, DDT) ……..

VII. The part of a cell which has definite shape, size and specific function is (organelle, organ, organ system, organism) …….

VIII. In Pine trees the leaves are modified into needles to (increase photosynthesis, increase transpiration, decrease photosynthesis, decrease transpiration) …….

(c) Study the table given below and write the answers in the space provided below the table. **[8]**

PART	**POSITION**	**FUNCTION**
Nucleolus	Inside the nucleus	***1***
Malpighian layer	Innermost layer of epidermis	***2***
3	First part of nephron in the cortex of kidney	Receives glomerular filtrate
Bicuspid valve	***4***	***5***
Pupil	In front of the lens of the eye	***6***
7	Inside the testis	To produce sperm
Hair follicle	Encloses root hair	***8***

1……

2……

3……

4……

5……

6……

7……

8……

(d) Distinguish between the following pairs on the basis of what is given in brackets.

(i) Urethra and ureter (**function**)

Urethra	Ureter

(ii) Antiseptic and antibiotic (**definition**)

Antiseptic	Antibiotic

(iii) Diffusion and active transport (**movement of molecules)**

Diffusion	Active transport

(iv) Inspired and expired air **(% of oxygen and carbon dioxide)**

Inspired air	Expired air

(e) I. Complete the following to represent the relationship as shown in the example. **[4]**

Example: Blood : Red in colour :: Lymph: Colourless

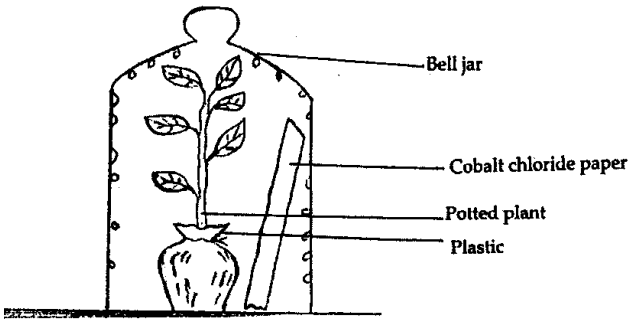
(i) Cell wall : Rigidity : : Centrosome: …….

(ii) Light reaction : Photochemical phase : : Dark reaction : ……

(iii) Photosynthesis : Chloroplast : : Respiration : …….

(iv) Sweat glands : Sweat : : Sebaceous gland : …….

II. The diagram given below represents an experiment to demonstrate a particular process-taking place in plants. Study the diagram and answer the questions that follow. **[4]**



(i) What is the aim of the experiment?

……
……
……
……

(ii) Define the process taking place in the experiment.

……
……
……
……
……

(iii) Write down ***TWO*** observations from the experiment.

……
……
……
……
……

(iv) State ***TWO*** precautions taken in the experiment to get the correct rest

……

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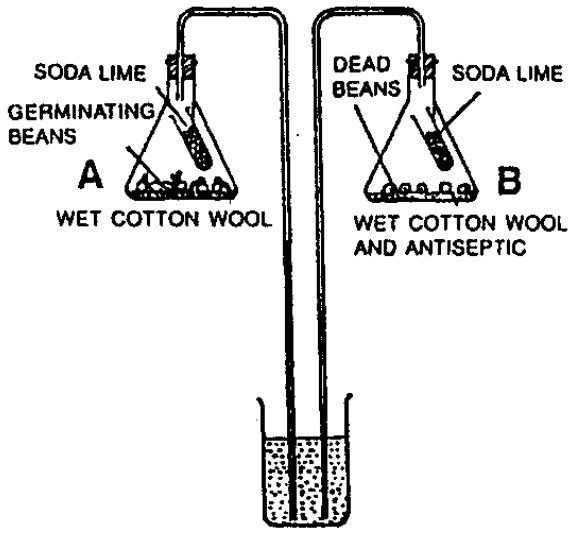
SECTION-B (40)

*Attempt any **FOUR** questions from this section.*

Question 2

(a) Sangay set-up the experiment shown below to demonstrate a particular physiological process occurring in plants. Study the diagram carefully and answer the questions that follow.



(i) Name the physiological process. **[½]**

……

(ii) Define the physiological process. **[2½]**

……

……

……

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……

……

……

……

(iii) What is the aim of carrying out the experiment? **[1]**

……

……

……

……

……

(iv) Why does the water level in the delivery tube of flask A rise? **[1½]**

……

……

……

……

……

……

……

……

(v) Which of the two flasks, A or B is the control in the experiment? **[½]**

……

(vi) What is the function of soda lime and antiseptic in the experiment? **[1]**

……

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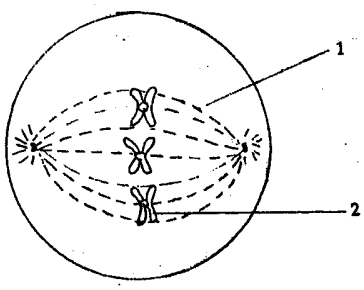
……

……

……

……

(b) The diagram given below represents a stage in the mitotic division of a cell. Study the same and answer the questions that follow. **[3]**



(i) Is it a plant cell or an animal cell? Give a reason to support your answer.

……

……

……

(ii) Name the parts labelled 1 and 2.

1……

2……

(iii) Which stage of cell division is shown in the above diagram? Give a reason to support your answer.

……

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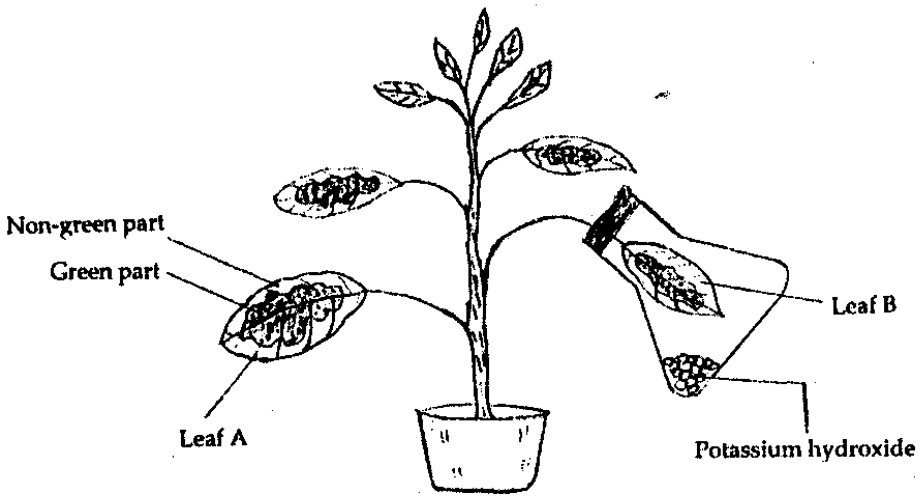
Question 3

(a) A potted plant with variegated leaves was kept in darkness for 24 hours. It was then set-up as shown in the diagram given below. It was exposed to light for about 12 hours and leaves A and B were tested for the presence of starch.
Answer the questions that follow.



(i) Why was the plant kept in the dark for 24 hours? **[1]**

……

……

……

……

……

(ii) What is the aim of the experiment with leaf A? **[1]**

……

……

……

(iii) What is the aim of the experiment with leaf B? **[1]**

……

……

……

(iv) Write down the steps involved in testing a leaf for the presence of starch. **[2]**

……

……

……

……

……

……

……

(v) After doing the starch test on leaf A and B, write down your observations in the table given below. **[1]**

Leaf A	Leaf B

(b) Write in the table given below what do you mean by 'dominant gene' and 'recessive gene'.

Dominant gene	Recessive gene

(c) If the father is heterozygous tall (Tt) and the mother is homozygous dwarf (tt), make a chart to show the genotype and phenotype of the offsprings. **[2]**

Question 4

(a) Give a reason for each of the following statements. **[5]**

(i) While coming into a dark room from bright sunlight, you experience difficulty in seeing objects and try to open your eyes wider.

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……

……

……

……

……

……

……

(ii) Sweat pores are more numerous on our palm.

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……

(iii) In summer, urine is slightly thicker than in winter.

……

……

……

……

……

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……

……

(iv) Breathing through the nose is said to be healthier than breathing through the mouth.

……

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……

……

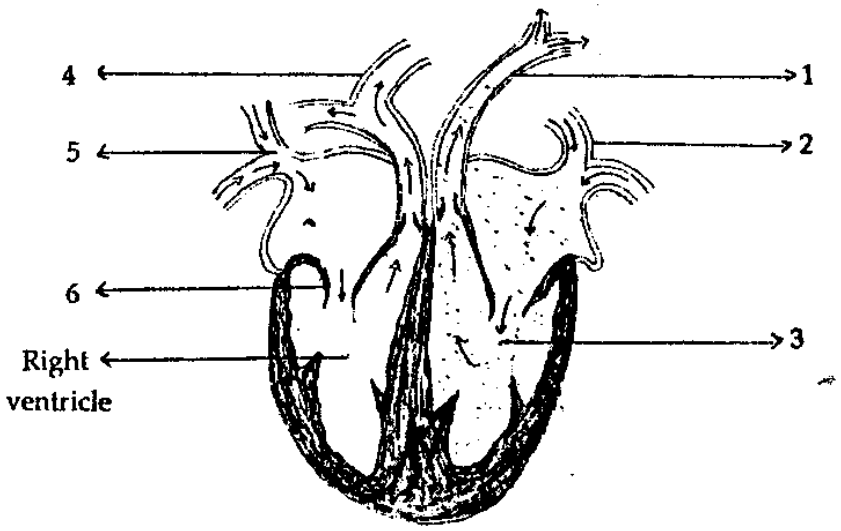
(v) Salt is added to keep the pickles fresh.

……

……

……

(b) The diagram given below shows the internal structure of a mammalian heart. Study the diagram and answer the questions that follow.



(i) Label the parts numbered 1 to 6 in the space provided below. **[3]**

1…….

2…….

3…….

4……

5……

6……

(ii) State the functions of the parts numbered 1 and 4 in the table given below.

Number 1	**Number 4**

(iii) State the functions of the blood vessels numbered 2 and 5 in the table given below. **[1]**

Blood vessel 2	**Blood vessel 5**

Question 5

(a) Draw a neat diagram of an animal cell as observed under an electron microscope and label the following parts: **[6]**

1. endoplasmic reitculum
2. mitochondria
3. lysosomes
4. ribosomes

(b) Complete the following statements by filling in the blanks with the correct word/s.

(i) The international organisation which procures and provides blood to the victims of war……..

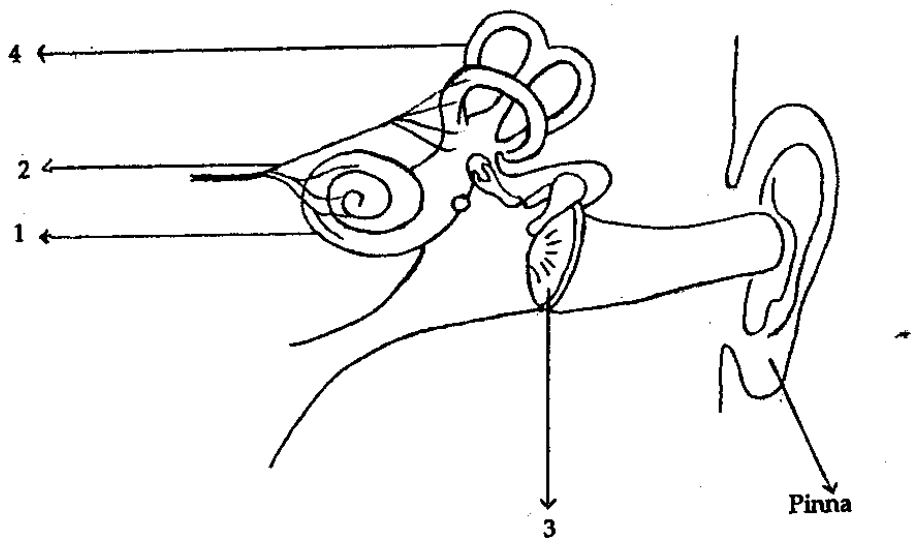
(ii) A chromosome is made up of …….

(iii) The number of live births per 1000 people of population per year…….

(iv) The micro organisms which are added to the soil to increase its nitrogen contents ……..

Question 6

(a) The following diagram shows the internal structure of an ear. Study the diagram and answer the questions that follow.



(i) Label the parts numbered 1 to 4 in the space provided below. **[2]**

1……

2……

3……

4……

(ii) What is the function of the part labelled 2? **[1]**

……

……

(iii) Name the part which helps to equalize atmospheric pressure on either side of the ear.

……

(iv) What is the function of pinna? **[1]**

……

……

(b) Give the appropriate technical or scientific term for the following statements. **[3]**

(i) The full term of development of an embryo in the uterus…….

(ii) The onset of menstruation in a young female about the age of 13 years……

(iii) The tubular knot fitting like a cap on the upper side of the testis ……

(c) Write down ***TWO*** functions of the WHO. **[2]**

……

……

……

Question 7

(a) Explain the following terms: **[4]**

(i) Growth rate of population

……

……

……

……

(ii) Contraception

……

……

……

(iii) Passive immunity

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……

……

(iv) Root pressure

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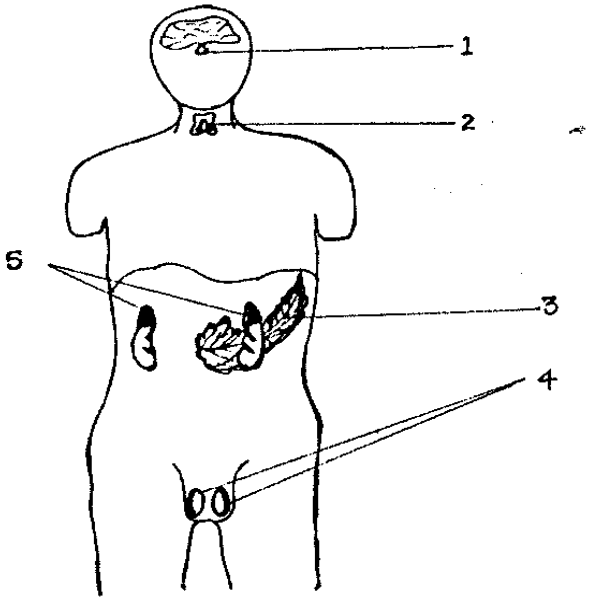
……

……

(b) Given below is a part of a human body showing some important parts in the ventral and dorsal views. Study the diagram and answer the questions that follow.



(i) Name the parts numbered 1 to 5 in the space provided below. **[2½]**

1……

2……

3……

4……

5……

(ii) Name the important hormones secreted by parts labelled 2 and 5. **[1]**

2.……

……..

5……

……

(iii) Name the part that corresponds to part 4 in a female. **[1]**

……

(iv) Name the hormone which **[1½]**

1. promotes growth of the whole body particularly of the skeleton……
2. stimulates liver to release glucose into the blood……
3. stimulates contraction of uterus at the time of child birth……..