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Index No:

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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 during the first **fifteen minutes**. This time is to be spent on 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 should 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 page from the question booklet.
8. **Do not** draw lines or pictures **on** or **in** the question booklet to beautify it.
9. **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

Section	A						B							Total	Chief Marker's Signature ↓
Question Number	1a	1b	1c	1d	1e	1f	2	3	4	5	6	7			
Award															
Markers' initial →															

SECTION A (40 Marks)
Compulsory: Attempt all questions.

Question 1

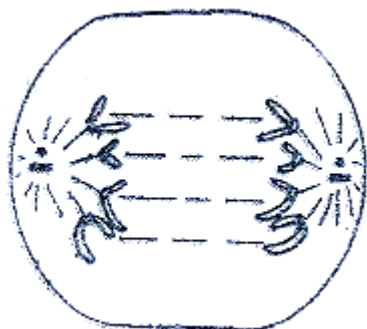
(a) *Directions: Each question in this part is followed by four possible choices of answers. Choose the correct answer and write it in the space provided.* [15]

(i) Which among the following cell organelles forms the spindle fibre?

- A centrosome
- B nucleolus
- C ribosome
- D nucleus

Answer:.....

(ii) The stage of cell division in the diagram given below is



- A late prophase.
- B late anaphase.
- C poly anaphase.
- D early prophase.

Answer:.....

(iii) ‘Both the parents are tall but one of their progeny is a dwarf’. Therefore, the genotype of the parents is

- A heterozygous tall.
- B homozygous tall.
- C dwarf.
- D tall.

Answer:.....

(iv) The correct pathway for the conduction of cell to cell osmosis of H₂O in the root is

- A root hairs → xylem → cortex → epidermis.
- B root hairs → epidermis → xylem → cortex.
- C root hairs → cortex → epidermis → xylem.
- D root hairs → epidermis → cortex → xylem.

Answer:.....

(v) The leaves of a sunflower wilt on a sunny day because water

- A is lost through transpiration.
- B loss is less than water absorbed.
- C absorption stops on a sunny day.
- D loss is more than water absorbed.

Answer:.....

(vi) Which one of the following combinations best shows that water is a raw material as well as the end product in photosynthesis?

- A 12H₂O and 6H₂O
- B 6H₂O and 12H₂O
- C 6H₂O and 3H₂O
- D 3H₂O and 6H₂O

Answer:.....

(vii) The fluid which acts as a cushion to protect the brain from shocks is the

- A perilymph.
- B endolymph.
- C amniotic fluid.
- D cerebrospinal fluid.

Answer:.....

(viii) All the following are examples of natural reflex actions **EXCEPT**

- A swallowing.
- B coughing.
- C salivating.
- D sneezing.

Answer:.....

(ix) The condition in which a person becomes sluggish with swelling of face and hands is termed as

- A cretinism.
- B myxoedema.
- C simple goiter.
- D exophthalmic goiter.

Answer:.....

(x) Which one of the following glands function as an exocrine as well as an endocrine gland?

- A thyroid
- B adrenal
- C pancreas
- D pituitary

Answer:.....

(xi) The time required for implantation after fertilization in a normal human female is

- A 4 weeks.
- B 3 weeks.
- C 2 weeks.
- D 1 week.

Answer:.....

(xii) Choose the correct pair from the following:

- A ureter – discharge of urine
- B urethra – sperm production
- C vas deferens – sperm passage
- D seminal vesicle – alkaline secretion

Answer:.....

(xiii) Induced abortion is permitted only when the embryo

- A is normal.
- B is immature.
- C is fully mature.
- D has serious genetic disorder.

Answer:.....

- (xiv) Which one of the following is mainly used to prevent infection after surgical operation
- A antitoxins
 - B antibodies
 - C antiseptics
 - D antibiotics

Answer:.....

- (xv) The prevention or removal of human sufferings in peace as well as in times of war is the function of
- A Red Cross.
 - B UNICEF.
 - C WHO.
 - D WFP.

Answer:.....

(b) Fill in the blanks with the correct form of word/s. [5]

- (i) A point of crossing over between two non-sister chromatids of a pair of homologous chromosome is known as
- (ii) The is a concentrated solution present in the vacuole of root hair adapted to draw in the outside water.
- (iii) The site of photochemical phase in the chloroplast is
- (iv) The beta cell in the Islet of Langerhans secretes
- (v) The process by which WBC engulfs bacteria and destroys them is called

(c) Match the items of Column A with the most appropriate items of Column B. Rewrite the correct matching pairs in the spaces provided. [5]

Column A	Column B
i. Tubectomy	a. carry impulse from eye to brain
ii. Semicircular canals	b. controls voluntary action
iii. Auditory nerve	c. controls involuntary action
iv. Optic nerve	d. for dynamic balance
v. Cerebrum	e. temporary contraception
	f. carry impulse from ear to brain
	g. permanent contraception
	h. for static balance

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(d) **Name the following:** [5]

- (i) The alternative form of a gene occupying the same position on a homologous chromosome.....
- (ii) The special pore-bearing structure present on the leaf margin to allow exudation of water droplets.
- (iii) The special chemicals found in the blood which acts against germs.....
- (iv) The full term development of an embryo in the uterus.....
- (v) Any cell organelle found only in plant cell.....

(e) **Write TRUE or FALSE for the following statements. Rewrite the false statements in the correct forms by changing only the underlined words.** [6]

- (i) The axial flower is the recessive trait of flower position.
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- (ii) The relative concentration of water molecules and the solute on either side of the cell membrane is the same in hypotonic solution.
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(iii) The optimum temperature for photosynthesis to occur is 35°C.

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(iv) The diffusion of substance from mother to foetus is through the amnion.

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(v) The use of diaphragm for contraception is a barrier method.

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(vi) The treatment of diseases in animals by using chemicals is known as chemotherapy.

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(f) *Give reasons for the following:*

[4]

(i) A cell shrinks and loses its shape when placed in hypertonic solution.

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(ii) Desert plants have thick cuticle on their leaves.

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(iii) During copulation the discharge from a male is called semen but not sperm.

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(iv) Quarantine measures are suggested by WHO.

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SECTION B (40 Marks)

Attempt any four questions

Question 2

(a) Draw a diagram of a plant cell and label any **four** parts. [3]

(b) (i) State **two** functions of local health bodies. [1]

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(ii) Write the full form of:

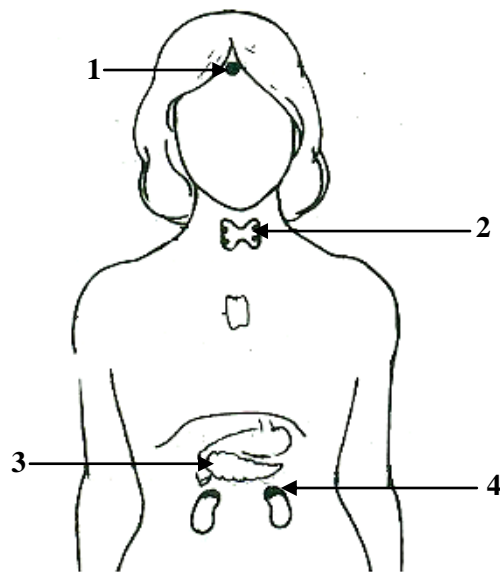
- 1. NICD
- 2. WHO

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(iii) Which hormone stimulates the vigorous contraction of the uterus during child birth? [1]

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(c) Given below is a diagram of the human body showing some important structures. Study the diagram and answer the questions that follow



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

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(ii) Name the important hormones secreted by the parts labelled 2 and 4.

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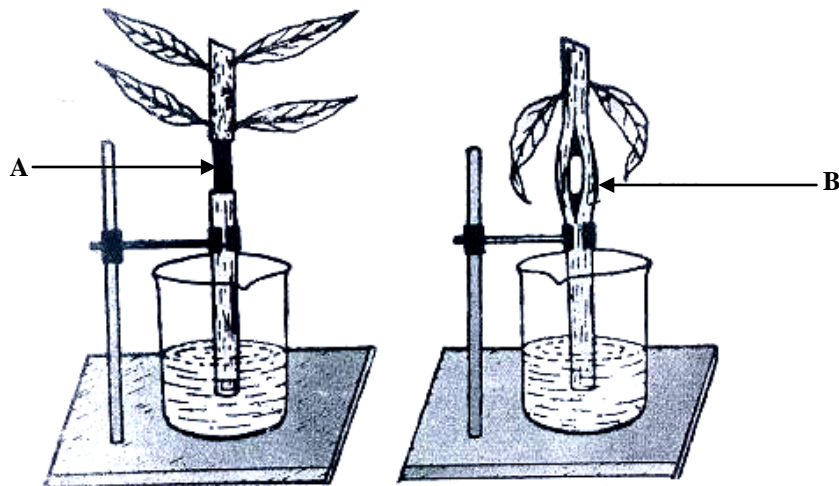
(iii) Name the nutrient element which is essential for the normal functioning of part 2.

[1]

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Question 3

(a) Given below are the results of an experiment on a physiological process in plants.



(i) What is the aim of the experiment given above?

[1]

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(ii) Label the parts 'A' and 'B'.

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(b) Define the following terms:

[2]

(i) Root pressure

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(ii) Turgidity

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(c) Write **two** differences between diffusion and osmosis in the table given below.

[2]

Diffusion	Osmosis

(d) (i) Describe any **four** events that take place during prophase of mitotic cell division.

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(ii) What does mitosis signify? Mention **four** points. [2]

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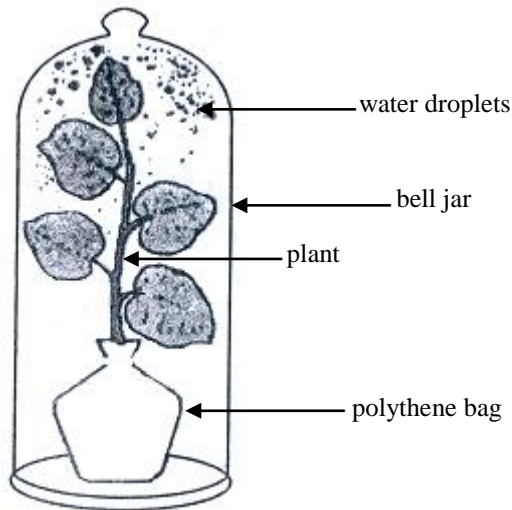
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Question 4

(a) Draw a diagram of the female reproductive organ and label the following parts. [3]

fallopian tube, ovary, uterus, cervix

- (b) Given below is an experimental set-up to study a particular process in plants. Study the diagram and answer the questions that follow.



- (i) Name the physiological process being demonstrated above. [½]
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- (ii) Define the process. [½]
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- (iii) Draw a suitable control experiment for the above experiment. [1]

(iv) Mention **two** uses of the process in plants mentioned in (i).

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(v) Why is the plant covered with a polythene bag? [1]

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(c) Give the scientific terms for the following statements. [3]

(i) The part where sperms are produced in human testes.

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(ii) The rupturing of the follicle releasing the egg from ovary.

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(iii) The tubular knot fitting like a cap on upper part of the testes.

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Question 5

(a) With the help of a diagram describe that 'Carbon dioxide is necessary for photosynthesis'. [3]

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- (b) Classify the following factors affecting photosynthesis as external and internal factors in the table given below.

light intensity, chlorophyll, temperature, structure of leaf

External factors	Internal factors

- (c) (i) Draw a diagram of a human ear and label any **four** parts. [3]

- (ii) Differentiate between the following based on what is given in the brackets. [2]

1.

Rod cell (pigment)	Cone cell (pigment)

2.

Myopia (lens)	Hypermetropia (lens)

Question 6

(a) (i) An alcoholic person when drunk generally walks clumsily. Why? [1]

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(ii) A person faces difficulty in seeing things when entering from a lighted area to a dark area. Support your answer with **two** reasons. [1]

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(b) Explain the mechanism of seeing an object. [2]

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(c) Define the following terms: [2]

(i) Birth rate

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(ii) Population density

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(d) (i) State **two** measures to control population rise. [2]

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(ii) Give **two** reasons to support the statement 'Small family, happy family'. [2]

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Question 7

(a) (i) What is mutation?

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(ii) In a family, both parents are tongue roller. One parent is homozygous tongue roller and other is heterozygous tongue roller. Solve the possibilities of tongue roller character in their children using the Punnett's square.

Write the genotype and the phenotype.

[3]

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(b) (i) What first aid measures are given to a person with a profusely bleeding cut?

[2]

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(ii) Disinfectants are applied on spots and not on the body. Why?

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(iii) Classify the following into antiseptics and disinfectants in the table give below: [2]
iodine, DDT, lime, lysol

Antiseptic	Disinfectant

(iv) 'Abnormal increase in WBC in the blood is a sign of some infection in our body'. Why? [1]

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