

SECTION A (40 Marks)

Compulsory: To be attempted by all candidates.

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) The cytoplasmic organelle that helps in the manufacture of starch is

- A cytoplasm.
- B chloroplast.
- C centrosome.
- D chromoplast.

Answer:.....

(ii) Which of the following is an X- linked inheritance?

- A colour blindness
- B tongue roller
- C hair colour
- D baldness

Answer:.....

(iii) Salting of meat and pickles is a method of preserving food by the process of

- A osmosis.
- B turgidity.
- C plasmolysis.
- D deplasmolysis.

Answer:.....

(iv) The rate of transpiration in a plant is measured with the help of a

- A barometer.
- B potometer.
- C manometer.
- D galvanometer.

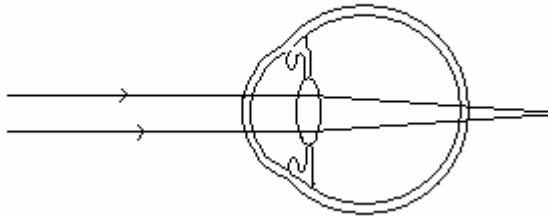
Answer:.....

(v) The rate of photosynthesis is **NOT** affected by

- A carbon dioxide concentration.
- B light intensity.
- C temperature.
- D humidity.

Answer:.....

(vi) The defect of the eye shown in the diagram below is



- A hypermetropia.
- B astigmatism.
- C myopia.
- D cataract.

Answer:.....

(vii) Which of the following is **NOT** a conditioned reflex?

- A Applying brakes in a vehicle.
- B Playing a musical instrument.
- C Tying shoe lace while talking.
- D Withdrawing hand when suddenly pricked.

Answer:.....

(viii) A person excreting a great deal of urine loaded with sugar, feeling thirsty and losing weight is suffering from

- A adrenal virilism.
- B diabetes mellitus.
- C diabetes insipidus.
- D urinary tract infection.

Answer:.....

(ix) Seminiferous tubules are found in the

- A brain.
- B testes.
- C ovary.
- D kidney.

Answer:.....

(x) Which of the following shows the correct stages in the development of an embryo?

- A egg → zygote → embryo → foetus
- B zygote → egg → embryo → foetus
- C foetus → embryo → zygote → egg
- D egg → embryo → zygote → foetus

Answer:.....

(xi) All of the following are the reasons for the sharp rise in human population **EXCEPT**

- A better education.
- B better health care.
- C improved nutrition.
- D large scale immunization.

Answer:.....

(xii) Passive immunity can be acquired by injecting

- A antigens.
- B vaccines.
- C antibodies.
- D antibiotics.

Answer:.....

(xiii) The only similar characteristic between antiseptics and disinfectants is that both

- A are used in high concentrations.
- B cause no harm to the body.
- C are applied on the spot.
- D kill germs.

Answer:.....

(xiv) Which of the following is an oral contraceptive?

- A pills
- B condom
- C diaphragm
- D spermicidal

Answer:.....

(xv) The international organization involved in controlling the wide spread of the recent swine flu is the

- A Red Cross.
- B UNICEF.
- C WHO.
- D UNO.

Answer:.....

(b) Name the following. [5]

(i) The cell organelle where the inner wall is thrown into folds called cristae.

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(ii) The outer portion of the cerebrum containing cell bodies of the neuron.

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(iii) A special group of hormone secreting cells of the pancreas.

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(iv) The mixture of sperm and secretions from the accessory glands.

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(v) The statistical study of human population with reference to size, density and distribution.

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(c) I. Write TRUE or FALSE for the following statements. [3]

(i) In **MEIOSIS** the full number of chromosomes is maintained in the daughter cell.

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- (ii) **WALL PRESSURE** is the pressure of the cell content on the cell wall.
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- (iii) **ANTI-TRANSPIRANTS** are physical or chemical agents which help to reduce excessive transpiration.
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- (iv) All green plants are categorized as **CONSUMERS**.
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- (v) **PITUITARY** is popularly known as the master gland.
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- (vi) **AMNIOTIC FLUID** protects the embryo from mechanical shock.
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II. If false, rewrite the false statements in the correct form by changing only the words printed in BOLD letters.

[3]

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(d) *Match the item under Column A with the most appropriate item in Column B. Rewrite the correct matching pairs in the spaces provided.*

Column A	Column B
1. Brain	(a) nephron
2. Meiosis	(b) somatic cell
3. Diploid	(c) stomata
4. Guard cell	(d) lenticel
5. WHO	(e) pharmaceutical standard
	(f) sex cell
	(g) neuron
	(h) blood supply

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(e) *Choose the ODD term in each of the following sets.* [5]

(i) glucose, water, oxygen, carbon dioxide

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(ii) ovary, fallopian tube, ureter, uterus

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(iii) vasectomy, diaphragm, condom, spermicidal

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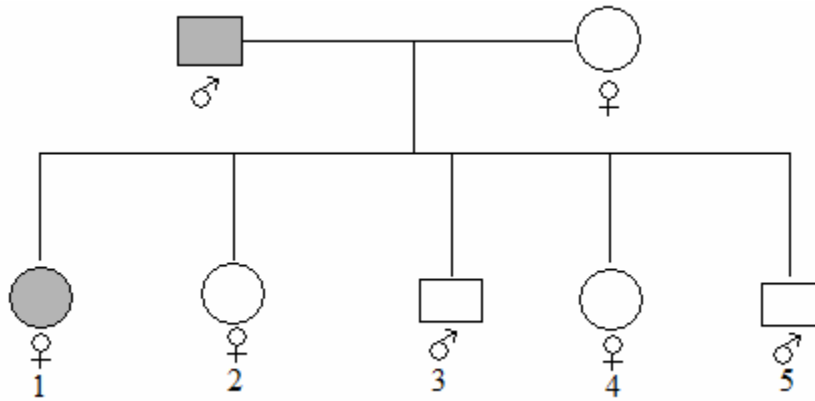
(iv) hypermetropia, cataract, colour blindness, cretinism

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(v) flaccidity, plasmolysis, exosmosis, turgidity

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(f) A family consists of 2 parents, 3 daughters and 2 sons. The pedigree chart below shows the inheritance of the trait haemophilia.



- (i) Who is haemophilic in the family? [1]
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- (ii) What type of inheritance is haemophilia? [1]
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- (iii) Will the children numbered 2 and 4 be normal? Work out the possibilities of inheritance. [2]

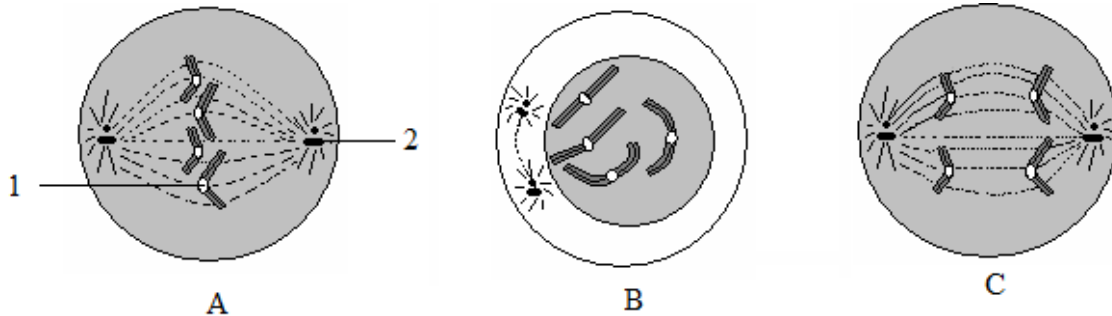
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SECTION B (40 Marks)

Attempt any four questions

Question 2

(a) The diagrams given below represent certain phases of mitotic division but they are in the wrong sequence. Study the same and answer the questions that follow.



(i) Write the correct sequence of the above stages by using the letters A, B and C. [1]

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(ii) Name the **two** phases of mitosis shown in the diagram above. [1]

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(iii) Name the parts labelled 1 and 2. [1]

1.....

2.....

(iv) Write down **two** significance of mitotic division. [2]

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- (b) (i) Complete the following table. Write the correct answers in the spaces provided below.

Hormone	Over secretion	Under secretion
Insulin	1.....	2.....
3.....	4.....	Myxoedema
Growth hormone	5.....	6.....

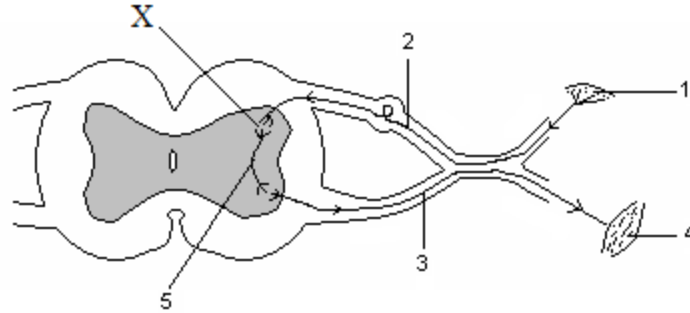
- 1.....
 2.....
 3.....
 4.....
 5.....
 6.....

- (ii) Write down any **two** differences between Hormonal Control and Nervous Control in the table given below. [2]

Hormonal control	Nervous control

Question 3

a) The diagram given below shows the internal structure of the spinal cord showing a pathway for a simple reflex. Study the same and answer the questions that follow.



(i) Label the parts numbered 1 to 5. [2½]

- 1.....
- 2.....
- 3.....
- 4.....
- 5.....

(ii) What is the term used for the point X shown in the diagram? [½]

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(iii) How does the distribution of gray matter and white matter of a spinal cord differ from that in the brain? [1]

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(iv) ‘The reflex given above is necessary for us to escape from immediate danger’. Justify the statement. [2]

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- (b) The first pair of items in the list given below indicates the kind of relationship that exists between both the items, complete the following on a similar basis. [4]
- (i) Photosynthesis : chloroplast; Respiration :
 - (ii) Dark reaction : stoma; Light reaction :
 - (iii) Lysosome : inter cellular digestion; Ribosome :
 - (iv) Phloem : food conduction; Xylem :

Question 4

- (a) The following materials are provided:
beaker, funnel, test-tube, aquatic plant, water
Describe an experiment with the help of a neat labelled diagram to prove that oxygen is produced during photosynthesis. [4]

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(b) Expand the following biological abbreviations. [2]

(i) ATP

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(ii) BCG

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(iii) DNA

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(iv) WHO

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(c) Define the following terms. [4]

(i) Immunity

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(ii) Mortality

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(iii) Root pressure

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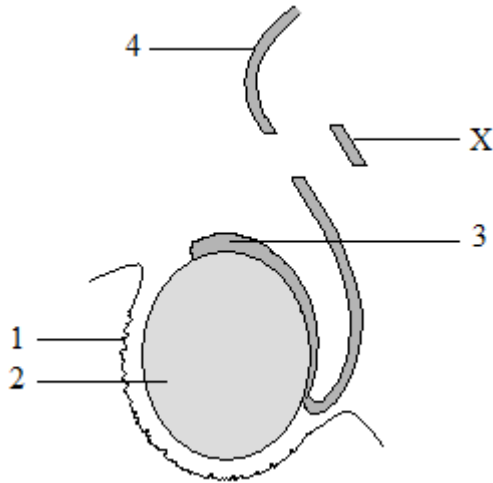
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(iv) Implantation

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Question 5

(a) The diagram given below shows the male reproductive organ. Observe the diagram and answer the questions that follow.



(i) Label the parts numbered 1 to 4. [2]

1.....
2.....
3.....
4.....

(ii) Write down **one** function each for the parts labelled 1 and 3. [2]

1.....
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3.....
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(iii) Where is structure 2 located in

1. an adult?
2. a foetus?

1.....
2.....

(iv) What is the term used for the removal of part X from the part labelled 4? [1]

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(b) Answer the following questions.

(i) Explain how the scientific industrial revolution contributed to the sudden rise in population of the world. [2]

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(ii) Explain how the following structures help to defend our body from infections. [2]

1. Hair

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2. Mucus

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Question 6

(a) Give reasons for the following.

(i) If the soil is not adequately watered, plants growing in well fertilized soil will wilt. [1]

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(ii) Generally, only the male child suffers from colour blindness and not the female. [1]

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(iii) A red blood cell will burst open when put in distilled water. [1]

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(iv) Plants growing under a stone or log turn yellowish in colour. [1]

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(v) Hormones are poured directly into the blood. [1]

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(b) Differentiate between the following pairs based on what is given in the brackets.

(i) Cerebellum and medulla oblongata (**function**)

Cerebellum	Medulla oblongata

(ii) Eukaryotes and prokaryotes (**nucleus**)

Eukaryotes	Prokaryotes

(iii) Hypotonic solution and hypertonic solution (**relative concentration**)

Hypotonic solution	Hypertonic solution

(iv) Penicillin and streptomycin (**source**)

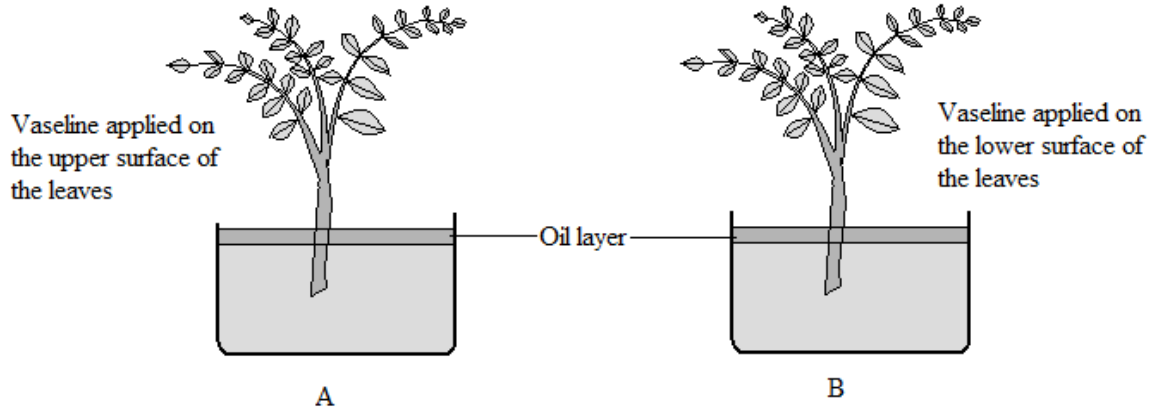
Penicillin	Streptomycin

(v) Contraception and contraceptive (**definition**)

Contraception	Contraceptive

Question 7

- (a) Two experimental set-ups are shown below to study a certain phenomenon occurring in plants.



- (i) Which phenomenon is tested in the above experimental set-ups? [1]

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- (ii) Why is the water covered with oil? [1]

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- (iii) What difference in results would you observe in the experimental set-ups A and B? [1]

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- (iv) Give a suitable explanation for the observations stated in question (iii) above. [2]

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(b) Complete the following table. Write the correct answers in the spaces provided below.

STRUCTURE	FUNCTION
pupil	1.....
2.....	prevents internal reflection of light
eustachian tube	3.....
4.....	dynamic equilibrium
corpus callosum	5.....
6.....	protective covering of the brain

- 1.....
- 2.....
- 3.....
- 4.....
- 5.....
- 6.....

(c) Write down the name of the international bodies responsible for the functions given below.

(i) To suggest quarantine measures. [1]

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(ii) Training of midwives. [1]

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