

ICSE Solved Paper 2018

Biology

Class-X

(Maximum Marks : 80)

(Time allowed : Three hours)

Attempt all questions from Section I and four questions from section Section II

SECTION-I

(40 marks)

Attempt all questions from this Section

1. (a) Name the following : [5]
- (i) The organization which procures and supplies blood during an emergency.
 - (ii) The blood vessel which supplies blood to the liver.
 - (iii) The number of chromosomes present in a nerve cell of a human being.
 - (iv) The layer of the eyeball that forms the transparent cornea.
 - (v) The wax-like layer on the epidermis of leaves which reduces transpiration.
- (iv) A strong chemical substance which is used on objects and surfaces in our surroundings to kill germs :
- (a) Cresol
 - (b) Carbolic acid
 - (c) Iodine
 - (d) Mercurochrome
- (v) Which one of the following is a Greenhouse gas?
- (a) Oxygen
 - (b) Methane
 - (c) Sulphur dioxide
 - (d) Nitrogen

- Ans. (i) Red Cross / Red Cross Society
(ii) Hepatic artery/Hepatic Portal Vein
(iii) 46 or 23 pairs
(iv) Sclera/Sclerotic layer
(v) Cuticle/cutin

[ICSE Marking Scheme, 2018]

- (b) Choose the correct answer from each of the four options given below : [5]

- (i) The numbers of Spinal nerves in the human being are :
- (a) 31 pairs
 - (b) 20 pairs
 - (c) 10 pairs
 - (d) 30 pairs

- (ii) Which one of the following is non-biodegradable?

- (a) DDT
- (b) Vegetable peel
- (c) Cardboard
- (d) Bark of trees

- (iii) Aqueous humour is present between the :

- (a) Lens and Retina
- (b) Iris and Lens
- (c) Cornea and Iris
- (d) Cornea and Lens

- Ans. (i) Option (a) is correct.
(ii) Option (a) is correct.
(iii) Option (d) is correct.
(iv) Option (a) is correct.
(v) Option (b) is correct.

[ICSE Marking Scheme, 2018]

- (c) Complete the following paragraph by filling in the blank (i) to (v) with appropriate words : [5]

To test a leaf for starch, the leaf is boiled in water to (i) It is then boiled in methylated spirit to (ii) The leaf is dipped in warm water to soften it. It is placed in a petri dish, and (iii) solution is added. The region of the leaf which contains starch, turns (iv) and the region which does not contain starch, turns (v)

- Ans. (i) kill the cells
(ii) remove chlorophyll/decolourise the leaf
(iii) Iodine/Potassium iodide/KI/I₂
(iv) blue black/blackish blue/dark blue/Indigo
(v) yellowish brown/reddish brown/yellow / golden brown

[ICSE Marking Scheme, 2018]

- (d) Match the items given in Column A with the most appropriate ones in Column B and rewrite the correct matching pairs.

Column A

- (i) Cretinism
- (ii) Diabetes insipidus
- (iii) Exophthalmic Goitre
- (iv) Adrenal virilism
- (v) Dwarfism

Column B

- (a) Hypersecretion of adrenal cortex
- (b) Hyposecretion of Thyroxine
- (c) Hyposecretion of growth hormone
- (d) Hyposecretion of Vasopressin
- (e) Hyposecretion of adrenal cortex
- (f) Hypersecretion of Growth hormone
- (g) Hypersecretion of Thyroxine

Ans. (i) Cretinism	-	(b) Hyposecretion of thyroxine
(ii) Diabetes insipidus	-	(d) Hyposecretion of Vasopressin
(iii) Exophthalmic Goitre	-	(g) Hypersecretion of thyroxine
(iv) Adrenal virilism	-	(a) Hypersecretion of adrenal cortex
(v) Dwarfism	-	(c) Hyposecretion of growth hormones

[ICSE Marking Scheme, 2018]

- (e) Correct the following statements by changing the underlined words : [5]

- (i) Normal pale yellow colour of the urine is due to the presence of the pigment Melanin.
- (ii) The outermost layer of Meninges is Piamater.
- (iii) The cell sap of root hair is Hypotonic.
- (iv) Xylem transports starch from the leaves to all parts of the plant body.
- (v) Nitrogen bonds are present between the complementary nitrogenous bases of DNA.

Ans. (i) Urochrome/Urobilin
(ii) Duramater
(iii) Hypertonic/Concentrated
(iv) Phloem
(v) Hydrogen/H

[ICSE Marking Scheme, 2018]

- (f) Choose between the two options to answer the question specified in the brackets for the following: An example is illustrated below.

Example : Corolla or Calyx (Which is the outer whorl?) Answer : Calyx [5]

- (i) Blood in the renal artery or renal vein (Which one has more urea?)
- (ii) Perilymph or endolymph (Which one surrounds the organ of Corti?)
- (iii) Lenticels or stomata (Which one remains open always?)
- (iv) Sclerotic layer or choroid layer. (Which one forms the Iris?)
- (v) Blood in the pulmonary artery or pulmonary vein (Which one contains less oxyhaemoglobin?)

Ans. (i) Renal artery
(ii) Endolymph
(iii) Lenticels
(iv) Choroid
(v) Pulmonary artery

[ICSE Marking Scheme, 2018]

- (g) Given below is a representation of a type pollution.

Study the picture and answer the questions : [5]



- (i) Name the type of pollution shown in the picture.
- (ii) Name one source of this pollution.
- (iii) How does this pollution affect human health?
- (iv) Write one measure to reduce this pollution.
- (v) State one gaseous compound that leads to the depletion of the ozone layer and creates 'Ozone holes'.

Ans. (i) Air/Gaseous Pollution
(ii) Factories / industries / motor vehicles / cars / buses/ burning of garbage / brick kilns/ trucks/lorries/Power Plant/oil refineries/ burning crop residues/bursting crackers.
(iii) Respiratory problems / difficulty in breathing / Asthma / poor visibility / damages lungs / bronchitis/Respiratory inflammation/ cough/sneezing/wheezing/eye irritation/allergies/toxic chemical enters food chain/disorders of liver,kidney,lung,hormonal.
(iv) Use of unleaded petrol / CNG / Chimneys with filters or precipitators / switching off engines when not in use/use of carpool, public transport,planting more trees/regular check up of vehicles

- (v) Styrofoam / CFCs / Refrigerants / Freons / CCl₄ / HFCs / HCFCs/halons/methyl bromide

[ICSE Marking Scheme, 2018]

- (h) Choose the ODD one out from the following terms given and name the CATEGORY to which the others belong : [5]
- (i) Detergent, X-rays, Sewage, Oil spills
 - (ii) Lumen, Muscular tissue, Connective tissue, Pericardium
 - (iii) Dendrites, Medullary sheath, Axon, Spinal cord
 - (iv) Centrosome, Cell wall, Cell membrane, Large

vacuoles

- (v) Prostate gland, Cowper's gland, Seminal vesicle, Seminiferous tubules.

Ans.

- (h) (i) X-rays - water pollutants
 (ii) Pericardium - parts of artery and vein / blood vessels
 (iii) Spinal Cord - parts of neuron / nerve cell
 (iv) Centrosome - parts of plant cell
 (v) Seminiferous tubules - accessory or reproductive glands of male

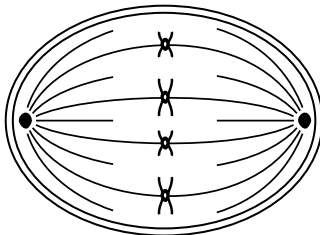
[ICSE Marking Scheme, 2018]

SECTION-II

(40 marks)

Attempt any four questions from this Section.

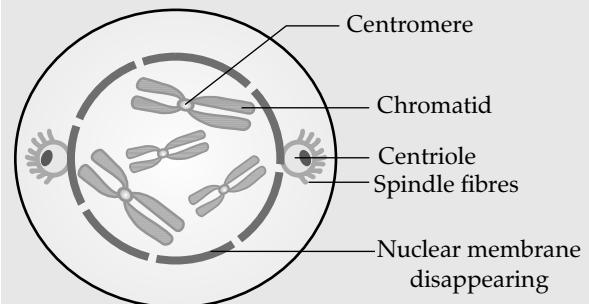
2. (a) The diagram given below represents a stage during cell division
 Study the same and answer the question that follows: [5]



- (i) Identify whether it is a plant cell or an animal cell.
 Give a reason in support of your answer.
- (ii) Name the stage depicted in the diagram.
 What is the unique feature observed in this stage?
- (iii) Name the type of cell division that occurs during :
 1. Replacement of old leaves by new ones.
 2. Formation of gametes.
- (iv) What is the stage that comes before the stage shown in the diagram?
- (v) Draw a neat, labelled diagram of the stage mentioned in?
- (iv) Above keeping the Chromosomes number constant.

- (b) Mention the exact location of the following : [5]
- (i) Epididymis
 - (ii) Lacrimal gland
 - (iii) Malleus
 - (iv) Hydathodes
 - (v) Pulmonary semilunar valve
- Ans.

- (a) (i) Plant cell/cell wall present, Aster absent, Aster present Animal cell, Centrioles / Centrosome present
 (ii) Metaphase, Chromosomes are in the equatorial plane.
 (iii) 1. Mitosis
 2. Meiosis
 (iv) Prophase
 (v)



[ICSE Marking Scheme, 2018]

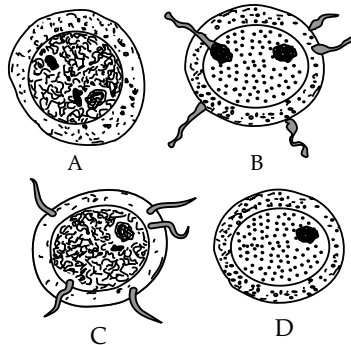
- (b) (i) on top of the testis/head, dorsal side, back, rear of testis
 (ii) upper sideward portion of orbit/upper outer part of eye/upper lateral region of eye
 (iii) middle ear / between eardrum and incus. / inner surface of eardrum
 (iv) Tips / margins of leaves / in leaves. /ends or apex of veins/apex of leaves/Epidermis of leaves
 (v) In the right ventricle at the base of pulmonary artery. /at the opening of Pulmonary Artery

[ICSE Marking Scheme, 2018]

3. Given below are diagram showing the different stages in the process of fertilisation of an egg in the

(a) human female reproductive tract.

Study the diagrams and answer the questions : [5]



- (i) Arrange the letters given below each diagram in a logical sequence to show the correct order in the process of fertilisation.
- (ii) Where does fertilisation normally take place? What is 'Implantation' that follows fertilisation?
- (iii) Mention the chromosome number of the egg and zygote in humans.
- (iv) Explain the term 'Gestation'. How long does gestation last in humans?
- (v) Draw a neat, labelled diagram of a mature human sperm.

(a) (i) DCBA/CBAD

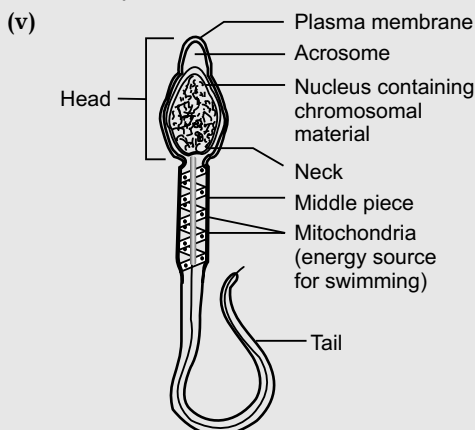
(ii) Oviduct, fixing of the embryo in the wall of uterus

OR

Fallopian tube, blastocyst in the wall of uterus

(iii) Egg – 23, Zygote – 46 / 23 pairs

(iv) Full term development of the embryo in the uterus, 280 days / 40 weeks/9 months. It is the period between implantation and birth of baby.

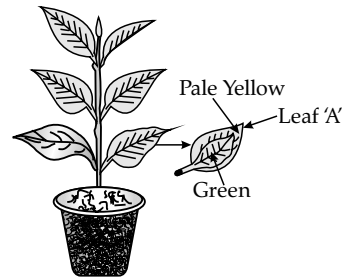


[ICSE Marking Scheme, 2018]

(b) A potted plant with variegated leaves was taken in order to prove a factor necessary for photosynthesis.

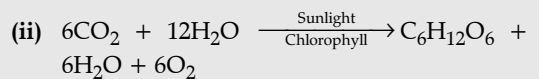
The potted plant was kept in the dark for 24 hours and then placed in bright sunlight for a few hours. Observe the diagram and answer the questions.

[5]



- (i) What aspect of photosynthesis is being tested in the above diagram?
 - (ii) Represent the process of photosynthesis in the form of a balanced equation.
 - (iii) Why was the plant kept in the dark before beginning the experiment?
 - (iv) What will be the result of the starch test performed on leaf 'A' shown in the diagram? Give an example of a plant with variegated leaves.
 - (v) Draw a neat labelled diagram of a chloroplast.
- Ans.

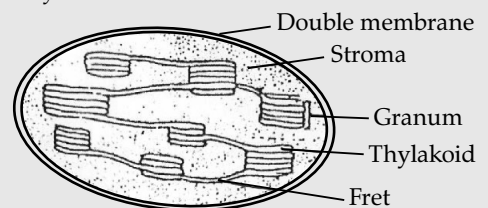
(b) (i) Chlorophyll is necessary for photosynthesis.



(iii) to destarch the leaves.

(iv) Green part – blue black/blackish/dark blue/indigo

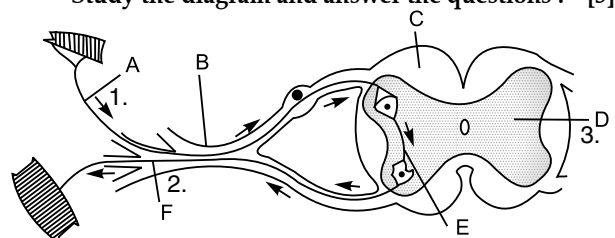
(v) Yellow part – brown/yellowish brown/golden yellow



[ICSE Marking Scheme, 2018]

4. (a) The diagram given below shows the internal structure of a spinal cord depicting a phenomenon.

Study the diagram and answer the questions : [5]



- (i) Name the phenomenon that is depicted in the diagram. Define the phenomenon.
- (ii) Give the technical term for the point of contact between the two nerve cells.
- (iii) Name the parts numbered 1, 2, and 3.
- (iv) How does the arrangement of neurons in the spinal cords differ from that of the brain?
- (v) Mention two ways by which the spinal cord is protected in our body. [5]

Ans. (a) (i) Reflex action, / Simple reflex/Reflex act
It is an automatic, [spontaneous, quick] involuntary response to a stimulus.

- (ii) Synapse
- (iii) 1. Sensory neuron / afferent fibre/Axon of sensory neuron
2. Motor neuron / efferent fibre/Axon of motor neuron
3. Grey matter/central canal
- (iv) Spinal Cord – Cytons in the inner grey matter and axons in the outer white matter. /Cytons are inside & Axons are outside
Brain – Cytons in the outer grey matter and axons in the inner white matter. /Cytons inside, Axons outside
- (v) Meninges, Cerebrospinal fluid, Vertebral column / backbone.

[ICSE Marking Scheme, 2018]

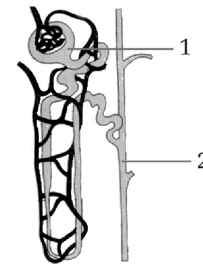
- (b) Give appropriate biological or technical terms for the following : [5]
 - (i) Process of maintaining water and salt balance in the blood.
 - (ii) Hormones which regulate the secretion of other endocrine glands.
 - (iii) Movement of molecules of a substance from their higher concentration to lower concentration when they are in direct contact.
 - (iv) The condition in which a pair of chromosomes carry similar alleles of a particular character.
 - (v) The complex consisting of a DNA strand and a core of histones.
 - (vi) The onset of menstruation in a young girl.
 - (vii) Squeezing out of white blood cells from the capillaries into the surrounding tissues.
 - (viii) The fluid which surrounds the foetus.
 - (ix) The relaxation phase of the heart.
 - (x) The difference between the birth rate and the death rate.

Ans. (b) (i) Osmoregulation/Osmotic regulation
(ii) Tropic hormones
(iii) Diffusion
(iv) Homozygous
(v) Nucleosome
(vi) Menarche

- (vii) Diapedesis
- (viii) Amniotic fluid
- (ix) Diastole
- (x) Growth rate of population

[ICSE Marking Scheme, 2018]

5. (a) The diagram given below is that of a structure present in a human kidney.
Study the same and answer the questions follow that : [5]



- (i) Name the structure represented in the diagram.
- (ii) What is the liquid entering part '1' called ?
Name two substances present in this liquid that are reabsorbed in the tubule.
- (iii) What is the fluid that comes to part '2' called ?
Name the main nitrogenous waste in it.
- (iv) Mention the three main steps involved in the formation of the fluid mentioned in (iii) above.
- (v) Name the substance which may be present in the fluid in part '2' if a person suffers from *Diabetes mellitus*.

Ans.

- (a) (i) Nephron / Uriniferous tubule / Renal tubule / Kidney tubule
(ii) Glomerular filtrate, water / glucose / Sodium Chloride/Na ions/chloride ions/amino acids/ultrafiltrate/Nephric filtrate
(iii) Urine, Urea
(iv) Ultrafiltration, selective reabsorption, tubular secretion, Glomerular filtration.
(v) Glucose / Sugar / Ketones

[ICSE Marking Scheme, 2018]

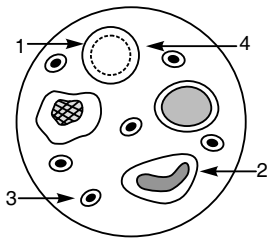
- (b) Differentiate between the following pairs on the basis of what is indicated in the brackets. [5]
 - (i) Leaf and Liver [form in which glucose is stored]
 - (ii) ATP and AIDS [expand the abbreviations]
 - (iii) Testosterone and Oestrogen [organ which secretes]

- (iv) Ureter and Urethra [Functions]
 (v) Hypotonic solution and Hypertonic solution
 [condition of a plant cell when placed in them]

Ans.

- (b) (i) Leaf – Starch, Liver – Glycogen
 (ii) ATP – Adenosine triphosphate, AIDS – Acquired immuno deficiency syndrome.
 (iii) Testosterone – testis, Oestrogen – Ovary
 (iv) Ureter – conducts urine from the kidney to the urinary bladder/ transports urine from Renal pelvis to bladder
 Urethra – expulsion of urine from the urinary bladder/ eliminates urine from body/ expels urine and semen.
 (v) Hypotonic – Turgid / Turgidity
 Hypertonic – Flaccid / Plasmolysed/ Flaccidity
 [ICSE Marking Scheme, 2018]

6. (a) Given below is a diagram of a human blood smear. Study the diagram and answer the questions that follow : [5]



Smear of human blood

- (i) Name the components numbered '1' to '4'.
 (ii) Mention two structural differences between the parts '1' and '2'.
 (iii) Name the soluble protein found in part '4' which forms insoluble threads during clotting of blood.
 (iv) What is the average lifespan of the component numbered '1'?
 (v) Component numbered '1' do not have certain organelles but are very efficient in their function. Explain.

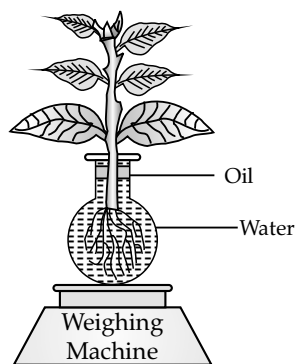
- Ans. (a) (i) 1. RBCs / Erythrocytes
 2. WBC / Leucocytes/named WBC
 3. Platelets / Thrombocytes
 4. Plasma
 (ii) 1. RBC
 - Biconcave disc like
 - Nucleus absent
 - Haemoglobin present
 2. WBC
 - Irregular, amoeboid
 - Nucleus present
 - Haemoglobin absent

- (iii) Fibrinogen
 (iv) 120 days
 (v) Absence of nucleus increases the surface area for absorbing more oxygen / more RBCs can be accommodated.
 Absence of mitochondria in mature RBCs ensures the entire amount of oxygen getting transported to the needy tissues in all parts of the body without even a single fraction of it being used for cellular respiration.
 Absence of endoplasmic reticulum increases the flexibility to move through narrow capillaries. [ICSE Marking Scheme, 2018]

- (b) Given biological explanations for the following : [5]
 (i) Education is very important for population control.
 (ii) The placenta is an important structure for the development of a foetus.
 (iii) All the food chains begin with green plants.
 (iv) Plants growing in fertilized soil are often found to wilt if the soil is not adequately watered.
 (v) We should not put sharp objects into our ears.

- Abs. (b) (i) Desire for a male child, ignorance regarding the functioning of reproductive system, gender inequality, etc., can be eliminated with education and population increase can be checked. /to create awareness for birth control measures/vital for growth of nation/ Food, water, environmental pollution, lack of job opportunities can be eliminated /to improve quality of life.
 (ii) - Transport of oxygen / digested foods / hormones / antibodies from maternal blood to foetal blood/nutrients /glucose, etc.
 - Elimination of nitrogenous wastes / carbon dioxide from foetal blood to maternal blood./urea, uric acid, creatinine
 - Secretes oestrogen and progesterone
 - Acts as a barrier to germs.
 (iii) All animals / organisms depend on green plant for oxygen and directly or indirectly depend for food.
 (iv) Soil medium becomes hypertonic. Roots lose water by exosmosis/ plasmolysis and the plants wilt.
 (v) Can damage eardrum / tympanum leading to deafness. [ICSE Marking Scheme, 2018]

7. (a) The diagram below represents process in plants. The setup was placed in bright sunlight. Answer the following questions : [5]



- (i) Name the physiological process depicted in the diagram.
Why was oil added to the water?
- (ii) When placed in bright sunlight for four hours, what do you observe with regard to the initial and final weight of the plant? Give a suitable reason for your answer.
- (iii) What happens to the level of water when this setup is placed in :
1. Humid conditions ?
2. Windy conditions ?
- (iv) Mention any three adaptations found in plants to overcome the process mentioned in (i).
- (v) Explain the term 'Guttation'.

- Ans. (a)**
- (i) Absorption of water by roots, Transpiration by leaves. To prevent evaporation of water.
- (ii) Weight of the plant reduces. Rate of transpiration is more than the rate of absorption of water. /Final weight is less than initial weight because leaves transpire.
- (iii) 1. Remains same
2. Reduces

- (iv) Sunken stomata, fewer stomata, narrow leaves, Rolled or folded leaves, loss of leaves, leaves modified to spines, thick cuticle on leaves. /small leaves/needle like leaves/hair on leaves/multiple epidermis.
- (v) Loss of water (as droplets) from the margins / hydathodes of leaves. /apex, tips of leaves.

[ICSE Marking Scheme, 2018]

- (b) A pea plant which is homozygous for green pods which are inflated [GGII] is crossed with a homozygous plant for yellow pods which are constricted [ggii]. Answer the following questions. [5]
- (i) Give the phenotype and genotype of the F_1 generation.
Which type of pollination has occurred to produce F_1 generation?
- (ii) Write the phenotypic ratio of the F_2 generation.
- (iii) Write the possible combinations of the gametes that can be obtained if two F_1 hybrid plants are crossed.
- (iv) State Mendel's law of 'Segregation of Gametes'.
- (v) What is the scientific name of the plant which Mendel used for his experiments on inheritance?


- Ans. (b)**
- (i) Phenotype: All have green, inflated pods.
Genotype: GgIi, Cross pollination
- (ii) 9 : 3 : 3 : 1
- (iii) GI, Gi, gI, gi
- (iv) Two members of a pair of factors separate during gamete formation./The two alleles of a trait separate during gamete formation.
- (v) *Pisum sativum*

[ICSE Marking Scheme, 2018]



Don't Stop Reading !
You never know what might be asked in the exam.

To download Chapter-wise Mind Maps scan the code below



To download Chapter-wise Revision Notes scan the code below

