

Paper Set : SET-I (HT)

SUBJECT : Biology

ICSE Board - Sample Paper - 1 Solutions

SECTION - A ---- (40 Marks)

- Q.1** (A) (i) Cerebrospinal fluid
(ii) 46
(iii) Root pressure
(iv) Population density
(v) Sclera

- (B) (i) (d) 12 pairs
(ii) (d) Oviduct
(iii) (c) Renal pelvis
(iv) (c) imbibition
(v) (d) Refrigeration equipments

- (C) (i) To kill the cells.
(ii) Remove the chlorophyll.
(iii) Iodine solution.
(iv) Blue black in colour.
(v) Brown

- (D) Match the pair :

[5]

	A	B
1	Sunken stomata	Nerium
2	Birth rate	Natality
3	DNA & Histone	Nucleosome
4	Euro norms	Vehicular standard
5	Diabetes mellitus	Hyperglycemia

- (E) (i) Puberty brings reproductive maturity.
(ii) Leydig cells secret testosterone.
(iii) Perform function of closing and opening of stomata.
(iv) Eustachian tube controls the pressure in middle ear.
(v) Corpus luteum secretes progesterone and estrogen hormone.
- (F) (i) Normal pale yellow colour of the urine is due to presence of the pigment urochrome.
(ii) The outermost layer of meninges is Duramater.
(iii) The cell sap of roots hair is hypertonic to its surroundings.
(iv) Phloem transports sucrose from the leaves to all parts of the plant body.
(v) Hydrogen bonds are present between the complementary nitrogenous bases of DNA.

- (G) (i) Bile – Others are nitrogenous waste products while it is not.
 (ii) Lumen – Others are types of tissue but it is not.
 (iii) Spinal cord – Other are different parts of a neuron while it is not.
 (iv) Urethra – Others are part of human female reproductive system while it is not.
 (v) Seminiferous tubules – Other are glands associated with human male reproductive system while it is not.
- (H) (i) Mutation – Mutation is the change in DNA sequence or a gene, which results in variation i.e. the expression of the gene is altered.
 (ii) Imbibition – A special type of diffusion in which water is absorbed by solids-colloids causing an increase in volume.
 (iii) Thigmotropism – The directional response of a plant organ to touch or physical contact with a solid object.
 (iv) Power of accommodation – The ability of eye lens to adjust its focal length is called as power of accommodation.
 (v) Guttation – The loss of water in the form of droplets from hydathodes (Small pores) on the leaf margins.

SECTION - B ---- (40 Marks)

(Attempt any 4 from the question)

- Q.2 (A)** (i) Diagram is depicting a reflex action. Reflex action is involuntary and instantaneous response given to a stimulus with the help of spinal cord or brain.
 (ii) The point of contact between two nerve cells is synapse.
 (iii) 1 = Sensory nerve, 2 = Motor nerve, 3 = Spinal cord.
 (iv) White matter (Axons) is beneath the grey matter (Cell bodies) in brain while in spinal cord white matter is central and is surrounded by grey matter. So the arrangement of neurons is opposite in brain and spinal cord.
 (v) Spinal cord is protected by vertebral column and three meninges namely duramater, arachnoid and pia mater.
- (B) (i) The diagram is representing a nephron.
 (ii) The liquid is glomerular filtrate, water and Na^+ ions are reabsorbed in tubule.
 (iii) The fluid is called urine. Urea is the main nitrogenous waste present in it.
 (iv) Three steps of formation of urine are as following:
 a. Filtration b. Reabsorption c. Secretion

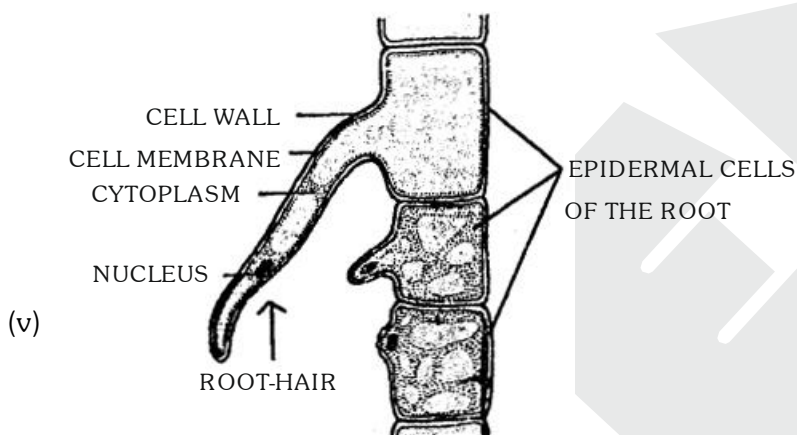
(v) In a person suffering from diabetes mellitus glucose may be present in urine.

Q.3 (A) (i) 1 = Root hair cell, 2 = Soil particles, 3 = Xylem vessel, 4 = Root cortex cell.

(ii) Osmosis enables the passage of water from the soil into the root hair.

(iii) The pressure is root pressure. Root pressure is a positive pressure that develops in the xylem and helps in the rising of the sap from roots to leaves through stem.

(iv) This phenomenon is known as guttation.



Root-hair (Highly magnified)

(B) (i) Human skin cell (diploid) is a somatic cell having 46 chromosomes and ovum is a gamete (haploid) having 23 chromosomes.

(ii) Sperm duct provides passage for sperms and fallopian tubes are the passage through which ovum travels.

(iii) Phenotypic ratio –

Monohybrid cross – 1 : 2 : 1

Dihybrid cross – 9 : 3 : 3 : 1

(iv) Pigment present in Rod cells – Rhodospin.

Pigment present in Cone cells – Iodopsin.

(v) LUBB is the first sound of heart which occurs due to the closing of mitral and tricuspid valve (Atrio-ventricular valves) and DUP is the second sound which occurs due to the closing of the semilunar valves.

Q.4 (A) (i) Phenotype of F_1 generation = Green, inflated pods

Genotype of F_1 generation = GgIi

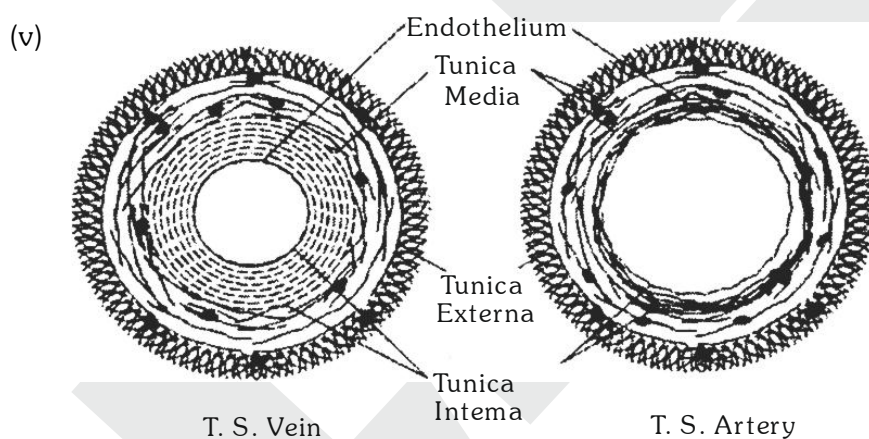
Cross pollination has occurred to produce F_1 generation.

(ii) Phenotypic ratio of the F_2 generation = 9 : 3 : 3 : 1.

(iii) The possible combinations of the gametes obtained from F_1 hybrid plant – GI, Gi, gi, gi

- (B) (i) This part is umbilical cord.
 (ii) Part 2 which is placenta provides nutrients and oxygen to growing foetus.
 (iii) Part shown is amniotic sac filled with amniotic fluid which protects the foetus from any physical harm and provides lubricacy.
 (iv) The normal gestation period in human being is 280 days.
 (v) Gestation is the period from the formation of zygote to the time delivery.

- Q.5 (A)** (i) Ventricles are in diastolic phase, because blood is flowing from atria to ventricles as shown by arrows.
 (ii) 1 = Pulmonary Artery
 2 = Pulmonary Vein
 (iii) Closing of bicuspid and tricuspid valves causes 'LUBB' and closing of semilunar valves causes 'DUP' sound.
 (iv) Coronary arteries supply oxygenated blood to the heart muscles.



- (B) (i) Phloem.
 (ii) Recessive Allele.
 (iii) Seminal Vesicle.
 (iv) Ganong's potometer.
 (v) Dizygotic twins.
 (vi) Homologous chromosomes.
 (vii) Antiseptic.
 (viii) Biomedical waste.
 (ix) Lysozyme.
 (x) RBC.

- Q.6 (A)** (i) A → Cerebrum.
 B → Cerebellum.
 C → Medulla Oblongata.

(ii) Function of A → Controls voluntary actions.

Function of B → Co-ordination during voluntary actions.

(iii) Neurons are the structural and functional units of the brain.

In part A (Cerebrum), outer side contains cell bodies and the inner side contains axons of the neurons.

In part B (medulla oblongate), the outer side contains axons and the inner side contains cell bodies of the neurons.

(iv) Collectively these membranes are called meninges.

(v) CSF protects and nourishes the central nervous system.

(B) (i) 1 = Red blood corpuscles, 2 = White blood corpuscles (Neutrophils)
3 = Platelets, 4 = Blood plasma

(ii)

	RBC	WBC
1	Biconcave, disc shaped	Amoeboid
2	Does not contain nucleus	Has 3 - 5 lobbed nucleus

(iii) Fibrinogen protein helps in blood clotting.

(iv) 120 days.

(v) RBC do not contain nucleus, cell organelles like mitochondria and ER. It helps them in moving out of blood capillaries by squeezing themselves. They can easily carry glucose. More haemoglobin can be accommodated so oxygen carrying capacity is also increased.

Q.7 (A) (i) Genotype of F_1 generation = TtRr

Phenotype of F_1 generation = Tall, Red flowers.

(ii) Possible combination of the gametes – TR, Tr, tR, tr.

(iii) This law states that the alleles of two different genes are sorted independently of one another during gametogenesis.

(iv) 9 – Tall and Red, 3 – Tall and White

3 – Dwarf and Red, 1 – Dwarf and White

(v) 9 : 3 : 3 : 1.

(B) (i) Reflex action : Involuntary and instantaneous response given to a stimulus with the help of spinal cord or brain.

(ii) Gestation : The period from the conception to delivery of the baby.

(iii) Photophosphorylation : During photosynthesis ADP molecules are converted into ATP using sunlight. This is known as photophosphorylation.

(iv) Hormone : Chemical substances secreted from endocrinal glands controlling a particular function in co-ordination with nervous system.

(v) Synapse : The junction where two neurons meet and nerve impulses are transferred from one neuron to another.