

Pre- Board Test -1 Solution

SECTION A

1. (i) (a) *Thin walled and blood flows under diminished pressure.*

Explanation: Veins transport blood from organs to heart, which does not require pressure, making them thin walled. Veins also have valves to ensure flow of blood only in one direction.

- (ii) (b) *Heredity*
 (iii) (d) *Around the stoma*

Explanation: A pair of guard cells surround the stomata on the upper and lower epidermis of leaf.

- (iv) (b) *22 pairs of autosomes and 1 pair of sex chromosomes*

Explanation: In humans, there are 23 pairs i.e. $46 = 22$ pairs of autosomes + 2 sex hormones of the chromosome.

- (v) (b) *Antidiuretic hormone*

Explanation: This hormone is released when the hypothalamus sends messages to the pituitary glands through nerve cells.

- (vi) (d) *remove starch from the experimental leaf.*

Explanation: Starch is stored in the form of glucose in plants. Before experimenting on photosynthesis, the plant is kept in the dark for some hours to remove starch from the experimental leaf.

- (vii) (b) *Discharge the wastes into the river.*

Explanation: Discharging of industrial wastes into the river causes water pollution.

- (viii) (c) *Medical Termination of Pregnancy*

Explanation: MTP refers to Medical termination of pregnancy. This is the process which is used to terminate the pregnancy. This is called as induced abortion. There are medicines or the surgical form of abortion is performed to terminate the pregnancy.



Related Theory

→ This is legal method for the termination of the conception. MTP is considered safe till 21st week in India.

- (ix) (b) *Ovulation*

Explanation: Ovulation is the release of the egg (ovum) from a woman's ovary.



Related Theory

→ It is a phase in the menstrual cycle. It occurs at about day 14 of a 28-day menstrual cycle.

- (x) (b) *Cornea*
 (xi) (b) *Cochlea*

Explanation: Cochlea is the inner ear that is rolled up into the spiral snail-like shape.

- (xii) (a) *Central nervous system*

Explanation: The reflex action is governed by the "central nervous system".

- (xiii) (b) *Gibberellic acid- Leaf fall*

Explanation: Gibberellins promotes cell elongation of both leaves and stems and internodal length of genetically dwarf plants. It is in general a growth promoting hormone and does not inhibit growth. So, leaf abscission is not associated with gibberellins. Leaf fall is associated with abscisic acid.

- (xiv) (a) *Guttation*

Explanation: Guttation is the liquid water loss from special openings of veins of leaves. Exudation is liquid which comes out of the pores or wounds. Girdling is the experiment which proves that translocation of food occurs through phloem. Transpiration is the loss of water from aerial parts of the plants in the form of vapours.

- (xv) (a) *Bowman's capsule*

Explanation: Ultrafiltration begins in the nephron in the kidney. Blood travels through a coiled structure of capillaries surrounded by the Bowman's capsule.

2. (i) Name the following :

- (a) Variation
 (b) Collecting duct.



Related Theory

→ The collecting duct always passes through the hypertonic tissue fluid. Hence, water comes out osmotically making the filtrate hypertonic. Now, in collecting duct glomerular filtrate is known as urine. Term urine is first time used in collecting duct.

- (c) Acromegaly.
 (d) Sewage / detergents / oil spills.
 (e) Vasectomy

- (ii) (a) Photons, Grana, Absorbs energy, Stoma, Splits water molecules.

Explanation: In the presence of pigment chlorophyll, the energy in the form of photons is absorbed by the Grana, and the absorbed energy splits water molecules whereas stoma takes in carbon dioxide to release oxygen.

- (b) G1 phase, S-phase, G2 phase, Karyokinesis, Cytokinesis.

Explanation: This is the sequence of occurrence of each process in a cell cycle.

- (c) Right atrium, Right ventricle, Lungs, Left atrium, Left ventricle.

Explanation: Blood entering the right atrium passes through the right ventricle which pumps the blood to the lungs where it becomes oxygenated. The oxygenated blood comes back to the heart by the pulmonary veins which enter the left atrium and then flows into the left ventricle.

- (d) Ovary, Oviduct, Uterus, Cervix, Vagina.

Explanation: Egg is formed in the ovary and passes to Fallopian tube via oviduct to uterus. The fertilized egg grows in uterus. The vagina connects with uterus at the cervix. The unfertilized eggs exit through vagina during menstrual cycle.

- (e) Receptor, Sensory neuron, Spinal cord, Motor neuron, Effector.

Explanation: Receptors (eye, ear, skin) detect changes in the environment (stimuli), and turn them into electrical impulses. Sensory neurons carry electrical impulses from receptors to the CNS. CNS consists of the brain and the spinal cord. Motor neurons carry impulses from the CNS to effectors (muscles or glands).

(iii)

Column A	Column B
(i) Pituitary gland	(c) Growth hormone
(ii) Sulphur dioxide	(d) Acid rain
(iii) Seminiferous tubules	(e) Sperms
(iv) Clotting of blood	(b) Calcium
(v) Guttation	(h) Hyathodes

- (iv) Choose the odd one out from the following terms and name the category to which the others belong:

- (a) Odd one: – ADH

Category – Others are hormones of anterior lobe of pituitary gland.

- (b) Odd one: Styrofoam

Category : Others are biodegradable materials

- (c) Odd one: Cerebellum.

Category : All other three terms are the part of forebrain.

- (d) Odd one: Night blindness

Category: Others are sex linked inherited disorders.

- (e) Odd one : Auxin

Category : Others are waste products released by plants.

- (v) State the exact location of the following structures:

- (a) Grana are found in chloroplast.

- (b) At the junction of choroid and iris.

- (c) Between alimentary canal and liver.

- (d) These are present in the seminiferous tubules of the testis.

- (e) Pituitary gland is located at the base of midbrain below hypothalamus.

SECTION B

3. (i) The drooping down of the plant due to deficit of water is called wilting. It occurs due to excessive transpiration as compared to the absorption of water by roots.
- (ii) Photolysis is the decomposition of molecules by the action of light while photophosphorylation is the synthesis of ATP from ADP and phosphate that occurs in a plant using radiant energy absorbed during photosynthesis.
- (iii) Rice plants infected with fungus *Gibberella fujikuroi* shows too much growth in length, which is too long for the plant to support its

own weight and the plant ultimately dies. This phenomenon is called foolish seedlings.

- (iv) Sex chromosome is a chromosome that operates in the sex-determining mechanism of a species. For example, in human there is a large X chromosome and a much smaller Y chromosome.

- (v) (a) Transpiration.

- (b) In A–The weight of test tube reduces, as the leafy shoot transpires and in turn it absorbs water from the test tube.

In B–No change in weight/weight does not reduce. There is no leafy shoot. No

transpiration and no absorption of water takes place.

(c) It acts as a control set up.

4. (i) Abscissa acid

(ii) Colour blindness, Haemophilia, Pattern baldness. **[Any two]**

(iii) Adaptations which favour the process of photosynthesis are :

(1) Presence of more stomata to allow rapid exchange of gases like CO_2 and O_2 .

(2) Arrangement of chloroplasts on the upper surface of leaves, so, as to receive maximum amount of light.

(3) Large surface area of leaves for absorbing maximum light. **[Any two]**

(iv) Animals owe their existence to chlorophyll because plants with chlorophyll produce the food by photosynthesis, which in turn are used by all the living organisms directly or indirectly. Plants form the base of any food chain.

For example : Grass → Deer → Tiger

Tiger feeds on deer, who feeds on grass. Thus, deer and a tiger are dependent on grass directly or indirectly.

(v) (a) The stage is telophase. The reason is that nuclear membrane reappears and spindle fibres disappear.

(b) (1) Chromosome

(2) Nuclear membrane

(c) The technical term for the division of nucleus is Karyokinesis.

5. (i) It is the act of emptying the bladder. When the bladder is full of urine, stretch receptors in the bladder wall trigger the micturition reflex.

(ii) LUBB – Closure of tricuspid and bicuspid valves

DUBB – Closure of semilunar valves

(iii) (a) Suspensory ligaments hold lens in position.

(b) Semicircular canals balances the body.

(iv) It is the secretion of an endocrine gland, which is transported by blood and acts on target organs or cells.

Tropic hormones are secreted by pituitary gland and stimulates other endocrine glands to secrete their hormones.

(v) (a) Nephron.

(b) Glomerular filtrate.

(c) The fluid that comes to part 2 is urine. The main nitrogenous waste in urine is urea.

6. (i) It is a rod like or thread like structure formed by the condensation of chromatin fibers during cell division.

(ii) **[Any two]**


Prophase of Mitosis	Telophase of Mitosis
Prophase is the first stage in mitosis.	Telophase is the final stage.
Chromosomes are randomly arranged in the cell.	Chromosomes are present at the opposite poles of the cell.
Nuclear membrane starts disappearing.	Nuclear membrane is formed around each set of chromosomes.
Nucleolus starts to disappear.	Nucleolus starts being visible again.

(iii) Two functions of cerebrospinal fluid are:

(a) Protects the brain/ Spinal cord from injuries and shocks.

(b) It supplies food and oxygen to different parts of Central Nervous System.

(iv) Colour blindness is caused by a recessive gene located in the X chromosome. Y chromosome does not carry this gene. In males, if the single X defective chromosome carrying the gene expresses itself. It can result in the colour blindness. While in women, two defective X chromosomes are required to cause colour blindness. Hence, it is more common in men than in women.

 **Caution**

→ Explain the concept of recessive gene in men and women to give an idea about sex linked inheritance.

(v) (i) Ear ossicles

(ii) A – Cochlea, B – Semicircular canals, C – Ear ossicles

(iii) Cochlea helps in transmitting impulses to the brain via the auditory nerve. Semicircular canals help in maintaining dynamic equilibrium of the body.

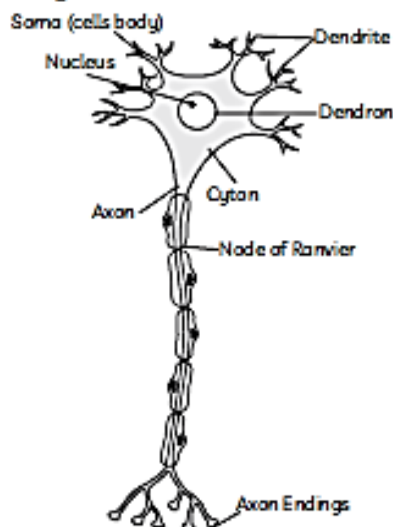
7. (i) Process of focusing the eye to see objects at different distances is called accommodation.

- (ii) Education can create awareness for birth control measures and family planning, thus, helping in population control.
- (iii) Functions of placenta :
- (1) It acts as a barrier between the foetus and the mother.
 - (2) It helps in transportation of soluble inorganic and organic materials, nutrients, hormones, antibodies, etc. through the placenta from the mother to foetus.
 - (3) It helps in the gas exchange between mother and foetus.
 - (4) It helps in elimination of nitrogenous wastes of foetus.
 - (5) It acts as an endocrine gland by secreting Human chorionic gonadotropin (hCG), human placental lactogen (hPL), oestrogen, progesterone and relaxin. **[Any four]**

(iv) **[Any two]**

DNA	Chromosome
DNA is the chemical form which stores genetic information.	A chromosome is the highest organized structure of DNA double helix with proteins.
DNA is made up of nucleotide monomers of four bases A, T, C, and G.	A chromosome is made up of condensed DNA double-helix with histone protein.
DNA carries the genetic information within a cell.	It is responsible for inheritance of traits.

(v) A Myelinated Neuron:



8. (i) Biomedical waste is any kind of waste containing infectious materials. generated from biological and medical sources and activities such as diagnosis, prevention or treatment of diseases.
- (ii) It is because, the roots are no more exposed to soil water and therefore, there is no absorption of water. As a result, the leaves do not receive water and soon all turns flaccid. This results in the wilting of leaves.
- (iii) Amnion is the innermost fetal membrane which secretes amniotic fluid whereas chorion is the outermost membrane which forms placenta with endometrium and allantois. It does not secrete amniotic fluid.
- (iv) Control measures for preventing global warming are :
- (1) Reducing the use of fossil fuels.
 - (2) Use of bio-fuels.
 - (3) Improving energy efficiency.
 - (4) Use of renewable source of energy such as CNG etc.
 - (5) Reforestation.
 - (6) Recycling of materials.
 - (7) International initiatives are also being taken to reduce the emission of greenhouse gases into the atmosphere.
- (v) (a) 1. Radicle, Plumule.
 (b) Hydrotropism
 (c) Part 1 i.e. Radicle is affected by Gravity of earth and water.