10. Mango: *Mangifera indica*
   Wheat belongs to class monocotyledonae.
   Housefly: *Musca domestica*
12. Generally viruses that infect plants have ssRNA. (TMV was first discovered in tobacco plants)
4. *Pinus* – Diplontic life cycle

5. *Sequoia* and *Wolfta* are seed bearing plants. They show diplontic type of life cycle. *Volvox* is haplontic. *Ectocarpus* is an exception of the algal genera. Most of the algal genera are haplontic, while *Ectocarpus* is haplo-diplontic.

6. *Selaginella* is a pteridophyte which possess vascular tissues.

10. Each embryo sac has a 3-celled egg apparatus—one egg cell and 2 synergids; 3 antipodal cells and 2 polar nuclei.

16. Bryophytes are amphibians of the plant kingdom. *Salvinia* is a Pteridophyte.

18. *Selaginella, Equisetum* and *Pteris* are pteridophytes, whereas *Ulothrix* is an alga.
7. Chordates are triploblastic.
8. Arthropods have open type of circulation. Cnidarians are diploblastic.
14. Sea cucumber is the common name of *Cucumaria*, which belongs to phylum Echinodermata.
15. Coelenterata – *Hydra*
7. It is a typical modification desert plants to prevent water loss by transpiration.

8. Leaves of some plants like Australian acacia are small and short-lived, thus here the petioles become green, expanded and perform function of photosynthesis.

13. Prop roots are root modification for providing support to the plant. Aleurone layer is the proteinaceous layer seen in seeds, it separates the embryo from rest of the seed and nourishes the embryo.

14. The swollen leaf base is known as pulvinus. Stipules are modified green appendages formed by the leafbase. Leaf is attached to the stem by means of a stalk known as Petiole.

15. Correct labels for L. S. of maize grain are:

19. Phylloclade is a stem modification where stem is modified to perform photosynthesis, while leaves are reduced to spines.
2. *Sorghum* belongs to monocots, where the mesophyll is undifferentiated into spongy and palisade.

5. In a dicot root, protoxylem lies exterior to metaxylem, i.e. lies towards the periphery, whereas in dicot stem, protoxylem lies inwards to the metaxylem, i.e. lies toward the pith.

6. Guard cells in monocots i.e. grasses, maize etc. are dumb-bell shaped, while in dicots they are bean – shaped.

8. Dicotyledonous roots have fewer xylem bundles, while monocotyledonous root usually show more than 6 xylem bundles.

16. The cells of cambial ring cut off towards pith mature into secondary xylem while that towards periphery mature into secondary xylem.

17. Protophloem – narrow sieve tubes
   Late wood – formed in winter season
   Metaxylem – bigger sieve tubes.
1. Chondrocyte is the cell of cartilage.

4. In cockroach, both male and female cockroach bears pair of large segmented anal cerci in 10th segment.

10. Squamous epithelium in the blood vessels is called as Endothelium.

15. Genital pouch in male cockroach is bounded ventrally by 9th sternum.
4. Nuclear membrane is found only in eukaryotic cells.

10. Tonoplast – Vacuole
3. Plant cell wall, paper and cotton fibres are made of cellulose.
8. Adenine and thymine; because C always attaches with G and A attaches with T.
11. All enzymes are proteins but all proteins are not enzyme.
12. Enzymes are polymers of amino acids.
5. During S-phase, replication of DNA takes place. The amount of DNA per cell doubles but the number of chromosomes remains same. The number of chromosome reduces only in meiosis.
8. Transport of water up the plant does not require energy. The force that moves water and minerals up the plant is the cohesion-tension-transpiration pull. Root pressure is another force that pushes water and minerals up the plant stem.

9. Seed have lower water potential, thus when brought in contact with water ($\psi_w = 0$) potential gradient develops, which leads to rapid movement of water to the surface of a seed.

15. Chalk powder is immiscible in water, thus it will not use the free water molecules, thus there will be no change in water potential of the water system.

16. Option (A) and (D) are examples of active transport, while (C) is diffusion.
3. K, P and Mg are macronutrients, whereas Mn is a micronutrient.

8. Plants absorb Boron in the form of $\text{BO}_3^{2-}$ or $\text{B}_4\text{O}_7^{2-}$. It is required for uptake and utilisation of $\text{Ca}^{2+}$. 
1. Dark reaction is also known as the Biochemical phase, which occurs in the stroma, while photochemical phase is the light reaction which occurs in thylakoid membrane of grana.

2. Chlorophyll ‘a’ is the universal and the most essential pigment associated with photosynthesis. Chlorophyll b, xanthophyll and carotenoids are the accessory pigments which absorb and transfer energy to chlorophyll ‘a’.

3. Dark reaction is independent of light, but dependent on products formed at the end of light reaction, i.e. ATP, NADPH$_2$ (NADPH + H$^+$)

12. At higher intensities the rate of photosynthesis becomes steady, thus light at those intensities is limiting factor.

13. Regeneration phase involves re-formation of RuBP which is crucial to continue the Calvin cycle, uninterrupted as it is the primary CO$_2$ acceptor.
3. Pyruvate formed as end product of glycolysis enters mitochondrial matrix by undergoing oxidative decarboxylation by set of reactions catalysed by pyruvic dehydrogenase in presence of Mg$^{2+}$, with other co-enzymes including NAD$^+$ and coenzyme A.

5. Glycolysis involves 10 enzyme controlled reactions, which forms 2 molecules pyruvic acid from glucose, along with 2 ATP and 2 NADH$_2$.

13. It is pyruvic acid that enters the anaerobic fermentation in either Lactic acid fermentation or alcohol fermentation. It is NAD$^+$ that is formed and not NADH$_2$. 
2. Log phase is also known as exponential phase. The growth increases rapidly at an exponential rate. The cells follow mitotic division till they meet the nutrient supply.

12. Cytokinins inhibit apical dominance and act antagonistically to auxins, which promote apical dominance.

14. Abscisic acid acts as growth inhibitor and induces dormancy of buds at the approach of winter.
4. Permanent teeth are the second set of teeth formed in humans. There are 32 permanent teeth (Incisors – 2/2, Canines – 1/1, PreMolars – 2/2, Molars – 3/3)

5. Gastric glands are lined with three kinds of secreting cells zymogen (main, peptic or chief) cells, parietal cells and mucous cells. The main peptic or zymogen cells secrete digestive proenzyme namely pepsinogen and prorennin. HCl convert pepsinogen and prorennin into pepsin and rennin.

6. Breaking of large fat droplets into fine emulsion by bile salt (Bile juice contains bile pigment and bile salt) of the liver.
1. CO₂ is transported by blood in three forms, 7% as dissolved in plasma, 23% as carbaminohaemoglobin and 70% as bicarbonates.

9. Total lung capacity is the sum of the vital capacity and residual volume i.e.,
   \[ \text{TLC} = \text{VC} + \text{RV} = 4800 \text{ ml} + 1200 \text{ ml} = 6000 \text{ ml} \]

10. Spirometry is the process of recording the changes in the volume movement of air into and out of lung and the instrument used for the purpose is called spirometer or respirometer.
6. Neutrophils, eosinophils, basophils are granulocytes, whereas monocytes are agranulocytes.
7. 120 mm Hg is systolic pressure.
8. End of T wave marks the end of systole.
15. Monocytes and neutrophils are phagocytes.
9. About 19% water is reabsorbed by the action of the posterior pituitary, Antidiuretic hormone (ADH) or vasopressin.

10. Water is reabsorbed in distal convoluted tubules under the influence of antidiuretic hormone (ADH) secreted by posterior lobe of pituitary gland.

12. Mammals have following types of excretory organs: Lungs excrete CO₂. Liver excretes bile pigments. Skin excretes toxic substance such as sweat. Kidney excretes urea.
5. All the WBCs in our body show Amoeboid movement.

8. A gliding joint is the simplest of the synovial joints. Gliding joints are found between the carpal bones and between the tarsal bones.

9. The fibrous joints are in the cranium of skull. In fibrous joints, the margins of bones are united by fibrous tissue. So, they are immovable.

14. Cardiac muscles are striated involuntary. Contract quickly and do not get fatigued.
4. The medullary sheath, or myelin sheath is continuous around the nerve fibres in the CNS but in the nerve fibres of PNS it is absent.

6. Duramater also called as pachymeninx or hard matter of brain is the outermost, thickest, tough and fibrous covering of vertebrate CNS.

7. Hypothalamus contains higher nerve centres for temperature regulation, hunger, thirst and emotional reactions.

9. Cones are mostly densely concentrated in the central fovea (yellow spot), a small depression in the centre of macula lutea.

11. Nature of nerve impulse or conduction of nerve impulse is an electro-chemical process.

12. Medulla oblongata contains centre for the autonomic reflex control of respiration, heart beat and these centre are called vital centres because damage to them is usually fatal.

14. Nerve impulse is a self propagating wave of depolarization and repolarization.
3. Pancreas (α-cells in Islet of Langerhans) - Glucagon.

7. Melanocyte stimulating hormone is produced by pars intermedia of pituitary. Others are produced by pars distalis region of pituitary.

11. All of these are peptide hormones.

12. The hormone oxytocin is sometimes used to hasten the child birth. It contracts the involuntary smooth muscles of the uterus to expel the child.

13. Both option (B) and (C) are correct since Thymosins provide all– mediated immunity

\[(T – lymphocytes) + Humord Immunity \quad (B – lymphocytes)\]