

CUET PG Model Test Paper [Life Science]

Q1. Which of the following is Indian mustard?

- (a) Brassica juncea
- (b) Brassica campestris
- (c) Brassica niger
- (d) none of the above

Q2. Which of the following have flagella on both ends of the bacterial cell?

- (a) Monotrichous
- (b) Amphitrichous
- (c) Lophotrichous
- (d) Peritrichous

Q3. Which of the following is removed in girdling experiment?

- (a) Bark only
- (b) Bark with phloem
- (c) Phloem only
- (d) Completely vascular tissue

Q4. Formation of chiasmata is the characteristic feature of

- (a) diplotene
- (b) pachytene
- (c) zygotene
- (d) diakinesis

Q5. Which type of sex determination is found in grasshopper?

- (a) XY type
- (b) WZ type
- (c) XO type
- (d) all of these

Q6. Gonadotropic hormone is secreted by

- (a) pituitary gland
- (b) adrenal gland
- (c) thyroid gland
- (d) none of these

Q7. Vallisneria and Hydrilla are

- (a) hydrophyte angiosperms
- (b) xerophyte angiosperms
- (c) mesophyte angiosperms
- (d) halophyte angiosperms

Q8. Test cross is when

- (a) F₁ crossed with heterozygous parents
- (b) F₁ crossed with homozygous dominant parents
- (c) F₁ crossed with homozygous recessive parents
- (d) F₁ crossed with homozygous parents

Q9. Five kingdom system was given by

- (a) R.H. Whittaker
- (b) Copeland
- (c) Carl Woese
- (d) E.Haeckel

Q10. ATP formation in mitochondria takes place in

- (a) outer membrane
- (b) inner membrane
- (c) F₁ particle
- (d) cristae

Q11. Dental formula of rabbit is

- (a) $\frac{2033}{1023}$
- (b) $\frac{2133}{2133}$
- (c) $\frac{1023}{2033}$
- (d) $\frac{2133}{1023}$

Q12. Choanocytes are present in

- (a) Coelenterata
- (b) Porifera
- (c) Echinodermata
- (d) Mollusca

Q13. Sago palm is

- (a) *Cycas revoluta*
- (b) *Cycas circinalis*
- (c) *Cycas pectinata*
- (d) *Cycas rumphii*

Q14. Phycocolloids are obtained from

- (a) brown algae
- (b) green algae
- (c) blue-green algae
- (d) diatoms



Q15. Spinal nerves in frog are

- (a) 10 pairs
- (b) 30 pairs
- (c) 12 pairs
- (d) 33 pairs

Q16. Zoophily is the pollination by

- (a) invertebrates
- (b) vertebrates
- (c) wind
- (d) air

Q17. Basic unit of muscle contraction is

- (a) collagen
- (b) sarcomere
- (c) bands
- (d) myofibrils

Q18. Vitamin-C helps in

- (a) metabolism of all major nutrients
- (b) formation of prothrombin
- (c) formation of collagen
- (d) metabolism of amino acids

Q19. Who is the father of green revolution?

- (a) M.O.P. Iyengar
- (b) F.E. Fritsch
- (c) E.J. Butler
- (d) Norman Borlaug

Q20. Arteries that carry deoxygenated blood are

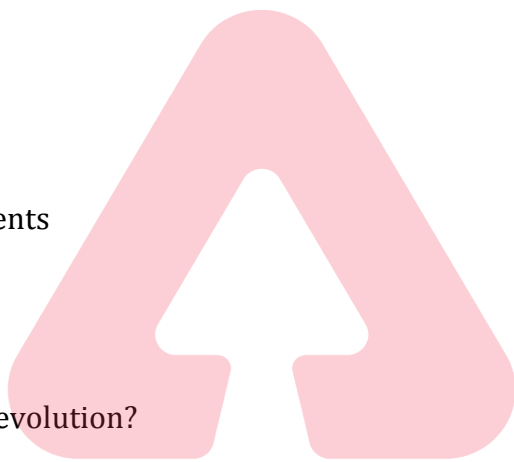
- (a) pulmonary arteries
- (b) carotid arteries
- (c) coronary arteries
- (d) phrenic arteries

Q21. Plastocyanin contains

- (a) copper
- (b) iron
- (c) calcium
- (d) potassium

Q22. Phyllode is a

- (a) copper
- (b) iron
- (c) calcium
- (d) potassium



Q23. Movement of tendrils in response to touch is known as

- (a) nyctinastism
- (b) thigmotropism
- (c) seismonastism
- (d) haptanastism

Q24. Trypsinogen is activated by

- (a) transferase
- (b) hydrolase
- (c) enterophase
- (d) ligase

Q25. Mouthpart of mosquito is a type of

- (a) sponging
- (b) piercing
- (c) biting
- (d) tearing

Q26. Silent Valley National Park is located in

- (a) Kerala
- (b) Tamil Nadu
- (c) Chhattisgarh
- (d) Hyderabad

Q27. Stony endocarp is found in

- (a) aggregate fruit
- (b) drupe fruit
- (c) berry fruit
- (d) pome fruit

Q28. Blue-green algae are

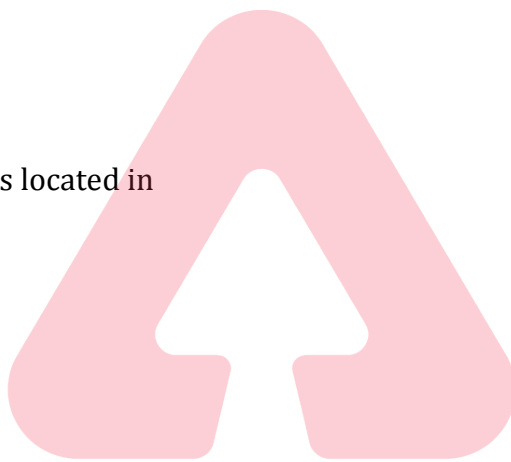
- (a) prokaryotic
- (b) eukaryotic
- (c) monocots
- (d) dicots

Q29. Class of spider is

- (a) Reptilia
- (b) Araneae
- (c) Arachnida
- (d) Neoptera

Q30. Budding occurs in

- (a) bacteria
- (b) yeast
- (c) virus
- (d) mycoplasma



Q31. The difference between rough endoplasmic reticulum and smooth endoplasmic reticulum is that rough endoplasmic reticulum

- (a) does not contain ribosomes
- (b) contains ribosomes
- (c) does not transport proteins
- (d) transports proteins

Q32. Guttation is the process of elimination of water from plants through

- (a) stomata
- (b) hydathodes
- (c) lenticels
- (d) wounds

Q33. Which of the following foramen is present in brain?

- (a) Foramen magnum
- (b) Apical foramen
- (c) Foramen ovale (heart)
- (d) Foramen transversarium

Q34. Which of the following is used for fruit ripening?

- (a) C_2H_2
- (b) C_2H_4
- (c) C_2H_6
- (d) C_2H_8

Q35. The muscles that contract during inspiration is

- (a) clarified muscle
- (b) external intercostal muscle
- (c) both (a) and (b)
- (d) scalene muscle

Q36. Edible part of lichee is

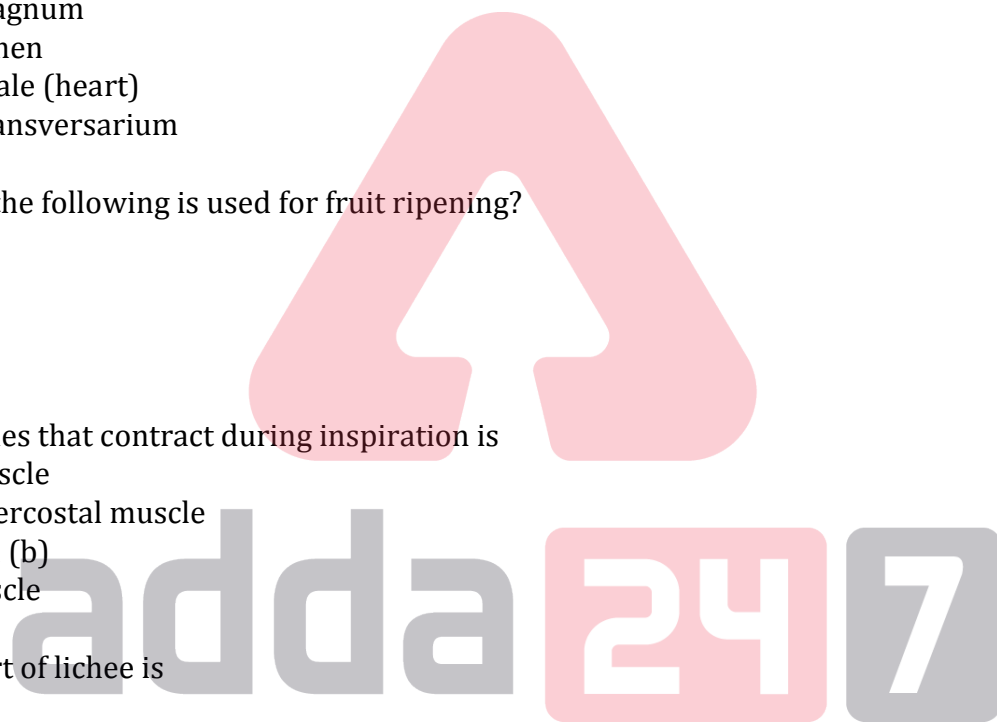
- (a) semilla
- (b) aril
- (c) pericarp
- (d) pedicel

Q37. Seeds not present inside the fruit in

- (a) gymnosperms
- (b) angiosperms
- (c) pteridophytes
- (d) bryophytes

Q38. Bowman's capsule is present in

- (a) renal cortex
- (b) renal medulla
- (c) renal capsule
- (d) renal fascia



Q39. Identify the correct match.

- (a) Ammotelism - Insects
- (b) Aminotelism - Turtle
- (c) Ureotelism - Mammals
- (d) Uricotelism - Protozoans

Q40. Least toxic excretory material is

- (a) ammonia
- (b) amino acids
- (c) urea
- (d) uric acid

Q41. Schwann cells are present where

- (a) nerve is covered with myelin sheath
- (b) neurilemma and myelin sheath are discontinuous
- (c) myelin sheath is discontinuous
- (d) neurilemma is discontinuous

Q42. Sympathetic nervous system is also known as

- (a) cranial
- (b) craniosacral
- (c) thoracolumbar
- (d) none of these

Q43. Amitosis occurs in

- (a) bacteria
- (b) yeast
- (c) chara
- (d) all of these

Q44. Synaptonemal complex occurs in

- (a) leptotene
- (b) zygotene
- (c) pachytene
- (d) diakinesis

Q45. In fungi, food reserve is

- (a) glycogen
- (b) starch
- (c) cellulose
- (d) all of these

Q46. In which of the following segment of earthworm clitellum is present?

- (a) 10-20 segments
- (b) 14-16 segments
- (c) 12-18 segments
- (d) 14-15 segments



Q47. The sporophyte of Funaria begins development within

- (a) antheridia
- (b) capsule
- (c) protonema
- (d) archegonium

Q48. The cotton thread fibres are

- (a) fibres taken out from stem
- (b) epidermal hairs of seed
- (c) epidermal hairs of fruits
- (d) fibres taken out from roots

Q49. Which of the following element is maximum in plants?

- (a) carbon
- (b) zinc
- (c) calcium
- (d) magnesium

Q50. Which of the following chlorophyll is directly participate in photosynthesis?

- (a) chlorophyll - a
- (b) chlorophyll - b
- (c) xanthophyll
- (d) carotenoid

Q51. Number of layers in amoeboid cyst are

- (a) 2
- (b) 3
- (c) 1
- (d) 4

Q52. Food poisoning is caused by

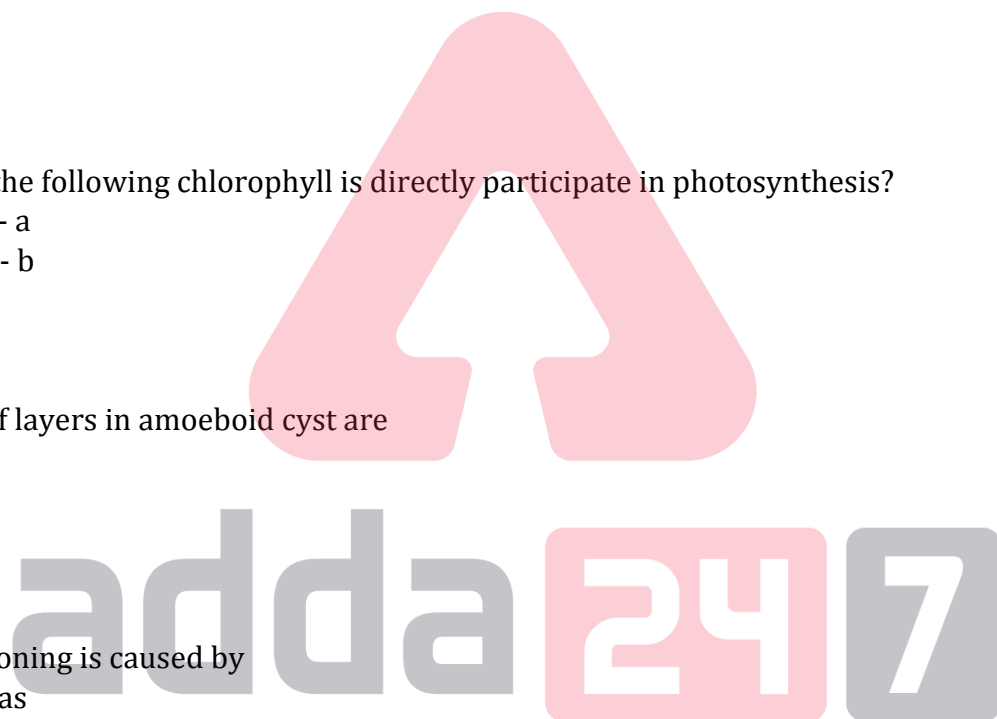
- (a) Nitrosomonas
- (b) Lactobacillus
- (c) Escherichia coli
- (d) None of these

Q53. Earthworm is

- (a) polychaeta
- (b) oligochaeta
- (c) hirudinea
- (d) none of these

Q54. Inheritance of skin colour in human is an example of

- (a) chromosomal aberration
- (b) codominance
- (c) point mutation
- (d) polygenic inheritance



- Q55.** Cri-du-chat syndrome in humans is caused by the
- (a) fertilization of an XX egg by a normal Y-bearing sperm
 - (b) loss of half of the short arm of chromosome 5
 - (c) loss of half of the long arm of chromosome 5
 - (d) trisomy of 21st chromosome

Q56. Which one of the following pair of parents is most likely get a child, who would suffer from haemolytic disease of new borne?

- (a) Rh+ mother and Rh- father
- (b) Rh- mother and Rh- father
- (c) Rh+ mother and Rh+ father
- (d) Rh- mother and Rh+ father

Q57. Which of the following is a flightless bird?

- (a) ostrich
- (b) emu
- (c) kiwi
- (d) all of these

Q58. Volkmann's canals occur in

- (a) cartilage
- (b) liver
- (c) bone
- (d) internal ear

Q59. Characteristic of mammalian liver is

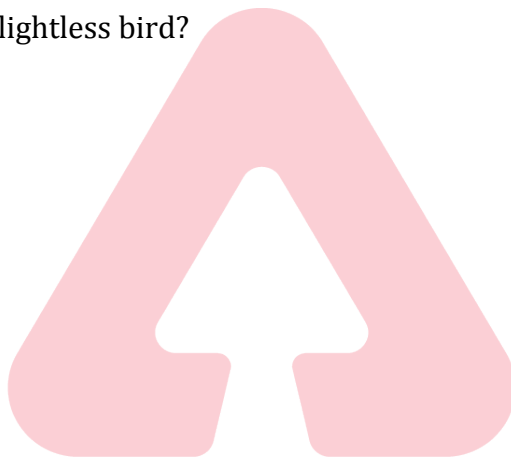
- (a) Kupffer's cells and leucocytes
- (b) leucocytes and canaliculae
- (c) Glissons's capsule and Kupffer's cells
- (d) Glisson's capsule and leucocytes

Q60. Branch of zoology dealing with the study of fishes is known as

- (a) herpetology
- (b) ichthyology
- (c) mammology
- (d) ornithology

Q61. Which is the correct example of the type of regeneration out of the two major types?

- (a) Morphallaxis-Regeneration of two transversely cut equal pieces of one Hydra into two small Hydra
- (b) Epimorphosis-Replacement of old and dead erythrocytes by the new ones
- (c) Morphallaxis- Healing of wound in the skin
- (d) Epimorphosis-Regeneration of crushed and filtered out pieces of Planaria into as many new Planarians



Q62. Chemical ions responsible for muscle contraction are

- (a) Ca^{2+} and K^{+}
- (b) Na^{+} and K^{+}
- (c) Na^{+} and Ca^{2+}
- (d) Ca^{2+} and Mg^{2+}

Q63. Ovum receives the sperm in the region of

- (a) animal pole
- (b) vegetal pole
- (c) equator
- (d) pigmented area

Q64. The releasing hormones are produced by

- (a) testis
- (b) pancreas
- (c) pituitary
- (d) hypothalamus

Q65. The best definition of the process of gastrulation is that it is a process where the

- (a) single layered blastula becomes two layered
- (b) archenteron is formed
- (c) zygote gets converted into larva
- (d) cells move to occupy their definite position

Q66. Glands responsible for calcium metabolism is

- (a) thymus
- (b) thyroid
- (c) parathyroid
- (d) adrenal

Q67. The main difference between bone and cartilage is of

- (a) mineral salts
- (b) haversian canals
- (c) lymph vessels
- (d) blood vessels

Q68. Physiologically urea is produced by the action of an enzyme

- (a) uricase
- (b) urease
- (c) arginase
- (d) none of these

Q69. During the conduction of nerve impulse, the repolarization occurs with the

- (a) influx of K^{+} ions
- (b) influx of Na^{+} ions
- (c) efflux of K^{+} ions
- (d) efflux of Na^{+} ions

Q70. In the axon of motor nerve fibre, the nerve impulse travels

- (a) towards cell body
- (b) away from cell body
- (c) away from synapse
- (d) in both directions

Q71. Gametophyte is dominant stage in the life cycle of

- (a) bryophyta
- (b) pteridophyta
- (c) angiosperms
- (d) gymnosperms

Q72. Pyrenoids are made up of

- (a) core of starch surrounded by sheath of protein
- (b) core of protein surrounded by fatty sheath
- (c) proteinaceous centre and starchy sheath
- (d) core of nucleic acid surrounded by protein sheath

Q73. The phragmoplast is organized at the

- (a) beginning of anaphase
- (b) end of anaphase
- (c) beginning of telophase
- (d) end of telophase

Q74. Fruits are not found in gymnosperms because

- (a) they are seedless
- (b) they are not pollinated
- (c) they have no ovary
- (d) fertilization does not takes place

Q75. Vegetative reproduction in Funaria takes place by

- (a) primary protonema
- (b) gemmae
- (c) secondary protonema
- (d) all of the above

Solution

S1. Ans.(a)

Sol. Brassica juncea, also known as mustard greens, Indian mustard, Chinese mustard and leaf mustard. It is a species of mustard plant.

S2. Ans.(b)

Sol. There are basically four different types of flagella arrangements:

- (i) Monotrichous : A single flagellum can extend from one end of the cell.
- (ii) Amphitrichous : A single flagellum (or multiple flagella) can extend from both ends of the cells.
- (iii) Lophotrichous : Several flagella (tuft) can extend from one end or both ends of the cell.
- (iv) Peritrichous : Multiple flagella may be randomly distributed over the entire bacterial cell.

S3. Ans.(b)

Sol. Ringing or girdling experiment was first performed by Hartig (1837). On removing the ring of bark (phloem and cambium) above the root at the base of stem accumulation of food occurs in the form of swelling just above the ring, which suggests that in absence of phloem, downward translocation of food is stopped.

S4. Ans.(a)

Sol. In diplotene unpairing of homologous chromosomes is started and chiasmata are first seen. Chiasmata are points, where crossing over took place.

During diakinesis, the chiasmata move from the centromere towards the end of chromosomes and the intermediate chiasmata diminish. This movements of chiasmata is known as Terminalisation. Zygotene stage is characterised by formation of synaptonemal complex, which facilitate the crossing over during pachytene. Crossing over between non sister chromatids of homologous chromosomes takes place during pachytene stage.

S5. Ans.(c)

Sol. In XX/XO sex determination system, females have two copies of the sex chromosome (XX) but males have only one (XO). The O denotes the absence of a second sex chromosome. This system is observed in a number of insects, including the grasshoppers and crickets of order-Orthoptera and in cockroaches of order Blattodea.

S6. Ans.(a)

Sol. Gonadotropins are protein hormones secreted by gonadotropic cells of the pituitary gland of vertebrates. The two principal gonadotropins in vertebrates are Luteinizing Hormone (LH) and Follicle Stimulating Hormone (FSH).

S7. Ans.(a)

Sol. Hydrophytes are plants that live either in very wet soil or completely or partially submerged in water. Structural modifications of hydrophytes include the reduction of mechanical and supporting tissues and vascular tissue. The absence or reduction of a root system and specialised leaves that may be either floating or finely divided with little or no cuticle. Vallisneria and Hydrilla are both hydrophytes.

S8. Ans.(c)

Sol. Crossing of F₁ individual having dominant phenotype with its homozygous recessive parent is called test cross and the progeny of test cross is called test cross progeny.

S9. Ans.(a)

Sol. R.H. Whittaker (1969), an American taxonomist, has proposed a five kingdom classification of living organisms on the basis of following aspects:

- (i) Prokaryotic and eukaryotic nature
- (ii) Unicellularity and multicellularity
- (iii) Mode of nutrition, etc.

The five kingdoms are Monera, Protista, Plantae, Fungi and Animalia.

Copeland (1956) developed four kingdom system. The four kingdom are Plantae, Animalia, Protista and Monera.

Linnaeus (1758) gave two kingdom system Plantae and Animalia.

S10. Ans.(b)

Sol. Inner membrane of mitochondria is the site of oxidative phosphorylation in which ATP formation from ADP takes place in the presence of oxygen.

S11. Ans.(a)

Sol. Rabbits are herbivores. Their teeth are unrooted and so, grow continually. The dental formula of rabbit is $\frac{2033}{1023} = 14$

S12. Ans.(b)

Sol. Choanocytes, also known as collar cells are cells that line the interior of asconoid, syconoid and leuconoid body type sponges (Porifera) that contain a central flagellum surrounded by a collar of microvilli which are connected by a thin membrane. It is the closest family member to the free living ancestor called choanoflagellate. The flagellae beat regularly, creating a water flow across the microvilli which can then filter nutrients and other food from the water taken from the collar of the sponge. Food particles are then phagocytosed by the cell.

S13. Ans.(a)

Sol. The sago cycad, *Cycas revoluta*, is a slow-growing wild or ornamental plant. Its common names, sago palm and king sago palm, are misnomers since it is actually a cycad. Cycads are gymnosperms from the family - Cycadaceae; palms are angiosperms (flowering plants) from the Arecaceae. The two taxa are completely unrelated. Interestingly, cycads are also a type of living fossil, having survived since at least the early Permian period

S14. Ans.(a)

Sol. The four major phycocolloids for industrial application are alginate, and laminarin are mainly from the phaeophyta (brown algae) and the more or less sulphated galactans such as agar and carrageenans are obtained principally from the Rhodophyta (red algae).

S15. Ans.(a)

Sol. Peripheral nervous system of a frog comprises of cranial and spinal nerves. Ten pair of cranial nerves and spinal nerves. Ten pair of cranial nerves are present in the frog and it arises from the brain and innervate to the different parts of body. Cranial nerves are involved in passing the information from outside to the brain. Frog contains 10 pairs of spinal nerves that rise from the spinal cord and gets distributed to the different parts of the body. Spinal nerves of frog appear as white in colour and are thread-like structures that emerge between the vertebrae and are located along the dorsal wall of body cavity. Spinal nerves functions in passing information from the extremities to brain through spinal cord.

S16. Ans.(b)

Sol. Zoophily is a form of pollination whereby pollen is transferred by vertebrates, particularly by humming birds and other birds and bats, but also by monkeys, marsupials, lemurs, bears, rabbits, deer, rodents, lizards and other animals. Zoomophilous species, like entomophilous species, frequently evolve mechanisms to make themselves more appealing to the particular type of pollinator, e.g., brightly coloured or scented flowers, nectar, and appealing shapes and patterns. These plant animal relationships are often mutually beneficial because of the food source provided in exchange for pollination. Zoophilous species include *Arctium*, *Acaena* and *Galium aparine*.

S17. Ans.(b)

Sol. A sarcomere is the basic unit of a muscle's cross-striated myofibril. Sarcomere are multi-protein complexes composed of three different filament systems.

The thick filament system is composed of myosin protein, which is connected from the M-line to the Z-disc by titin. It also contains myosin-binding protein C, which binds at one end to the thick filament and the other to actin.

The thin filaments are assembled by actin monomers bound to nebulin, which also involves tropomyosin. Nebulin and titin give stability and structure to the sarcomere.

A muscle cell from a biceps may contain 100,000 sarcomeres. The myofibrils of smooth muscle cells are not arranged into sarcomeres.

S18. Ans.(c)

Sol. Vitamin – C is a water-soluble vitamin, meaning that our body doesn't store it. We need vitamin-C for the growth and repair of tissues in all parts of your body. It helps the body make collagen, an important protein used to make skin, cartilage, tendons, ligaments and blood vessels. Vitamin-C is essential for healing wounds and for repairing and maintaining bones and teeth.

S19. Ans.(d)

Sol. Norman Ernest Borlaug (March 25, 1914-September 12, 2009) was an American agronomist, humanitarian and Nobel laureate, who has been called 'the father of Green Revolution'. Borlaug was one of only six people who have won the Nobel Peace Prize, the Presidential Medal of Freedom and the Congressional Gold Medal. He was also a recipient of the Padma Vibhushan, India's second highest civilian honour.

S20. Ans.(a)

Sol. The pulmonary arteries carry deoxygenated blood that has just returned from the body to heart towards the lungs, where carbon dioxide is exchanged for oxygen.

S21. Ans.(a)

Sol. Plastocyanin is an important copper containing protein involved in electron transfer. It is monomeric, with a molecular weight around 10,500 Daltons and 99 amino acids in most vascular plants.

S22. Ans.(d)

Sol. Phyllodes are modified petioles. In some plants, the petioles become flattened and widened and the true leaves may become reduced or vanish altogether. Thus, the phyllode comes to serve the purpose of the leaf. Phyllodes are common in the genus-Acacia.

In *Acacia koa*, the phyllodes are leather and thick, allowing the tree to survive stressful environments. The petiole allows partially submerged hydrophytes to have leaves floating at different depths, the petiole being between the node and the stem.

S23. Ans.(b)

Sol. Thigmotropism is a movement, in which an organism moves or grows in response to touch or contact stimuli. Usually, thigmotropism occurs when plants grow around a surface, such as a wall, pot or trellis. Climbing plants, such as vines, develop tendrils that coil around supporting objects. Touched cells produce auxin and transport it to untouched cells. Some untouched cells will then elongate faster, so cell growth bends around the object. Some seedlings also inhibit triple response, caused by pulses of ethylene which cause the stem to thicken and curve to start growing horizontally.

Mimosa pudica is well known for its rapid plant movement. The leaves close up and droop when touched. However, this is not a form of tropism but a nastic movement, a similar phenomenon. The difference is that tropisms are influenced by the direction of their stimulus, while nastic movements are not.

S24. Ans.(c)

Sol. Trypsinogen is the precursor form of the pancreatic enzyme trypsin or a zymogen. It is found in pancreatic juice, along with amylase, lipase and chymotrypsinogen. It is activated by enteropeptidase, which is found in the intestinal mucosa to form trypsin. Once activated, the trypsin can activate more trypsinogen into trypsin. Trypsin cleaves peptide bond on carboxyl side of basic amino acids. Serum trypsinogen is measured using a blood test. High levels are seen in acute pancreatitis and cystic fibrosis.

S25. Ans.(b)

Sol. Insects exhibit a range of mouthparts, adapted to particular modes of feeding. The earliest insects had chewing mouthparts. Specialisation has mostly been for piercing and sucking, although a range of specialisations exist, as these modes of feeding have evolved a number of times mosquitoes and aphids both pierce and suck, however female mosquitoes feed on animal blood, whereas aphids feed on plant fluids.

S26. Ans.(a)

Sol. Silent Valley National Park is located in the Nilgiri hills, Palakkad district in Kerala, South India. The area in this national park was historically explored in 1847 by the botanist Robert Wight.

S27. Ans.(b)

Sol. Drupe is a fruit in which an outer fleshy part surrounds a shell of hardened endocarp with a seed inside. These fruits develop from a single carpel and mostly from flowers with superior ovaries. The definitive characteristic of a drupe is that the hard, lignified stone is derived from the ovary wall of the flower. Some flowering plants that produce drupes are coffee, jujuba, mango, olive, most palms pistachio and all members of the genus Prunus, including the almond, apricot, cherry, damson, nectarine, peach and plum.

S28. Ans.(a)

Sol. Blue-green is the former name for the blue-green bacteria, now classified as cyanobacteria. It is a group of prokaryotic cells that use chlorophyll for photosynthesis.

S29. Ans.(c)

Sol. Classification of spider is as follows:

Kingdom - Animalia

Phylum - Arthropoda

Sub-phylum - Chelicerata

Class - Arachnida

Order - Araneae

S30. Ans.(b)

Sol. Budding is a form of asexual reproduction, in which a new organism grows on another one. The new organism remains attached as it grows separating from the parent organism only when it is mature. Since the reproduction is asexual, the newly created organism is a clone and is genetically identical to the parent organism. Among fungi, budding is characteristic of yeasts.

S31. Ans.(b)

Sol. The endoplasmic reticulum (ER) is an eukaryotic organelle that forms an interconnected network of tubules, vesicles and cisternae within cells. Rough endoplasmic reticulum synthesis proteins, while smooth endoplasmic reticulum synthesis lipids and steroids, metabolise carbohydrates and steroids and regulate calcium concentration, drug detoxification and attachment of receptors on cell membrane proteins.

S32. Ans.(b)

Sol. The loss of extra water in liquid drops from margins of leaves of herbaceous plants, when root pressure is high and transpiration is low is known as guttation. This process is very common during warm humid nights. This process occurs in plants growing in high soil moisture. It occurs through specialised pores called hydathodes present near the vein endings.

S33. Ans.(a)

Sol. The foramen magnum is a large opening in the occipital bone of the cranium. It is one of the several oval or circular apertures in the base of the skull, through which the medulla oblongata enters and exits the skull vault. Apart from the transmission of the medulla oblongata and its membranes, the foramen magnum transmits the spinal accessory nerve, vertebrates arteries, the anterior and posterior spinal arteries, the membrane tectorial and alar ligaments.

S34. Ans.(b)

Sol. Ethylene (C₂H₄) shortens the shelf life of many fruits by hastening fruit ripening and floral senescence. Tomatoes, bananas and apples will ripen faster in the presence of ethylene. Bananas placed next to other fruits will produce enough ethylene to cause accelerated fruit ripening. Ethylene will shorten the shelf life of cut flowers and potted plants by accelerating floral senescence and floral abscission. Flowers and plants which are subjected to stress during shipping, handling, or storage produce ethylene causing a significant reduction in floral display. Flowers affected by ethylene include carnation, Geranium, Petunia, rose and many others.

S35. Ans.(b)

Sol. Inspiration or inhalation is the process by which gas is drawn into the lungs through the trachea. In mammals the rib cage is raised by contraction of the external intercostal muscles and the muscles of the diaphragm. These actions enlarge the thorax, so that pressure in the lung cavity is reduced below atmospheric pressure, which caused an influx of air until the pressure are equalised.

S36. Ans.(b)

Sol. an aril is any specialised outgrowth from the funiculus or hilum that covers or is attached to the seed. The aril may create a fruit-like structure. False fruit are found in numerous angiosperm taxa. The edible flesh of the longan, lichee, ackee and lleuque fruits are highly developed arils surrounding the seed rather than a pericarp layer.

S37. Ans.(a)

Sol. Gymnosperms are plants that have seeds but not found inside its fruits but they are seen outside the ovum.

S38. Ans.(a)

Sol. Renal cortex is the outer part which is dark in colour and granular in nature, due to the presence of glomeruli, Bowman's capsule, proximal and distal convoluted tubules.

S39. Ans.(c)

Sol. Ureotelism is the habit of eliminating urea as nitrogenous waste. The animals performing ureotelism are known as ureotelic; e.g., earthworm, cartilage fishes, adult amphibians, many aquatic reptiles, mammals, etc.

S40. Ans.(d)

Sol. Uric acid is less toxic, it is thousand times less soluble than urea and ammonia, very little water is required for elimination of uric acid. Urine is allowed to stay in cloaca where water is reabsorbed from it. Uric acid is therefore, generally passed out as a paste or pellet along with faeces.

S41. Ans.(a)

Sol. Schwann cells cover the axon with concentric layers of insulating plasma membrane. The sheath formed by glial or Schwann cells is called neurilemma. An additional sheath of shining lipid rich substance called myelin is present spirally coiled below the neurilemma. Such nerve fibres are called medullated or myelinated. Nerve fibres devoid of myelin sheath are called non-medullated or non-medullated.

S42. Ans.(c)

Sol. Sympathetic nervous system originates from rami communicantes of all thoracic and first three lumbar spinal nerves. Thus, it is also named as thoracolumbar outflow.

S43. Ans.(d)

Sol. Amitosis is the division of nucleus without recognisable or visible chromosomes. It is also called direct nuclear division. Amitosis was first of all observed by R. Remak (1855) in RBCs of chick embryo. In this type of cell division, usual features of mitosis like nuclear membrane disappearance and spindle formation, etc, do not occur but nucleus divides by a constriction into two unequal nuclei. Further this direct nuclear division may not be followed by wall formation. It is found in some lower algae, fungi and also in mature cells of higher plants, which are about to disintegrate.

S44. Ans.(b)

Sol. The nucleoprotein complex that helps in adherence of sister chromatids and then homologous chromosomes is called synaptonemal complex. It is first seen during zygotene.

S45. Ans.(a)

Sol. Food reserve of fungi is glycogen and oil.

S46. Ans.(b)

Sol. 14-16 segments area of earthworm is covered by prominent circular band of glandular tissue called clitellum or clitellum. It secretes egg case or ootheca. Clitellum divides the body into three regions preclitellar, clitellar and post-clitellar.

S47. Ans.(d)

Sol. In Funaria, the development of sporophyte occurs in archegonium because antherozoid is fused with egg present in archegonium and form diploid zygote which divide and develops into sporophyte.

S48. Ans.(b)

Sol. The cotton thread fibres are epidermal hairs of seed, long pairs of which are called 'Lint' and short as 'Fuzz'. Cotton fibres are used in textile industry.

S49. Ans.(a)

Sol. Three macronutrients, namely, C, H and O constitute 96% of dry matter or plants as they form most of the body macromolecule.

S50. Ans.(a)

Sol. Chlorophyll-a ($C_{55}H_{72}O_5N_4Mg$) is a universal photosynthetic pigment, as it occurs in all oxygenic photosynthetic organisms. It is also involved in photoconversion or primary reaction of photosynthesis in which light energy is changed into chemical energy; because of this, chlorophyll-a is called primary photosynthetic pigment.

S51. Ans.(b)

Sol. Multiple fission or sporulation in Amoeba takes place during unfavourable condition after encystment. There are three layers of cyst.

S52. Ans.(b)

Sol. Species of Lactobacillus, Streptococcus, Micrococcus and Proteus are responsible for spoilage of milk products. The exotoxins produced by these bacteria cause food poisoning.

S53. Ans.(b)

Sol. Earthworm (*Pheretima posthuma*) belongs to class-Oligochaeta or phylum-Annelida.

S54. Ans.(d)

Sol. The genes which individually have a small effect but collectively produce significant phenotypic expression are called polygenes. The inheritance of these genes is called polygenic inheritance, e.g., skin colour in human.

S55. Ans.(b)

Sol. Cri-du-chat syndrome is caused by a conspicuous deletion in the short arm of 5th chromosome. These individuals are severely impaired and their plaintive cat-like crying give the syndrome its name.

S56. Ans.(d)

Sol. Rh factor was first reported by Landsteiner and Wiener in rhesus monkey. When Rh⁺ man marry with Rh⁻ woman, the foetus will Rh⁺. This cause the condition called haemolytic disease.

S57. Ans.(d)

Sol. Flightless birds show discontinuous distribution. They have well developed powerful legs, small head, rudimentary eyes and wings, e.g., ostrich, emu, kiwi, cassowary etc.

S58. Ans.(c)

Sol. Haversian canals are found in long bone of mammals. These canals are interconnected by transverse canals called Volkmann's canals.

S59. Ans.(c)

Sol. Liver is the largest gland. Each liver lobe is formed of hexagonal lobules surrounded by a connective tissue sheath called Glisson's capsule. Kupffer's cells of liver act as phagocytes.

S60. Ans.(b)

Sol. Ichthyology Study of fishes

Mammology Study of mammals

Herpetology Study of reptiles and amphibians

Ornithology Study of birds

S61. Ans.(a)

Sol. Morphallaxis involves the reconstruction of whole body from a small fragment by reorganizing the existing cells, e.g., regeneration of Hydra from its pieces.

S62. Ans.(b)

Sol. In sodium-potassium exchange pump, ions move against concentration gradient. When sarcoplasm is positively charged inside with respect to outside, this change is called action potential and the sarcolemma is said to be depolarized. Due to depolarization muscle fibre contracts.

S63. Ans.(a)

Sol. The area of ovum which extrudes the polar bodies and receives sperm is termed as animal pole. The sperm fuses with ovum to form the diploid zygote. The pole of ovum opposite to animal pole is called vegetal pole.

S64. Ans.(d)

Sol. The neurosecretory cells of hypothalamus secrete hormones called releasing factors. These are Adrenocorticotrophic Releasing Hormone, TRH, SRH, GZH, GRH, etc.

S65. Ans.(d)

Sol. Gastrulation is the formation of gastrula from blastula. It is that phase of embryonic development during which the cells of blastula move in small mass to attain the final location. Such movement of cells is called morphogenetic movement.

S66. Ans.(c)

Sol. Epithelial cells of parathyroid gland secrete parathormone. This hormone helps to regulate the metabolism of calcium and phosphate. Parathormone is under the feedback control of blood calcium level.

S67. Ans.(b)

Sol. Cartilage is a solid but semirigid and flexible connective tissue while bone is solid, rigid and strong connective tissue. Haversian canals are found in bone of mammals only.

S68. Ans.(c)

Sol. Urea cycle takes place in liver cells. With the hydrolytic enzyme, arginase, arginine, splits into urea and ornithine with the elimination of a water molecule.

S69. Ans.(d)

Sol. When a stimulus is applied, sodium potassium pump stop operating. Sodium ions rush inside and potassium ions rush outside. This results in depolarization (action potential). After a period of action potential, sodium-potassium pump operate (efflux of Na^+ and influx of K^+) and axon will get resting potential by repolarization.

S70. Ans.(b)

Sol. Nerve impulse is a wave of depolarization of the membrane of nerve cell. The nerve impulse travel along a neuron or across a synapse. In the axon of motor nerve fibre, the nerve impulse travels away from the cell body.

S71. Ans.(a)

Sol. Gametophytic and sporophytic phases are present in life cycle of bryophytes and both phases are morphologically distinct. The gametophytic phase is more conspicuous independent and dominant, while sporophyte depends on gametophyte.

S72. Ans.(c)

Sol. Pyrenoids are proteinaceous bodies present in chromatophores. These organelles are considered to be associated with synthesis and storage of starch. In members of Chlorophyceae, pyrenoids are having proteinaceous centre surrounded by starch plates.

S73. Ans.(b)

Sol. In plant cells, cytokinesis occurs by the cell plate formation. A number of elements called Phragmoplasts are derived from ER and Golgi body. These elements line up at equator during anaphase and later fuse to form cell plate.

S74. Ans.(c)

Sol. Gymnosperms are characterized by presence of naked ovules, which develop into seeds. The ovular integument form the seed coat.

S75. Ans.(d)

Sol. Vegetative reproduction in Funaria takes place by fragmentation of primary protonema, secondary protonema, gemmae, bulbils and apospory.