

SUCCESS KEY TEST SERIES

First Term Examination [MODEL ANSWER]

Std: 11th Science

Subject: Biology

Time: 3Hrs

Date :

Chapter 1 to 8

Max Marks: 70

Section A (MCQ & VSA 1 MARKS Questions)

Q.1 Select and write the correct answer:

10

- (i) Ans. (d)
- (ii) Ans. (c)
- (iii) Ans. (d)
- (iv) Ans. (b)
- (v) Ans. (d)
- (vi) Ans. (b)
- (vii) Ans. (a)
- (viii) Ans. (d)
- (ix) Ans. (a)
- (x) Ans. (d)

Q.2 Answer the following:

8

- (i) Ans. Conservation is the protection, preservation, management, or restoration of wildlife. Conservation of biodiversity ensures the survival of many endangered species and habitats which are threatened due to human activities. Conservation of biodiversity can be broadly divided into following types:
 - i. 'Ex-situ' is the off-site conservation. It is the process of maintaining and breeding endangered plant or animal species outside its natural habitat. Botanical gardens, zoological parks, aquarium, Seed banks, etc. are the examples of ex-situ conservation.
 - ii. 'In-situ' conservation is the on-site conservation. It is the process of protecting an endangered plant or animal species in its natural habitat, either by protecting or restoring the habitat itself, or by defending the species from predators. Biosphere reserves, national parks, wild-life sanctuaries, etc. are the examples of in-situ conservation.
- (ii) Ans. The main functions of smooth endoplasmic reticulum are synthesis of lipids, detoxification of drugs and poisons and storage of calcium ions.
- (iii) Ans. The main function of rhizoids is to absorb water and minerals and helping in fixation of thallus on the substratum.
- (iv) Ans. G_1 is the longest phase between G_1 and G_2 .
- (v) Ans. Ascomycetes is commonly known as SAC fungi.
- (vi) Ans. The function of root hairs is absorption of sap from the soil.
- (vii) Ans. The cell wall of collenchyma is cellulosic but shows uneven deposition of cellulose and pectin especially at corners.
- (viii) Ans. Exoskeleton structure of Chondrichthyes is formed by placoid scales.

Section B (SA I - 2 MARKS EACH)

Attempt any Eight:

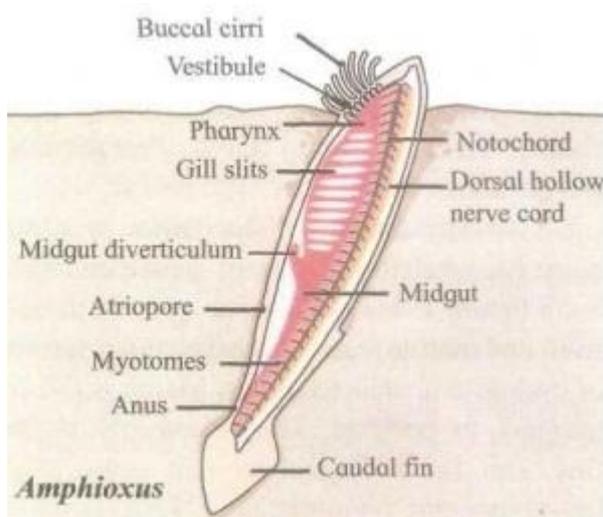
Q.3

Ans.

Characteristics	Rough ER	Smooth ER
Ribosome	Present on outer surface	Absent on outer surface
Appearance	Cisternae	Tubular
Occurrence	Pancreatic cells	Liver cells, Steroid secreting cells, Adrenal gland, Testes, Muscle cells, Ovaries

Q.4

- Ans. 1. Lancelets belong to phylum Chordata
 2. Lancelets are also called as Cephalochordata which is a sub-phylum of phylum Chordata.
 3. They are exclusively marine.
 4. Lancelets are small fish like animals that rarely exceed 5 cm in length.
 5. They are partly buried in soft marine sediments.
 6. Notochord extends throughout the length of body and present throughout their life.
 7. Myotomes (muscle blocks) are present.
 8. Post-anal tail is present.
 9. They show circulatory system of closed type.
 10. Their blood is without pigment.
 11. Example: Branchiostoma (Amphioxus or Lancelet)



Q.5

- Ans. 1. Riya can preserve the plant specimen in a dried form on a herbarium sheet by pressing and mounting it until she returns back from her visit.
 2. If she has any information about the plant specimen then she can write it on the herbarium sheet. This information will be useful for further studies with her biology teacher.
 3. With her teacher, she can use various taxonomical aids to get information about this peculiar plant.

Q.6

- Ans. A. Plant-like Protista – Diatoms
 B. Animal like Protista - Entamoeba

Q.7

- Ans. I. These are minute members of bound sacs, found in both plants and animal cells.
 II. There are mainly two types of microbodies are known namely sphaerosomes, Peroxisomes.
 III. It found in the endosperm of oil seed.
 IV. Functions:
 a. Involves in the storage and synthesis of fat.
 b. It synthesizes toxic substances.

- Q.8** Ans. I. The DNA unit contains sugar, phosphoric acid, and nucleotide bases called nucleotide.
 II. When the nitrogenous bases are attached to the first carbon atom (C-1) of sugar and when a phosphate attaches to the fifth carbon atom (C-5) of sugar molecule in the nucleoside forms a nucleotide.
 III. The single strand of DNA contains several thousand nucleotides.
 IV. The phosphor-di-ester bund formation is takes place in between the 5th carbon of lower nucleotide to the 3rd carbon of upper nucleotide. Further, this structure forms polynucleotides.
 V. The long chain polynucleotides are called as 3' and 5' ends, which are complementary to each other.

- Q.9** Ans. 1. Biodiversity is the degree of variation of life forms in an ecosystem.
 2. Biodiversity is essential to maintain ecological stability.
 3. Loss of biodiversity can affect entire ecosystem and ecosystem productivity where each and every species get affected.
 4. Therefore, loss of biodiversity matters to everyone living on this earth.

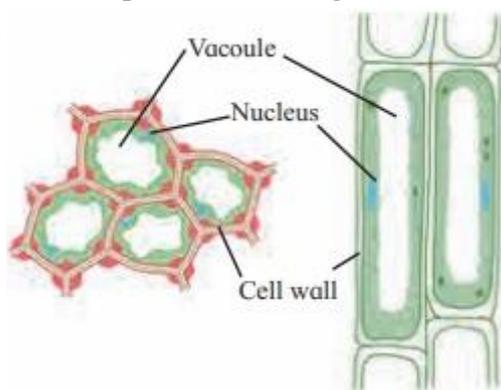
- Q.10** Ans. 1. Mycoplasmas are smallest of the living forms.
 2. The other name for Mycoplasma is PPLO
 3.They do not have cell wall.
 4. Many forms are pathogenic.
 5. They are found resistant to common antibiotics due to absence of cell wall.

- Q.11** Ans. 1. Pteridophytes contain primitive type of vascular tissues such as xylem and phloem. Therefore, they are called as vascular plants.
 2. They don't produce flowers, fruits and seeds. Their reproductive organs are hidden.
 3.They reproduce sexually by gamete formation and asexually by forming spores. Therefore, they are referred as cryptogams.

- Q.12** Ans. I. The life span of the cell is decided on the basis number of the cell division.
 II. The environment in which the cell is present plays an important role in maintains its life span.
 III. The human RBC cell has a life span of about 120 days.
 IV. The neuronal cell has an infinite life span because they divide once in the life of an organism.

- Q.13** Ans. I. It is a process in which cells undergo 'cellular suicide' when they receive a particular signal.
 II. The excessive mass of cells on the palm gets disappeared during figure developments.
 III. It prevents cells from becoming a cancer cells.
 IV. It helps in maintaining the structure of organs.

- Q.14** Ans.



Section C (SA II - 3 MARKS EACH)

Attempt any Eight:

24

- Q.15** Ans. Chondrichthyes
 i. It includes the animals in which endoskeleton is cartilagenous.
 ii. These are exclusively marine.
 iii. Exoskeleton is formed of placoid scales.
 iv. Teeth are modified placoid scales which are backwardly directed.
 v. Mouth is ventral in position.
 vi. There is single dorsal fin and 2 pairs of lateral fins (pectoral and Pelvic).

- vii. Caudal fin is heterocercal (Asymmetrical).
- viii. Five to seven pairs of gill slits are present.
- ix. They are not covered by operculum.
- x. Air bladder is absent hence these fishes need to swim constantly so that they do not sink.
- xi. They are predatory fishes. Some of them have electric organs
- xii. e.g. Torpedo - (electric ray) and some have poison sting e.g. Trygon - (sting ray) as organs of offence and defence.

Osteichthyes

- i. It includes fishes in which bony endoskeleton is present, hence called as bony fishes.
- ii. These are aquatic, present in both fresh and marine waters.
- iii. Exoskeleton is formed of cycloid and ctenoid scales.
- iv. Mouth is mostly terminal in position.
- v. They show two dorsal fins.
- vi. Tail fin is formed by two equal lobes i.e. homocercal (symmetrical).
- vii. Four pairs of gill slits are present, covered with operculum.
- viii. Air bladder is present to maintain buoyancy.
- ix. Claspers are absent.
- x. Fertilization is external.
- xi. These fishes are oviparous.
- xii. Example : Exocoetus (flying fish), Hippocampus (sea-horse), Pomphret, Labeo rohita (Rohu), Catla (Katla) etc

- Q.16** Ans. The term protein refers to the complex organic nitrogenous substances found in the cells of all animals and plants. Characteristics :
- i. Proteins are large molecules containing amino acid units ranging from 100 to 3000. Proteins have high molecular weights.
 - ii. In proteins, amino acids are linked together by peptide bonds which join the carboxyl group of one amino acid residue to the amino group of another residue. A protein molecule consists of one or more polypeptide chains. Proteins can contain any or all of the 20 naturally occurring amino acid types.
 - iii. The linear sequence of amino acids in polypeptide chain of a protein forms its primary structure.
 - iv. Functional proteins have 3-dimensional conformation. Some proteins such as keratin of hair consist of polypeptide chain arranged like a spiral helix. Such spirals are in some cases righthanded called α -helix, in others left-handed called β -helix.
 - v. The spiral configuration is held together by hydrogen bonds.
 - vi. The sequence of amino acids in the polypeptide chain also determines the location of its bend or fold and the position of formation of hydrogen bonds between different portions of the chain or between different chains.
 - vii. Due to formation of hydrogen bonds peptide chains assume a secondary structure.
 - viii. In some proteins, two or more peptide chains are linked together by intermolecular hydrogen bonds. Such structures are called pleated sheet. Pleated sheet structure is found in protein of silk fibres.
 - ix. In large proteins such as myoglobin and enzymes, peptide chains are much looped, twisted and folded back on themselves due to formation of disulphide bonds. Such loops and bends give the protein a tertiary structure.
 - x. Whereas in haemoglobin, protein subunits are held together to form quaternary structure. Proteins are extremely reactive and highly specific in behaviour. Proteins are amphoteric in nature i.e. they act as both acids and bases. The behaviour of proteins is strongly influenced by pH.
 - xi. Like amino acids, proteins are dipolar ions at the isoelectric point i.e. the sum of the positive charges is equal to the sum of the negative charges and the net charge is zero
 - xii. The ionic groups of a protein are contributed by the side chains of the polyvalent amino acids.
 - xiii. A protein consisting of more basic amino acids such as lysine and arginine exists as a cation and behaves as a base at the physiological pH of 7.4. Such proteins are called basic proteins.
 - xiv. Histones of nucleoproteins are basic proteins.

- xv. A protein rich in acidic amino acids exists as an anion and behaves as an acid.
- xvi. Such proteins are called acidic proteins.
- xvii. Most of the blood proteins are acidic proteins.

Q.17 Ans. I. The 'A' in the figure indicates the presence of Mitochondria.

Functions:

- a. It produces ATP during cellular respiration.
- b. It contributes in the synthesis, breaking-down, and recycling of biochemical substances needed for cell functioning e.g. Krebs's cycle.

II. The 'B' in the figure indicates the presence of Endoplasmic reticulum (Rough ER).

Functions:

- a. It helps in the synthesis of protein and lipids.
- b. Forms membrane for the cell.
- c. Involve drug and toxic substance detoxification.
- d. Acts as a storage site for ions.

III. The 'C' in the figure indicates the presence of the Golgi complex.

Functions:

- a. It involves in manufacturing and packaging and transport unit of the cell.
- b. It modifies the secretions of the endoplasmic reticulum.
- c. It helps in the transportation of vesicles to its respective or target organelles.

IV. The 'D' the in figure indicates the presence of Amyloplasts.

Functions:

It is involved in storage of starch.

Q.18 Ans. Body plan

It is a group of structural and developmental characteristics that can be used to identify the group of organisms .

Different types of body plan are :

- a. Cell aggregate plan
- b. Blind sac body plan
- c. Tube within tube body plan

Cell aggregate plan

- a. In this body plan, cells do not form tissues or organs.
- b. There is minimal differentiation and division of labour among cells.
- c. It is found in porifera.

Blind sac body plan

- a. In this body plan, body is like a sac with single opening.
- b. Digestion is carried out in this sac-like structure where ingestion and egestion takes place through same opening.
- c. e.g. Members of Phylum Cnidaria.

Tube within tube body plan

- a. Digestive system is present in tube-like body cavity.
- b. Mouth and anus are present at two separate ends of digestive system.
- c. Annelida onwards all phyla show this type of body plan.

Q.19 Ans. I. Meristematic cells are the living cells which has the ability to divide in the region where ever they are present.

II. The shape of meristematic tissue ranges from the polyhedral to isodiametric in shape without intracellular spaces.

III. These cells are metabolically active.

IV. These cells are immature cells which are also called procambium because they are involved in the formation of primary vascular tissue, cortex, epidermis, pith, and pericycle medullary rays.

V. Based on the origin of meristems they are classified into three types namely :

- primordial meristem
- primary meristems,

- secondary meristems.

VI. Primordial meristems are also called as promeristem or embryonic meristem. This occurs at the tip of the root, and shoots.

VII. Primary meristems:

a. Originates from primordial meristems.

b. Occurrence: Occurs at root and shoot apices.

c. Nature of cell: Cells are dividing, and different permanent tissue is produced from primary meristems.

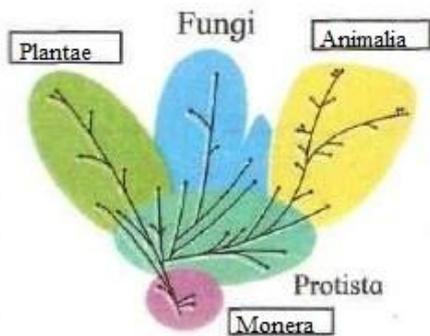
VIII. Secondary meristems:

a. This type of tissue develops from living permanent tissues during later stages of the plant growth, so called secondary meristems.

b. Occurrence: Occurs in the mature regions of root and shoot of the plants.

c. Position: It is always in a lateral position.

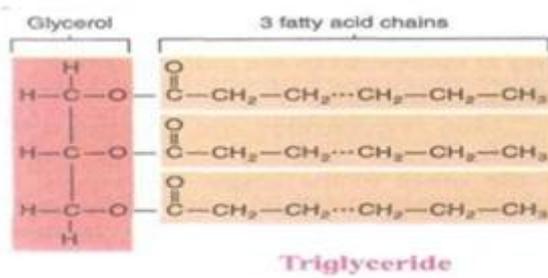
Q.20 Ans.



Q.21 Ans.

Plant cell	Animal cell
It originates into plant.	It originates into animal.
Plant cell has a regular shape.	Animal cell has irregular shape
Plant shows autotrophic mode of nutrition.	Animals shows heterotrophic mode of nutrition.
It contains cell wall.	It does not contain cell wall.
Chloroplast is present in plant cell.	Chloroplast is absent in Animal cell.
Plant cells shows presence of plasmodesmata.	Animal cell lacks plasmodesmata.
Excess glucose is stored in the form of Starch.	Excess glucose is stored in the form of glycogen.
Nucleus is present at one side of cell.	Nucleus is present at the center of the cell.
Plant cell does not contain centrioles.	Animal cell contains centrioles.
A single central vacuole is present.	Many vacuoles are present throughout the cell.
Plant cells do not contain lysosome.	Animal cells contain lysosome.
Plant cell lacks glyoxysome.	Animal cell contain glyoxysome.

Q.22 Ans.



Q.23 Ans. Haplontic life cycle:

1. Mitosis occurs in haploid cells.
2. They produce the gametes through mitosis.
3. Zygote is formed after fertilization.
4. The cell is the only diploid cell in the entire life cycle of the organism.
5. Thus the same zygotic cell later undergoes meiosis.
6. For example : This type of life cycle is seen in some algae and fungi.

Haplo-diplontic life cycle:

1. Mitosis occurs in both diploid and haploid cells.
2. These organisms undergo through a phase in which they are multicellular and haploid (the gametophyte) and a phase in which they are multicellular and diploid (the sporophyte).
3. This type of life cycle is seen in land plants and in many algae.

Q.24 Ans. The general characters of Kingdom Animalia are as follows:

1. The organisms belonging to this group may be aquatic, terrestrial, amphibious or aerial in habitat.
2. Members of this kingdom are heterotrophs.
3. They are mostly adapted to holozoic nutrition.
4. Most of them have capacity of locomotion.
5. They are multicellular eukaryotes where cells lack chlorophyll as well as cell wall.
6. Their growth follows definite pattern
7. They possess nervous system and hence can respond to stimuli by exhibiting certain behavior.

Q.25 Ans. Bryophyta:

- (i) These are nonvascular cryptogams because they don't have vascular tissues i.e. xylem and phloem.
- (ii) The dominant phase in bryophyte is gametophyte.
- (iii) True roots and leaves are absent.
- (iv) The sporophyte is dependent upon the gametophyte for its nourishment.
- (v) The sporophyte remains attached to the gametophyte.
- (vi) Examples: Funaria, Riccia, Marchantia etc.

Pteridophyta:

- (i) Pteridophytes are vascular plants because they have vascular tissues i.e. xylem and phloem.
- (ii) The dominant phase in Pteridophyta is sporophyte.
- (iii) True roots and leaves are present.
- (iv) The sporophyte is not dependent on gametophyte.
- (v) The sporophyte is never attached to the gametophyte.
- (vi) Examples: Lycopodium, Neprolepis, Equisetum etc.

Q.26 Ans. Dicotyledonae:

1. These plants have two cotyledons in their embryo.
2. They have a tap root system.
3. Vascular bundles are conjoint, collateral and open type.
4. Cambium is present between xylem and phloem.
5. Secondary growth is commonly found.
6. Leaves show reticulate venation.
7. Flower show tetra or pentamerous symmetry

Monocotyledonae:

1. These plants have single cotyledon in their embryo.
2. They have adventitious root system.
3. Vascular bundles are conjoint, collateral and closed type.
4. Cambium is absent between xylem and phloem.
5. Secondary growth is not found.
6. Leaves show parallel venation.
7. Flowers generally show trimerous symmetry.

Section D (SA II - 4 MARKS EACH)

Attempt any Three:

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Q.27

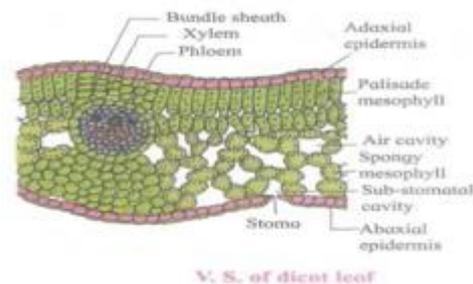
Ans. I. It is very common in dicotyledonous plants.

II. In this leaf, the mesophyll tissue is differentiated into palisade and spongy parenchyma.

III. The leaves are commonly horizontal in orientation with distinct upper and lower surfaces.

IV. The upper surface of the leaf which faces to the sun is darker than the lower surface.

V. As the dorsiventral leaf is very common in dicotyledonous plants so it shows all the features of dicot leaf which contains upper epidermis mesophyll and lower epidermis.



VII. Upper epidermis consists of a single layer of tightly packed rectangular, barrel-shaped, parenchymatous cells that are devoid of chloroplast.

VIII. A distinct layer of cuticle lies on the epidermis.

IX. Stomata are generally absent.

X. Mesophyll:

a. It is present at the upper and lower epidermis, there is chloroplast containing photosynthetic tissue called Mesophyll.

b. Mesophyll is differentiated into palisade and spongy tissue.

XI. Palisade parenchyma is present below the upper epidermis and consists of closely packed elongated cells.

XII. The cells contain abundant chloroplasts and help in photosynthesis.

XIII. Spongy parenchyma:

a. It is present below palisade tissue and consists of loosely arranged irregularly shaped cells with intercellular spaces.

b. The spongy parenchyma cells contain chloroplast and are in contact with the atmosphere through stomata.

XIV. Vascular system:

a. It is made up of many vascular bundles of varying size depending upon the venation.

b. Each one is surrounded by a thin layer of parenchymatous cells called bundle sheath.

c. Vascular bundles are closed and xylem towards upper epidermis and phloem towards lower epidermis.

d. Cambium is absent hence no secondary growth in the leaf.

XV. Lower epidermis:

a. It consists of a single layer of compactly arranged rectangular, parenchymatous cells.

b. A thin layer of cuticle is also present.

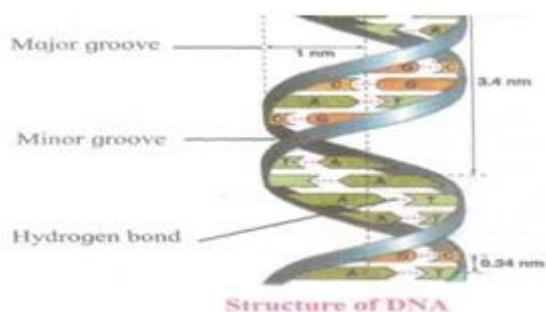
c. It contains stomata.

d. There is an air-space called sub- stomata chamber at each stoma.

- Q.28** Ans. 1. This diagram represents a dolphin.
 2. It belongs to phylum mammalia.
 3. Dolphins range in color from grey to black
 4. Typically live in rivers and in coast.
 5. They have a rounded head and triangular dorsal fins.

- Q.29** Ans. This diagram represents Nereis which belongs to phylum Annelida.
 1. They are commonly called ring worms or segmented worms.
 2. They show bilateral symmetry with metameric segmentation
 3. Locomotion is with the help of longitudinal and circular muscles.
 4. Alimentary canal is complete.
 5. Circulatory system is of closed type.
 6. Nerve chord is ventral.

- Q.30** Ans. I. It is a very long chain made up of alternate sugar and phosphate groups.
 II. The sugar is always deoxyribose and it always joins to the phosphate in the same way, so the long chain is perfectly regular, repeating the same phosphate-sugar sequence again and again.
 III. Each sugar of sugar-phosphate chain has a base attached to it, which is not always the same.
 IV. The unit which contains sugar, phosphate, and nitrogen bases is called as nucleotide while the molecule lacks the phosphate called nucleoside.
 V. There are four types of nucleotides are formed in DNA namely adenine, guanine, cytosine, thymine.
 VI. In nucleoside, the nitrogen base is attached with the 1st carbon of sugar with that of 5th carbon of sugar molecule a nucleotide molecule is formed.
 VII. A single strand of DNA consists of several thousands of nucleotides one above the other.
 VIII. The phosphate group of the lower nucleotide is attached with the 5' carbon atom of deoxyribose sugar forms phosphor-di-ester bound with that of 3' carbon atom of deoxyribose sugar of the nucleotides placed just above it.
 IX. The single long chain of polynucleotides is free at both the ends i.e C₃ carbon and C₅ carbon at the end of the stand does not form any phosphate bond.
 X. The DNA consists of two helical polynucleotide chains which are complementary to each other which are held by hydrogen bond.
 XI. Watson and crick model of DNA is the most abundantly occurring DNA.
 XII. It acts as a genetic material of plants and animals.
 XIII.



- Q.31** Ans. I. The above diagram represents the endoplasmic reticulum.
 II. It is a little network present within the cytosol of eukaryotes except ova and mature RBCs.
 III. In an electron microscope, it appears like a network of membranous tubules and sacs called cisternae.
 IV. Types of ER: Based on the presence of ribosomes they are classified into two classes namely rough ER and smooth ER.
 V. It grows in a place by adding membrane proteins and phospholipids to its membrane.
 VI. Structure of ER: In an electron microscope, it appears like a network of membranous tubules and sacs called cisternae.
 VII. Cytoplasm: It is divided into two parts
 a. Laminal cytoplasm: One present in the lumen of the ER.

b. Non- Laminal cytoplasm: One that present outside the ER.

VIII. Cell membrane: it is continuous from the nuclear envelope at one end and extends till the cell membrane at another end.

IX. Types of ER: Based on the presence of ribosomes they are classified into two classes.

A) Rough ER: The ribosome is present on the outer surface.

a. Involved in protein synthesis.

b. The proteins which are secreted by ribosomes attached to rough ER called secretory protein. This protein gets wrapped in a membrane that buds off from the transitional region of the ER. This departs from the ER and acts as a vesicle.

B) Smooth ER: The ribosome is absent on the outer surface.

a. Involved in the synthesis of lipids

b. Detoxifies drugs and poison.

c. Helps in the storage of calcium.

X. It acts as an intracellular supporting framework.

XI. It helps in maintaining the position of various cell organelles in the cytoplasm.

XII. Involved in lipid and protein synthesis.

XIII. It involves in manufacturing and packaging and transport unit of the cell.

XIV. It modifies the secretions of the endoplasmic reticulum.

XV. It helps in the transportation of vesicles to its respective or target organelles.