

SUCCESS KEY TEST SERIES

Annual Examination [MODEL ANSWER]

Std: 11th Science

Subject: Biology

Time: 3 Hours

Date :

Sample Answer Key

Max Marks: 70

Section A (MCQ & VSA 1 MARKS Questions)

Q.1 Select and write the correct answer:

10

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

Q.2 Answer the following:

8

- (i) Ans. i. Species is a group of organisms that can interbreed under natural conditions to produce fertile offsprings.
ii. Horse and ass (donkey) are considered to be two different species or animals, because; they cannot interbreed under natural condition to produce fertile offspring.
- (ii) Ans. Yes. Histones of nucleoproteins are water soluble in nature.
- (iii) Ans. The periderm consists of phellogen, phellem and phelloderm.
- (iv) Ans. Leaf has three main parts. They are:
 - (a) Leaf base or Hypopodium
 - (b) Petiole or Mesopodium
 - (c) Leaf lamina/blade or Epipodium.
- (v) Ans. A curve which shows the amount of light absorbed at each wavelength is termed as absorption spectrum.
- (vi) Ans. Pyruvic acid formed during glycolysis is decarboxylated and the remaining 2 fragments of Carbon combine with CoA to form Acetyl CoA.
- (vii) Ans. Muscularis layer in stomach is thicker than that of intestine because stomach churns the food and all the gastric juice is mixed in stomach.
- (viii) Ans. Bone, muscle and joint can be compared to the simple machine called lever. Joints act as fulcrum, respective muscle generates the force required to move the bone associated with joint.

Section B (SA I - 2 MARKS EACH)

Attempt any Eight:

16

- Q.3** Ans. 1. All organisms are not similar because of their shape, size, colour and living style.
2. In case of plants and animals , we see lot of varieties.
3. In case of animals, based on the food habits : some are carnivorous, some are omnivorous and some are herbivorous.
4. Based on sizes :Some animals are bigger in size and some are small.
5. Based on their habitat: Some organisms and plants are living in water and some are living on land.
6. So, by considering above conditions, we can conclude that all organisms are not similar.

- Q.4** Ans. 1. Amphibians are plants which require both land and water for their life.
2. Bryophytes are mostly terrestrial plants.
3. They are found in moist shady places but they need water for fertilization and completion of their life cycle.
4. Therefore, they are called amphibians of Plant Kingdom.

- Q.5** Ans. The fish scales and snake scales are not similar because the fish scales arise from bony tissue of the embryo and they are cycloid and ctenoid scales (i.e. fishes have dermal scales) whereas the snake scales arises from the epidermis of the skin (i.e. snakes have epidermal scales).

- Q.6** Ans. Cytoplasm:
i. It is found outside the nucleus
ii. It contains organelles and supporting structures.
iii. It contains number of chemicals like minerals, nucleotides, amino acids , sugars ,proteins and enzymes .

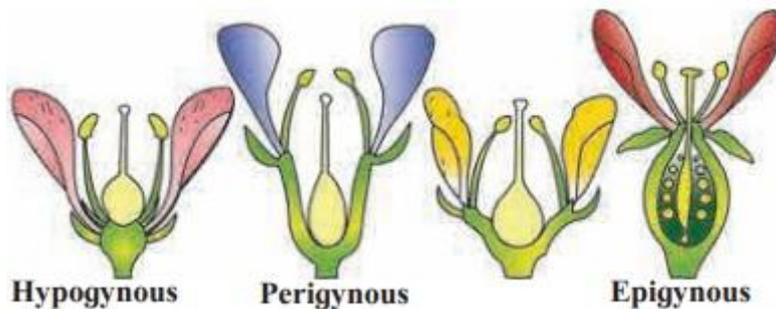
Nucleoplasm:

- i. It is found inside nucleus
ii. It contains a fibrous matrix .Its outer part is dense and forms fibrous lamina in contact with nuclear envelope.
iii. It contains small amount of minerals, sugar, amino acids also abundant nucleosides, nucleotides, proteins and enzymes.

- Q.7** Ans. A. It is a metaphase.
B. It is an Anaphase.

- Q.8** Ans. I. Because the wooden like lumber has a maximum life span.
II. The painting on wooden prevents from the rot. So that wooden last for a long time.

- Q.9** Ans.



- Q.10** Ans. 1. Stolon is a type of sub aerial shoot, which has slender, lateral branch arising from the base of main axis.
2. In some plants like wild strawberry, stolon is above the ground.
3. Primarily, stolon shows upward growth in the form of ordinary branch, but when it bends and touches the ground, terminal bud grows into new shoot and adventitious roots.
4. Examples of stolons are Jasmine, Mentha, etc.

- Q.11** Ans. I. The main or probable reason can be the major injury in the bone marrow.
II. The long bone contains bone marrow at the center which is the site of blood cell synthesis.
III. Anemia is caused due to the deficiency or low count of RBC.
IV. So, the injury to the priya's long bone later diagnosed with anemia.

- Q.12** Ans. Gizzard : is small, spherical organ that is responsible for crushing the food. Bristles help in filtering the food because of the presence of six chitinous plate called teeth.
If cockroach do not have gizzard, they can not chew or grind the food particles properly.

- Q.13** Ans. 1. An absorption spectrum defines the spectrum of electromagnetic radiation.
2. An action spectrum defines the spectrum of electromagnetic radiation most effective for photosynthesis.
3. Absorption spectrum is the graphic representation of the different wavelengths of light absorbed by the different pigments in a leaf during photosynthesis.
4. Action spectrum is the graphic representation of the effectiveness of different wavelengths of light in photosynthesis.

- Q.14** Ans. 1. Carbon monoxide Specifically inhibits cytochrome C oxidase of human mitochondrial respiratory chain .
2. Now the most color picker clinical symptoms of acute carbon monoxide poisoning are mainly related to the capability of haemoglobin to bind carbon monoxide .
3. Cytochrome c oxidase play a role in parthenogenesis.
4. Mitochondrial cytochrome C oxidase is also a target site in human acute carbon monoxide poisoning and it's extended and generalized inhibition could explain the persistent of different symptoms after the normalization of HbCO level.

Section C (SA II - 3 MARKS EACH)

Attempt any Eight:

24

- Q.15** Ans. Fungi are useful as well as harmful. Some useful roles of fungi are mentioned below:
1. Fungi play an important role in medicine preparation, in agriculture, in bakery industry and in breweries industry.
2. Mushrooms are consumed as food.
3. Yeast is used in bakery and breweries.
4. Penicillium, a fungus, is used for making antibiotic production.
5. They are essential in the recycling of nutrients.
- Q.16** Ans. A. Coral reefs:
1. Coral reef is an underwater ecosystem. It is characterized by the reef building corals.
2. Coral reefs are formed of colonies of coral polyps held together by calcium carbonate.
3. They belong to phylum Cnidaria.
4. Three main types coral reefs namely; fringing, barrier and atoll.
5. Their number declines during climate change because they are not able to survive in high temperature.
6. They constitute about 25% of all marine species on the planet.
B. Sea fans:
1. Sea fans are similar to corals however they anchor themselves in mud or sand instead of attaching themselves to hard surface.
2. They are composed of numerous polyps which are in cylindrical, sessile forms. They grow together in a flat, fan-like pattern.
3. They also belong to phylum Cnidaria.
4. They consume plankton.
5. Their body is without definite body divisions.
6. They show presence of water vascular system.
7. They do not produce calcium carbonate skeletons.
- Q.17** Ans. I. Nucleus:
a. It is considered as a control unit of the cell, because the nucleus contains the genetic material in it.
b. The genetic material such as DNA contains the genes. The functioning of the cell depends on the activation and inactivation of the gene. Therefore called as control unit of the cell.
c. It contains genetic information so, it plays an important role in hereditary and variation.
d. It provides site for ribosome biogenesis, DNA, and protein synthesis also.
e. It plays an important role in hereditary and variation as it contains genetic information i.e DNA and RNA.
f. It plays an important role in protein synthesis.
g. It helps in distinguishing between the dividing and non- dividing cells.
II. Chloroplast:
a. Chloroplast occurs in plants, algae, and few protists cells. Chloroplast differs in size, number, and shape.
b. Chloroplast contains a green pigment called chlorophyll along with other enzymes that helps in the production of sugar by photosynthesis.
c. The inner membrane of the chloroplast is selectively permeable. Chloroplast also contains DNA and ribosomes.

- d. The stroma of chloroplast involves in the transpiration process.
- e. It involves in preparation of food in a plant.

III. Endoplasmic reticulum:

- a. It is a little network present within the cytosol of eukaryotes except ova and mature RBCs.
- b. In an electron microscope, it appears like a network of membranous tubules and sacs called cisternae.
- c. Types of ER: Based on the presence of ribosomes they are classified into two classes namely rough ER and smooth ER.
- d. It grows in a place by adding membrane proteins and phospholipids to its membrane.
- e. It acts as an intracellular supporting framework.
- f. It helps in maintaining the position of various cell organelles in the cytoplasm.
- g. Involved in lipid and protein synthesis.

- Q.18** Ans. I. These are the small organic molecules which are produced by organisms that are not essential for the growth and development of an organism.
II. A different type of fungi, bacteria, and plants produces secondary metabolites.
III. There are three groups of secondary metabolites.
a. Terpenes: Made of mevalonic acid, composed of carbon and hydrogen
b. Phenolics: Made from simple sugars having benzene rings, hydrogen, and oxygen.
c. Nitrogen-containing compound: Diverse class may contain sulphur.
IV. Morphine an alkaloid isolated from Papaver somniferum plant is used as a pain reliever and cough suppressant.
V. It is used to treat infectious diseases, cancer, hypertension, and inflammation.
VI. SMs like alkaloid nicotine and cocaine and terpenes cannabinol are widely used for retraction and stimulation.
VII. The characteristics of aroma and flavors of secondary metabolites protect the plants from the pest.
VIII. Flavors of secondary metabolites improve our food preference.
IX. It helps in improving astringency of wine and chocolate by adding tannins.
X. The antibiotic properties of secondary metabolites are used in food preservation.

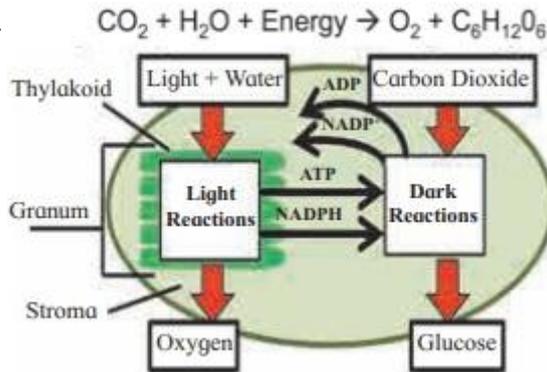
- Q.19** Ans. I. As it is equational division it distributes the division of hereditary material in its daughter cells both qualitatively and quantitatively.
II. It helps in the growth and development of an organism.
III. It involves in replacement of old and worn-out cells.
IV. It helps in asexual reproduction and vegetative propagation of plants.
V. It maintains the nucleo-cytoplasmic ratio.
VI. It preserves the genetic map of an organism.
VII. It maintains the chromosomal number.
VIII. As it produces identical daughter cells which helps in the production of a cloned organism

- Q.20** Ans. I. Small gateways in the epidermis cells are called as stroma.
II. Stroma is guarded by specially modified cells called as guard cells.
III. In dicot, the guard cells are kidney-shaped while in monocot they are dumbbell-shaped which is collectively called as stomata.
IV. Stoma, guard cells and subsidiary cells forms a unit called as a stomal apparatus.
V. These stomata are further covered by subsidiary cells.
VI. Guard cells have chloroplasts to carry out photosynthesis.
VII. Guard cells change their turgor pressure causing its opening and closing.
VIII. It plays a vital role in the exchange of gases and water vapour.

Q.21 Ans.

Skeletal muscle	Smooth muscle	Cardiac muscle
It contains striated muscle.	It contains non-striated muscle.	It contains both Non-striated muscle and Non-striated muscle.
Sarcolemma is a district with the presence of the nucleus at the periphery.	Sarcolemma is district with myofibriles.	Sarcolemma is not distinct.
Muscle gets striated appearance.	Muscle gets the non-striated appearance and unbranched with a single nucleus.	It gives branched appearance to the tissue.
It involves in strong voluntary contraction.	It involves in strong involuntary contraction.	It helps in the quick transfer of impulses.
It is found attached to the bones.	It is found in the in the wall of visceral organs and blood vessels.	It forms the myocardium of the heart wall.

Q.22 Ans.



Q.23 Ans. Aerobic respiration:

1. This respiration involves molecular oxygen as final electron acceptor which are liberated during oxidation of glucose.
2. Glucose is completely oxidized in this process
3. In case of aerobic respiration glycolytic product that is pyruvic acid is converted into acetyl coenzyme A.
4. This process occurs in cytoplasm in case of prokaryotes and in mitochondria in case of eukaryotes.

Anaerobic respiration:

1. Anaerobic respiration is the cellular respiration that does not involve the oxygen at all.
2. It is also called as fermentation.
3. It is completed through steps like glycolysis and conversion of glycolytic product to any suitable product like lactic acid ethanol etc.
4. Carbon dioxide is also produced.

Q.24 Ans. 1. Maltose is converted to glucose with the presence of maltase secreted by the intestine.

2. Sucrose digested into its components enzyme sucrase to glucose and fructose.

3. Lactose is a disaccharide.

4. In glycolysis Lactose to form glucose and galactose.

- Q.25** Ans. 1. Carbohydrate digestion begins in the mouth with the mechanical action of chewing and the chemical action of salivary amylase.
 2. Salivary amylase breaks down amylose and amylopectin into smaller chains of glucose.
 3. The large molecules found in intact food cannot pass through the cell membranes.
 4. Carbohydrates are not chemically broken down in the stomach but it happens in the small intestine.
 5. The main function of carbohydrates is to provide energy to body.
 6. Carbohydrate digestion begins in the mouth and his complete when the polysaccharides are broken down into simple sugars which can be absorbed by the body.

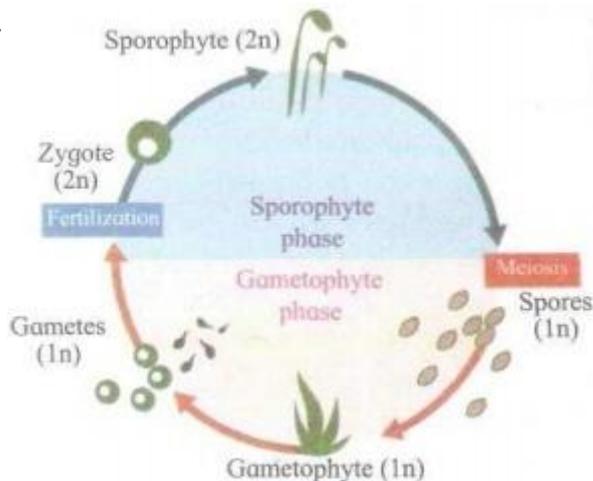
- Q.26** Ans. 1. Organs from living donors function better and for longer periods of time than choose from donors who are diseased.
 2. Dialysis can achieve 10 to 20 percent of the renal function.
 3. A successfull kidney transplant can improve the quality of life and reduce the risk of dying.
 4. If John undergo kidney transplant don't require dialysis treatment.
 5. So kidney transplantation is better than dialysis option.
 6. Most kidney patient feel more energetic after a transplant.

Section D (SA II - 4 MARKS EACH)

Attempt any Three:

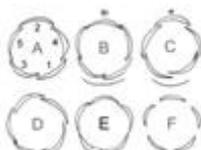
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Q.27 Ans.



1. The given diagram indicates the alternation in generation.
2. Life cycle of a plant includes two phases or distinct generations namely; sporophyte (diploid: 2n) and gametophytes (haploid: n).
3. Some special diploid cells of sporophyte divide by meiosis to produce haploid cells.
4. These haploid cells divide mitotically to give rise to gametophytes.
5. The gametophytes produce male and female gametes which fuse during fertilization to produce diploid zygote.
6. The diploid zygote divides by mitosis to form diploid sporophyte.
7. The sporophytic and gametophytic generations generally occur alternately in the life cycle of plant. This phenomenon is called alternation of generations.
8. Distinct alternation of these two generations is observed in Bryophytes and Pteridophytes.
9. In Gymnosperms and Angiosperms, gametophyte is much reduced and exists within sporophyte.
10. In algae, based upon the nature of dominant phase in life cycle, it is called haplontic, diplontic or haplo-diplontic life cycle.

Q.28 Ans.



Aestivation

The mode of arrangement of sepals, petals or tepals in a flower with respect to the members of same whorl is known as aestivation.

i. Epicalyx : It is an additional whorl of sepal like structures formed by bractiole which occurs on the outside of calyx. These are 5-8 in number. It is a characteristic feature of family. Malvaceae. They are protective in function. e.g. Ladies finger

ii. The position and arrangement of rest of the floral whorls with respect to gynoecium on the thalamus is known as insertion of floral whorls.

iii. In a typical flower thalamus consist of four compactly arranged nodes and three internods. Slope of thalamus decides insertion of floral whorls.

The different types of aestivation are :

a. Hypogyny

i. When the convex or conical thalamus is present in flower, ovary occupies the highest position while other floral parts are below ovary.

ii. Ovary is said to be superior and flower is called as hypogynous flower.

iii. E.g. Brinjal, Mustard, China rose etc. It is denoted as G in floral formula.

b. Perigyny

i. When cup shaped or saucer shaped thalamus is present in a flower, ovary and other floral parts occupy about same position. Such an ovary is said to be semi- superior or semi-inferior.

ii. All floral whorls are at the rim of thalamus. Flower is perigynous

iii. e.g. Rose, Pea, Bean, etc. It is denoted as G - in floral formula.

c. Epigyny

i. When thalamus completely encloses ovary and may show fusion with wall

ii. The other floral parts occupy superior position and ovary becomes inferior.

iii. Such flower is said to be epigynous flower,

iv. e.g. Sunflower, Guava etc. It is denoted as G - in floral formula.

Q.29 Ans. The nervous system of cockroach consists of central nervous system, peripheral nervous system and autonomous nervous system

Central nervous system

i. It consists of nerve ring and ventral nerve cord. Nerve ring is made up of supraoesophageal ganglia, circum-oesophageal connective and suboesophageal connective and sub-oesophageal ganglion.

Peripheral nervous system

ii. It consists of nerves arising from various ganglia of central nervous system. 6 pairs of nerves arise from cerebral ganglia. Nerves arising from thoracic ganglia go to mandibles, maxilla and Labium.

Autonomous nervous system

It consists of 4 ganglia and a retrocerebral complex

these ganglia are as follows :

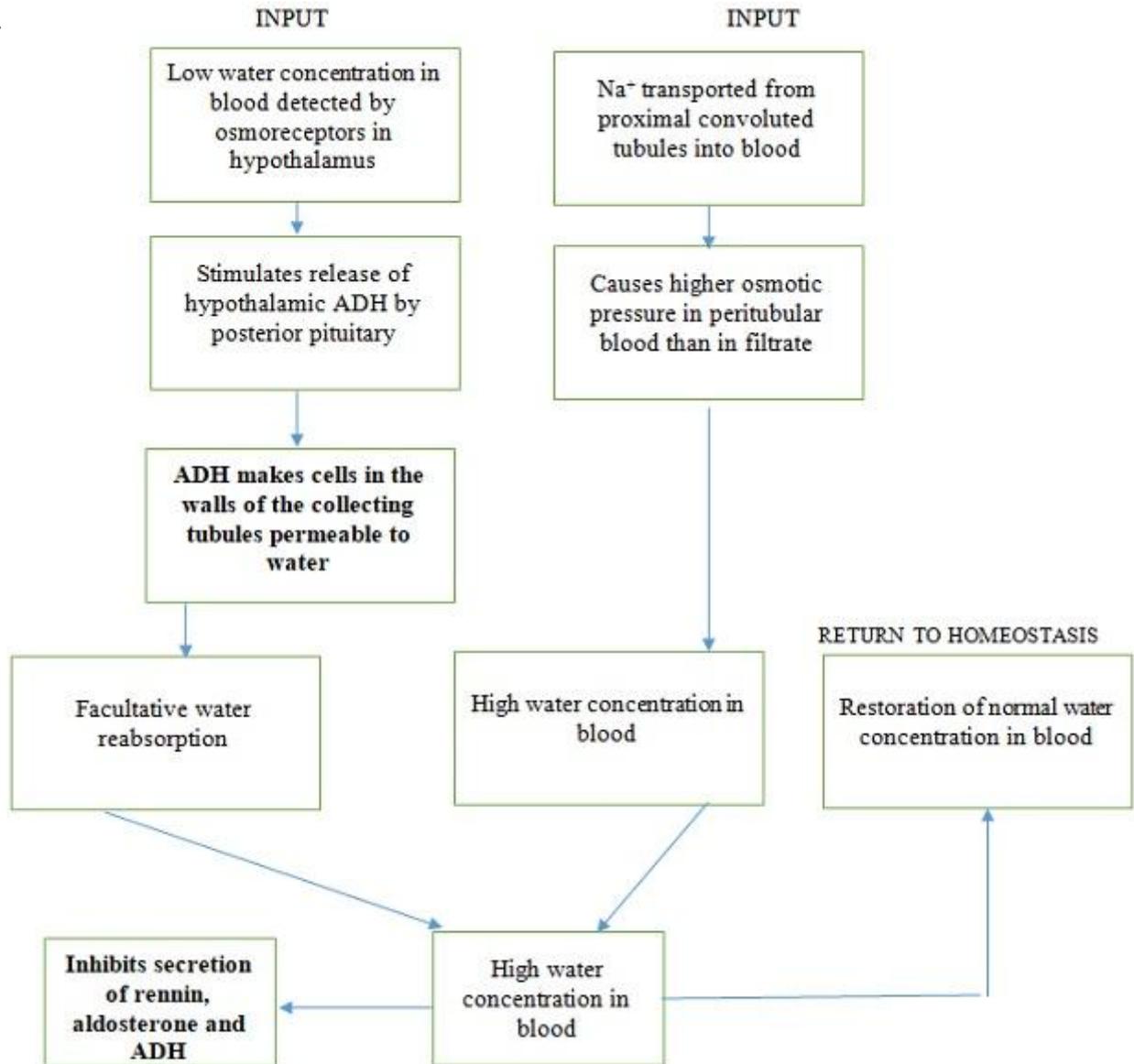
i. frontal ganglia

ii. hypocerebral ganglion

iii. Ingluvial ganglion

iv. ventricular ganglion.

Q.30 Ans.



- Q.31 Ans. 1. A typical vertebra is made up of an anterior vertebral body and a posterior vertebral arch.
2. It typical vertebra consist of
- A vertebral body
 - Vertebral arch
3. Vertebral body - the vertebral body is large specially in a lumbar vertebra.
4. In other words, a vertebra found in the lower back.
5. Vertebral body is also known as weight bearing segment.
6. The vertebral arch the party bra lark is made up of two pedicels that project posteriorly from the vertebral body.
7. Vertebral arch consists of right and left pedicels and right and left laminae.