
2010

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Part I

Question: 1

1. Give one significant difference between each of the following:

[5]

a. Aggregate fruit and Multiple fruit

Answer:

Aggregate fruit	Multiple fruit
It develops from several ovaries of free carpel of a single flower.	It develops from an inflorescence where the flowers are very close and may even be fused.

b. Heart Wood and Sap Wood

Answer:

See topics on 'heart wood and sap wood'

c. Open vascular system and Closed vascular system **

d. Uricotelism and Ammonotelism **

e. Auxetic growth and Accretionary growth **

2. Give the exact location and function of the following :

[3]

a. Most people living in hilly regions suffer from goiter.

Answer:

People living in hilly regions suffer from goiter usually because the soil there is deficient in iodine. Less iodine reaches into the body through diet. The thyroid then enlarges and forms goiter in effort to produce more thyroxine.

b. The water potential of pure water changes when solute is added to it.

Answer:

Water potential of pure water changes by adding solutes because now water will have a tendency to move out towards pure water from its solution which is formed by solutes in it.

c. When we turn round and round, we lose our balance.

Answer:

When we turn round and round, the semicircular canals also move with us. The movement of the cupula is opposed by the inertia of the endolymph which tends to stay still. This distorts and sends information to the brain where it is interpreted. The brain sends corrective information to the body muscles which may cause imbalance.

d. The spores of *Bacillus thuringiensis* are used as bioinsecticide.

Answer:

During sporulation *Bt* produces a crystalline protein or endotoxin. These endotoxins when ingested by insect larvae causes death. Hence the spores are used as bio insecticides.

e. Owls have better night vision than day vision.



Answer: Owls have more number of rods in their eyes. Rods are sensitive to dim light and work in night. So their night vision is better than day vision.

3. Give scientific terms for each of the following: [2]

a. Adjustment of the eye in order to obtain a clear vision of objects at difference distances.

Answer:
Accommodation

b. A device to measure growth in length of a plant.

Answer:
Auxanometer

c. The formation of blood cells in the bone marrow.

Answer:
Vasectomy

d. The response of an organism to relative length of day and night.

Answer:
Photoperiodism

e. Surgical removal of a section of vas deferens.

Answer:
Vasectomy

f. The act of passing out of urine.

Answer:
Micturition

4. Mention the most significant role of each of the following : [2½]

a. Schwann cells

Answer:
Insulate the axons.

b. Organ of Corti

Answer:
Helps in hearing by changing vibrations into nerve impulse which goes to brain from cochlea.

c. Phellogen

Answer:
Forms a protective layer in place of epidermis of woody plants and protects the inner, soft tissues.

d. Sertoli cells



Answer:

Provide mechanical support, protection and nutrition to the developing spermatozoa.

e. Neutrophils

Answer:

Destroy bacteria by phagocytosis and protect the body from their infection

f. Gustatory cells

Answer:

Detect taste of food.

5. State the best known contribution of

[2½]

a. Nawaschin

Answer:

Discovered double fertilization in angiosperms

b. John Otto

Answer:

Named vitamin

c. Went

Answer:

Demonstrated that the tip of coleoptile produces growth hormone – auxin.

d. T.R.Malthus

Answer:

Gave the essay on population

6. Expand the following:

[5]

a. ECG

Answer:

Electrocardiogram.

b. AIDS

Answer:

Acquired immune deficiency syndrome.

c. NAA

Answer:

Napthalene acetic acid.

d. ACTH



Answer:

Adreno cortico trophic hormone

Part II

Section A (Answer any three questions)

Question: 2

1. Draw a neat and fully labeled diagram of a T.S of dicotyledonous stem. [4]

Answer:

See topics on 'Stem'.

2. List three differences between micronutrients and macronutrients of plants. ** [4]
3. Describe the significance of osmosis in plants. ** [2]

Answer:

See topics on 'Osmosis'.

Question: 3

1. Describe the cohesion and transpiration pull theory of ascent of sap. [4]

Answer:

See topics on 'Ascent of sap'.

2. Explain the sequence of events between pollination and fertilization in plants. [2]

Answer:

See topics on 'Pollination' and 'Fertilization'

3. State and explain Blackman's Law of Limiting Factors. [1]

Answer:

See topics on 'Blackman's Law of Limiting Factors'

Question: 4

1. Write two functions each of . [4]
- a. Amniotic fluid

Answer:

1. It protects the foetus from jerks, injury and temperature fluctuations.
2. Protects the foetus from desiccation.

- b. Human placenta [4]

Answer:



It helps in the nutrition of foetus as the nutrient molecules like amino-acids, vitamins, mono-sugars etc. diffuse from mother's blood into foetal blood through the placenta.

2. Briefly explain the procedure followed for haemodialysis. **
3. Explain the origin and conduction of heart beat in man. ** [3]

Question: 5

1. What is a reflex action? Draw a neat labeled diagram of a reflex arc. ** [4]
2. Mention a cause and symptom of each [3]
 - a. Osteoporosis

Answer:

Cause: It is believed to be caused due to marked lack of physical activity, prolonged treatment with steroid drugs and Ca deficiency.

Symptom: Bones may be broken or compressed by even minor injuries and normal activities.

- b. Constipation

Answer:

Cause: It is caused by decreased motility of the intestines as the faeces remain in the colour for a long time.

Symptom: Difficult or infrequent defecation causing discomfort.

- c. Asthma

Answer:

Cause: It is caused by spasms of the smooth muscles of bronchi and bronchioles.

Symptom: Difficult breathing, coughing and wheezing.

- d. Tetany

Answer:

Cause: It is caused due to hypoparathyroidism.

Symptom: Muscle spasms and twitching mainly in hands, feet and face.

3. Write four functions of the human skeleton system. [3]

Answer:

Four functions of the human skeleton system.

- i. Helps in movement and locomotion
- ii. Provides supporting framework of the body.
- iii. Protects the internal organs
- iv. All types of blood cells are produced in it.

Question: 6

1. Explain the effects of gibberellins on plants. ** [4]
2. Describe the mechanism of pulmonary gaseous exchange. ** [4]
3. Mention the site of secretion and function of the following hormones. [2]



-
- a. Cholecystokinin

Answer:

Site of secretion: Secreted by the mucosa of duodenum. Function: Stimulates the secretion of pancreatic enzymes and cause the contraction of gall bladder.

- b. Oxytocin

Answer:

It controls secretion of milk after birth and development of breast tissues during pregnancy.

- c. Insulin

Answer:

Insulin is a peptide hormone produced by beta cells in the pancreas. It regulates the metabolism of carbohydrates and fats. It promotes the absorption of glucose from the blood to skeletal muscles and fat tissue.

Section B

Question: 7

1. Describe the procedure of hybridization of plants.

[4]

Answer:

Process of hybridization involves:

- Selection of parent plants: Selecting them on the basis on desired characters.
- Selfing of parents: It is done by artificial self-pollination of parent plants to eliminate undesirable characters and obtain inbreds.
- Emasculation: In its stamens are removed from the female plant before they mature. This is done to prevent self-fertilization.
- Bagging: Both male and female flowers are covered by bags of paper or cloth to prevent contamination of staminate flowers and cross pollination in female flowers.
- Crossing: In its pollens are collected from the desired male parent and transferred to the stigma of emasculate female flower. The crossed flowers are then covered and tagged properly.
- Raising of F₁ generation: Mature seeds of F₁ generation are harvest, dries and stored and in the next season F₁ plants are obtained from which are called hybrids.

2. Name the causative agent and the main preventive measure for each of the following.

[3]

- a. Amoebiasis

Answer:

Causative agent: Entamoeba histolytica

Preventive measure: Proper personal hygiene and replacement of lost fluids

- b. Rabies **

- c. Pneumonia **

- d. Malaria **

[4]

Answer:

See topics on 'Malaria'



3. What is manure? Explain any two types of manures.

Answer:

See topics on 'Manure'.

Question: 8

1. State three differences between Homologous and Analogous organs and give an example of each. [4]

Answer:

See topics on 'Homologous organs and Analogous organs'

2. Explain the resistance of mosquitoes to pesticides such as DDT. [4]

Answer:

See topics on 'Drug resistance'

3. What is the importance of preserving the germplasm of wild species [3]

Answer:

Preservation of germ plasm of wild species is important as a great bio-diversity and different clones can be maintained in a limited area. At the time of danger of their extinction, they can be reintroduced in their natural habitats.

Question: 9

1. Explain the basic postulates of Darwinism. [2]

Answer:

See topics on 'Darwinism'.

2. What is genetic erosion? State any two factors responsible for it. [4]

Answer:

See topics on 'Gene erosion'.

3. What is meant by biotic potential? [3]

Answer:

See topics on 'Biotic potential'.

Question: 10

1. Explain the origin of bread wheat (*Triticum aestivum*). ** [4]

2. Give two difference between:

a. B cells and T cells



Answer:

B cells	T cells
1. These are associated with humoral immune responses.	1. Associated with cellular immune responses.
2. Do not recirculate continuously in the body but make contact with antigens.	2. Respond to antigens by producing a clone of T-cells.

b. Antibodies and Interferons.

[2]

Answer:

Antibodies	Interferons
1. Antibodies are produced by plasma B-cells only.	1. Interferons are produced by any microbe infected cell.
2. They are slow in action but give a long-lasting protection against antigens.	2. They are quick in action but give a temporary protection against microbes.
3. They form the body's third line of defence.	3. They form the body's second line of defence.

3. Define organ transplantation. Mention a precaution which must be taken for this procedure.

Answer:

Replacement of diseased or damaged organ by a healthy one is called organ transplant. Before such a transplant it must be made sure that the transplanted organ would not be rejected by the recipient. This is done by tissue matching. This will stop or slow down rejection.

** Out of syllabus. Answer will be provided up on request

