ISARADDI'S CLASSES

SSLC study material

June - 2021

PART - B

BIOLOGY

UNITS :

- Life processes
- Control and coordination
- How do organisms reproduce ?
- Heredity and Evolution
- Our environment
- Sustainable management of Natural resources

TOTAL = 27Marks

SANJEEVKUMAR ISARADDI

9448245781

isaraddiclasses.com

CHAPTER 6
Life Processes

ISARADDI'S CLASSES

Previous questions from SSLC Board

April 2019

1. Explain the process of translocation of food materials in plants. (2Marks)

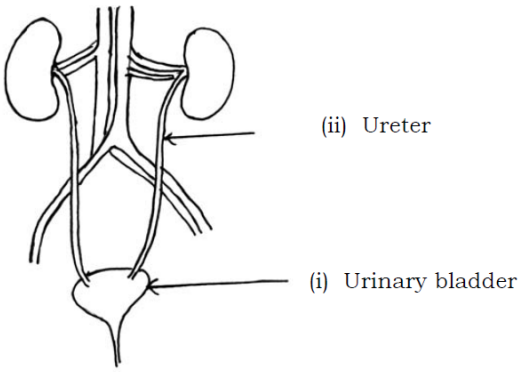
Ans. :

- Translocation of food materials occurs in the phloem tissue of plants.
- This process takes place in the sieve tubes with the help of adjacent companion cells both in upward and downward directions.
- This process is achieved by osmotic pressure.

2. Draw the diagram showing the structure of human excretory system. Label the following parts. (2Marks)

(i) Urinary bladder
(ii) Ureter.

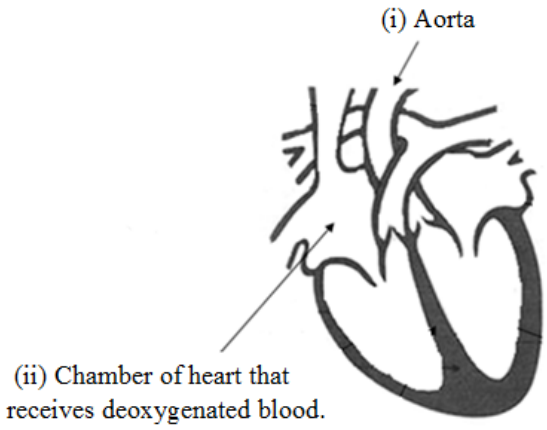
Ans :



3. Draw the diagram showing the sectional view of the human heart. Label the following parts. (3Marks)

(i) Aorta
(ii) Chamber of heart that receives deoxygenated blood.

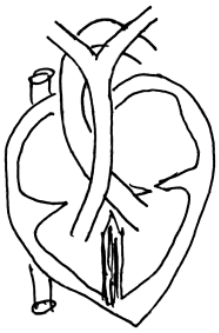
Ans :



June 2019

1. Diagrams given below represent hearts of three different animals. Observe it and answer the question.

(1)



(2)

(3)

Among these, which heart is helpful to the animals that require more energy ? Why ? (2Marks)

Ans :

(i) Heart - 2

(ii) Oxygenated and deoxygenated blood will not mix together

Efficient supply of oxygen to the body.

Helpful to maintain body temperature.

April 2020

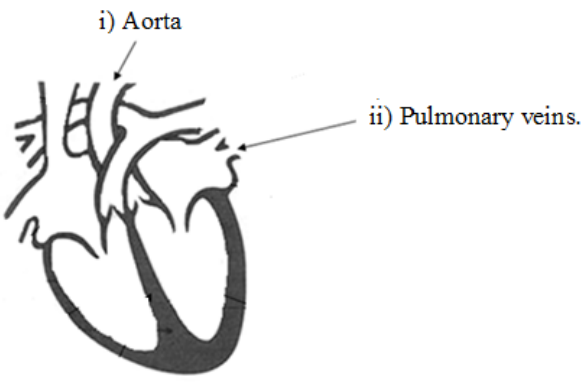
1. "The body temperature of frogs and lizards depend on temperature in the environment." Justify. (2Marks)

Ans. :

- Both frogs and lizards have three chambered heart
- Oxygenated and deoxygenated blood mix in the heart.
- Production of energy became slightly less. This energy cannot be used for maintaining constant temperature.

2. Draw the diagram showing the schematic sectional view of the human heart. Label the following parts :
   i) Aorta
   ii) Pulmonary veins. (3Marks)

Ans :



September 2020

1. How are the functions of arteries, veins and capillaries are interrelated in the circulation of blood ?
(3Marks)

Ans. :

- Arteries carry blood away from the heart to various organs of the body. On reaching an organ or tissue, the artery divides into smaller and smaller vessels to bring the blood in contact with all the individual cells.
- Exchange of material between the blood and surrounding takes place across the thin wall of smallest vessels, the capillaries. The capillaries then join together to form veins.
- Veins convey the blood away from the organ or tissue. Veins collect the blood from different organs and bring it back to the heart.

OR

How does transportation of water take place over the heights in a plant ?

Ans :

- At the roots, cells in contact with the soil actively take up ions. This creates a difference in the concentration of these ions between the root and the soil.
- Water moves into the root from the soil to eliminate this difference. There is a steady movement of water into root xylem, creating a column of water that is steadily pushed upwards.
- Evaporation of water molecules from the stomata of leaves due to transpiration creates a suction which pulls water from xylem cells of root.

MOST LIKELY QUESTIONS FOR 2021(Including previous year questions)

1. What are the components of the transport system in human beings? What are the functions of these components?

Ans :

The transport system in human beings mainly consists of heart, blood and blood vessels.

(i) Function of heart : The heart receives deoxygenated blood from the body parts and pumps it to lungs for enriching with oxygen. It receives purified blood from lungs and pumps it around the body.

(ii) Function of blood : Blood transports oxygen, carbon dioxide, digested food, hormones and nitrogeneous waste like urea. It also protects the body from diseases and regulates the body temperature.

(iii) Function of blood vessels : The blood pushed by the heart flows through the blood vessels (arteries, veins and capillaries) and also comes back to the heart through them.

2. Why is it necessary to separate oxygenated and deoxygenated blood in mammals and birds?

OR

What are the advantages of having four chambered heart in birds and mammals

Ans :

- Separation of oxygenated and deoxygenated blood allows good supply of oxygen to the body.
- This system is useful in animals that have high energy requirement.
- Mammals and birds constantly need oxygen to get energy to maintain their body temperature constant.

3. Describe double circulation of blood in human beings. Why is it necessary?

Ans :

Blood goes through the heart twice during each cycle in our body. This is known as double circulation.

Heart collects deoxygenated blood from body and send it to lungs for purification

Heart collects oxygenated blood from lungs and supply it to all body parts .

Necessity of double circulation:

- It avoids deoxygenated and oxygenated blood from mixing.
- This type of separation of oxygenated and deoxygenated blood ensures a highly efficient supply of oxygen to the body.
- This is useful in case of humans who constantly need energy to maintain their body temperature.

4. How arteries and veins are structurally differ in each other ?

Ans :

- Since the blood emerges from the heart under high pressure, the arteries have thick, elastic walls.
- Veins do not need thick walls because the blood is no longer under pressure, instead they have valves that ensure that the blood flows only in one direction.

5. What would be the consequences of a deficiency of haemoglobin in our bodies?

Ans:
Due to the deficiency of haemoglobin in blood, its oxygen carrying capacity decreases. As a result the production of energy by oxidation will become slower. Therefore, one would fall sick and would feel fatigue most of the time.

6. Describe the structure and functioning of nephrons.

Ans :

Structure of nephron :

Each nephron is composed of two parts.

- First one is a cup-shaped bag at its upper end which is called Bowman's capsule. The Bowman's capsule contains a bundle of blood capillaries which is called glomerulus.
- The other part of the nephron is coiled which carries filtrate to the collecting duct

Function of nephron :

- Filtration of blood takes place in Bowman's capsule from the capillaries of glomerulus. The filtrate passes into the tubular part of the nephron. This filtrate contains glucose, amino acids, urea, uric acid, salts and water.
- As the filtrate flows along the tubule, useful substances such as glucose, amino acids, salts and water are selectively reabsorbed into the blood by capillaries surrounding the nephron tubule.
- The filtrate which remained after reabsorption is called urine.
- Urine is collected from nephrons to carry it to the ureter from where it passes into urinary bladder.

7. What are the methods used by plants to get rid of excretory products?

Ans:
(i) The plants get rid of gaseous products-through stomata in leaves and lenticels in stems.
(ii) The plants get rid of stored solid and liquid waste by the shedding off leaves, peeling off bark and felling off fruits.
(iii) The plants get rid of wastes by secreting them in the form of gums and resins.
(iv) Plants also excrete some waste substances into the soil around them.

8. How is the amount of urine produced regulated?

Ans : It depends on the quantity of excess water and wastes dissolved in water.

(i) Quantity of water : When water is abundant in the body tissues, large quantities of dilute urine is excreted out. When water is less in quantity in the body tissues, a small quantity of concentrate urine is excreted.
(ii) Quantity of dissolved wastes : Dissolved wastes, especially nitrogenous wastes, like urea and uric acid and salts are excreted from the body. When there is more quantity of dissolved wastes in the body, more quantity of water is required to excrete them. Therefore, the amount of urine produced increases.

9. What are the differences between the transport of materials in xylem and phloem?

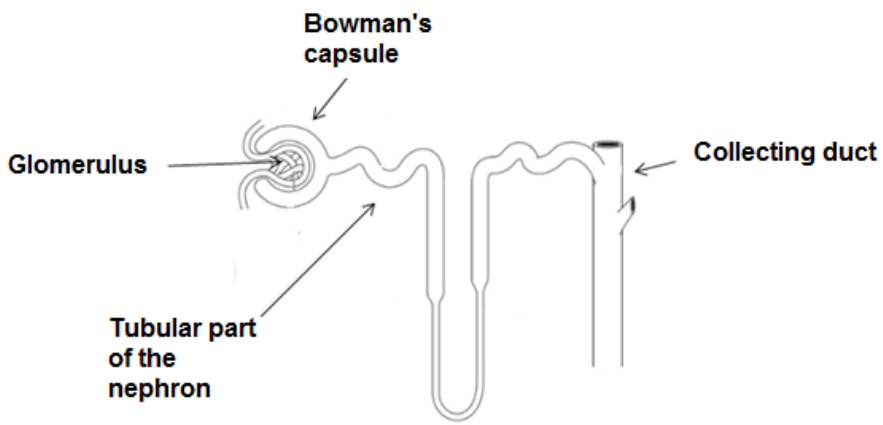
Ans :

Xylem	Phloem
Xylem conducts water and dissolved minerals from roots to leaves and other parts.	Phloem conducts prepared food material from leaves to other parts of plant in dissolved form.
It takes place through vessels and tracheids which are dead tissues.	takes place through sieve tubes with the help of companion cells, which are living cells.
In xylem upward movement of water and dissolved minerals is mainly achieved by transpiration pull.	It is done by the osmotic pressure
Does not requires energy	Energy is required here
Movement is only in upward direction	Both in upward and downward direction

10. Compare to animals , plants need less energy. Why ?

Ans :
- Plant doesn't move
- Major part of the plant body is made up of dead cells

11. Draw the diagram showing the structure of nephron and label the parts.



CHAPTER 7

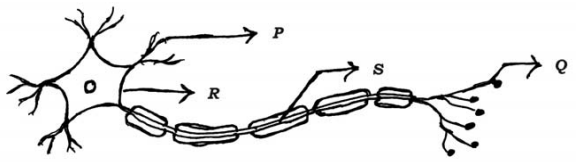
Control and Coordination

ISARADDI'S CLASSES

Previous questions from SSLC Board

April 2019

1. The correct path of the movement of nerve impulses in the following diagram is (1Mark)



(A) $Q \rightarrow S \rightarrow R \rightarrow P$

(B) $P \rightarrow Q \rightarrow R \rightarrow S$

(C) $S \rightarrow R \rightarrow Q \rightarrow P$

(D) $P \rightarrow R \rightarrow S \rightarrow Q$

Ans. :

(D) — $P \rightarrow R \rightarrow S \rightarrow Q$

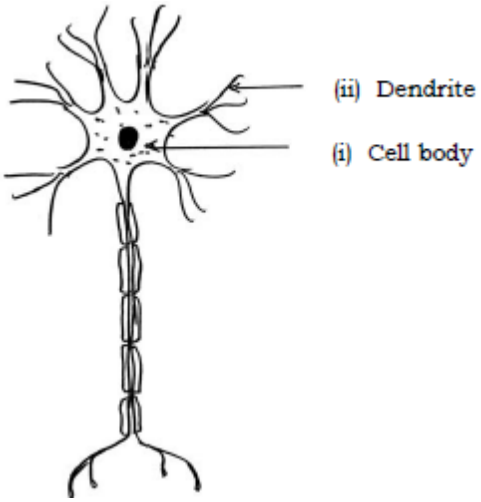
June 2019

1. Draw the diagram showing the structure of neuron. Label the following parts : (2Marks)

(i) The part which has prominent nucleus

(ii) Dendrite.

Ans. :



2. Imagine the following situations : (3Marks)

(i) Clapping at the end of a programme

(ii) Fluctuating blood pressure in the body.

How these situations are functionally different ? Give reason.

Ans. :

(i) Voluntary action :

- Action performed based on thinking
- Controlled by forebrain.

(ii) Involuntary action :

- Action without thinking control
- Controlled by hind brain.

OR

"We withdraw our leg when stepped on thorn unknowingly."

(a) Trace the sequences of events which occur in this action.

(b) Which part of human nervous system controls this action ?

Ans. :

(a) (i) Receptors receive the stimulus of pain

(ii) Messages reach spinal cord through sensory neuron.

(iii) Responses reach motor neuron through association neuron.

(iv) Responses reach effector through motor neuron.

(v) Muscles withdraw the leg.

(b) Spinal cord controls this action

April 2020

1. The incorrect statement related to thyroxine hormone among the following is (1Mark)

(A) it regulates fat metabolism

(B) its deficiency leads to goitre

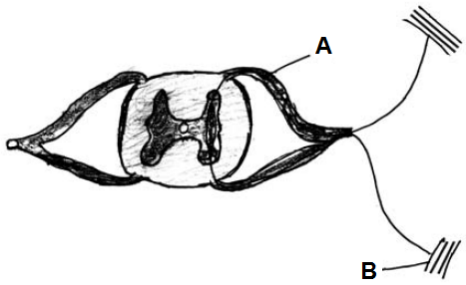
(C) it is secreted by parathyroid gland

(D) iodine in the food is essential for its production.

Ans. :

(C) it is secreted by parathyroid gland

2. Name the given structure. What is its general function ? Mention the function of the parts labelled as A and B. These structures in animals are said to be efficient ways to give quick responses. Why ? (4Marks)



Ans. :

- Reflex arc
- It gives sudden action in response to the event happening in the environment.

A) *Sensory neuron* : It conducts the impulse of stimulus from receptor to the spinal cord.

B) *Effectors* : Which shows the sudden visible response.

Reflex arcs have evolved in animals because the thinking process of brain is not fast enough in many animals. Mean while many animals have very little of the complex neuron network needed for thinking.

So it can function in the absence of true thought process and increase the chance of survival.

September 2020

1. A person's face has become pale and his breathing rate has increased due to fear. Analyse the process which enables the person to deal with this situation. (2Marks)

Ans. :

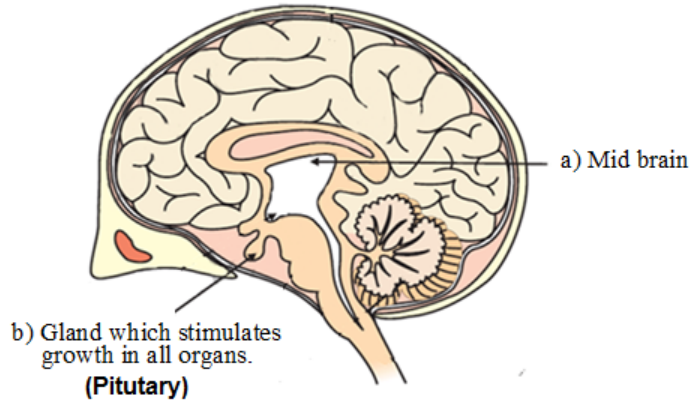
- Adrenaline is directly secreted into the blood. The blood to the skin is reduced due to contraction of muscles around small arteries.
- The breathing rate increases because of the contractions of the diaphragm and the rib muscles. The heart beats faster, resulting in supply of more oxygen to the muscles.

2. Draw the diagram showing longitudinal section of human brain. Label the following parts : (4Marks)

a) Mid brain

b) Gland which stimulates growth in all organs.

Ans. :



MOST LIKELY QUESTIONS FOR 2021(Including previous year questions)

1. What is the need for a system of control and coordination in an organism?

Ans : An organism needs control and coordination system for the following functions :

(i) To save the body of the organisms from the harmful changes in the environment.

(ii) To control the speed of voluntary and involuntary actions.

(iii) To have the capability to think and learn for responding to any stimuli.

2. What happens at the synapse between two neurons?

Ans : The small empty space between two nerve cells is called synapse.

At synapse, a chemical substance is produced at the end of axon of one nerve cell that reaches to the other nerve cell through the dendrite.

3. Which part of the brain maintains posture and equilibrium of the body?

Ans : Posture and equilibrium of the body are controlled by cerebellum.

4. How do we detect the smell of an agarbatti (incense stick)?

Ans : The smell of agarbatti (incense stick) diffuses in the air.

It is detected by olfactory receptors present in the nose.

This information is sent to olfactory lobe by sensory nerves located in the forebrain.

It responds to the information.

5. What are plant hormones? Give an example of a plant hormone that promotes growth.

Ans : Plant hormones are also called phytohormones.

Plant hormones are the chemical substances which help in controlling growth, flowering, height, development of plants and their response to the environment.

Hormone that promotes growth in plants is - Auxin.

6. How is the movement of leaves of the sensitive plant different from the movement of a shoot towards light?

Ans :

Movement of leaves of the sensitive plant	Movement of a shoot towards light
It is a nastic movement	It is a tropic movement
The stimulus is touch	The stimulus is light
It does not depend on the direction of stimulus	It depends on the direction of stimulus
It is growth independent	It is growth dependent

7. How do auxins promote the growth of a tendril around a support?

Ans :

When the tip of a tendril touches a support, then the auxins present in its tip move to that side of tip which is away from the support.

Auxins promote growth. So, due to more auxins in it, the side of tendril away from the support grows faster (and becomes longer) than the side which is in contact with the support and makes the tendril twirl (or bend) around the support.

8. Design an experiment to demonstrate hydrotropism.

Ans :

Equipments requires : Glass through , water container , soil and a plant

Procedure : As shown in figure , in glass through take a soil , plant and keep the water containing cup just away from the plant. Keep this set up for few days.

Observation : Roots grow towards wet area

Decision : Roots show hydrotropism

9. How does phototropism occur in plants?

Ans : The movement in any part of a plant due to light is called phototropism.

The shoot of plant shows positive phototropism and roots show negative phototropism.

Phototropism in plants occurs due to the hormone auxin. When light falls on one side of a plant, the secretion of auxin hormone is more in the part away from the light.

Hence, auxin causes growth in length of the cells in shady part. So, the plant appears to bend towards light.

10. Which signals will get disrupted in case of a spinal cord injury?

Ans :

(i) All the involuntary actions will get disturbed.

(ii) Reflex actions will be disturbed because reflexes are located in the spinal cord. Therefore, the quick responses required to safe guard the body will not take place.

11. How are involuntary actions and reflex actions different from each other?

Ans :

Involuntary actions	Reflex actions
It takes place without any thinking	It takes place along with stimuli
It is controlled by mid and hind brain	It is controlled by spinal cord
The action is relatively slower	It is very quick

12. Compare and contrast nervous and hormonal mechanisms for control and coordination in animals.

Ans :

Nervous system	Endocrine system
It is a faster process	It is a slower process
It transmits information in the form of electrochemical signals	It transmits information in the form of chemical signals
It does not control metabolism	It controls metabolism
Growth is not affected	Growth is affected

13. What are the parts of hind brain ? Mention their functions.

Ans :

(i) Cerebellum : it controls posture and equilibrium of the body

(ii) Medulla : Involuntary actions including blood pressure, salivation and vomiting are controlled by the medulla

14. Name the endocrine glands found attached with following organs and mention the hormones secreted by these glands.

(i) Brain (ii) Kidney

Ans :

(i) Brain : Pituitary gland , secretes growth hormones

(ii) Kidney : Adrenal gland , helps in metabolism, regulates blood pressure, and is responsible for the fight or flight response.

15. Why are some patients of diabetes treated by giving injections of insulin?

Ans :

- Insulin hormone regulates blood sugar levels.
- To treat increased level of blood sugar, the diabetic patients are treated by giving injections of insulin.

CHAPTER 8

How do Organisms Reproduce?

ISARADDI'S CLASSES

Previous questions from SSLC Board

April 2019

1. Part of the flower that develops into fruit and part of the seed that develops into root respectively are

(A) ovary and plumule (B) plumule and radicle (1Mark)

(C) ovary and radicle (D) ovary and ovule

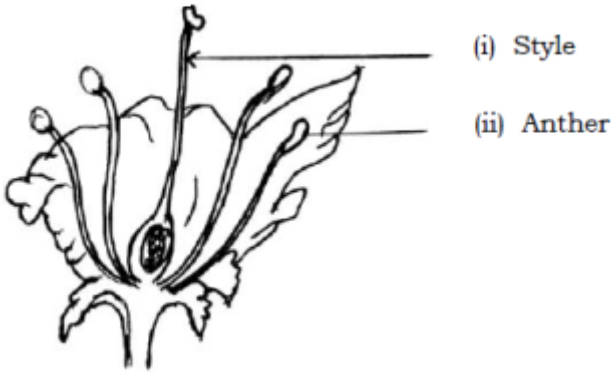
Ans. :

(C) — ovary and radicle

2. Draw the diagram showing the longitudinal section of a flower. Label the following parts : (2Marks)

(i) Style (ii) Anther.

Ans. :



June 2019

1. In sustaining reproductive fertility of a person, (2Marks)

(a) position of the testis in the body

(b) secretion of the testosterone

(c) secretion of the prostrate gland

are supplementary to each other. Explain scientifically.

Ans. :

(a) Sperm formation requires a lower temperature than body temperature.

(b) Testosterone regulates / stimulates the formation of sperm.

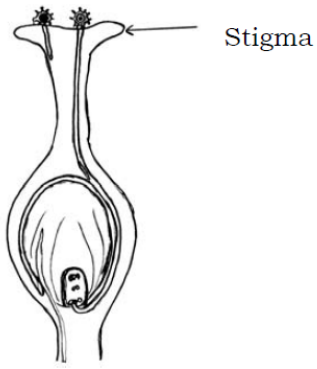
(c) Secretion of Prostrate gland makes the transportation of sperm easier.

Thus reproductive fertility is sustained by the formation, stimulation

to the formation and proper transportation of sperms.

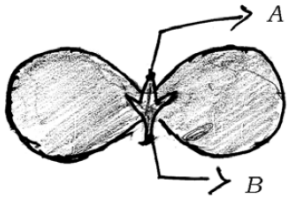
2. Draw the diagram showing the germination of pollen on stigma and label the part on which pollination takes place. (2Marks)

Ans. :



April 2020

1. In the given figure of Cotyledon the parts labelled as A and B respectively are (1Mark)



(A) fruit, shoot (B) primary shoot, primary root

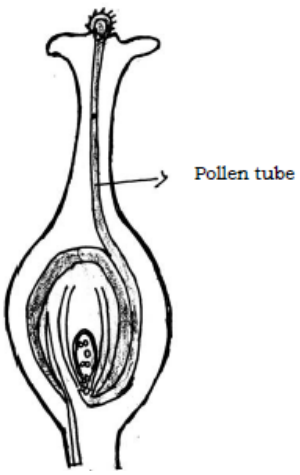
(C) secondary root, primary shoot (D) bud, leaf.

Ans. :

(B) primary shoot, primary root

2. Draw the diagram showing the germination of pollen on stigma and label the pollen tube. (2Marks)

Ans. :



3. Explain the significant function of each structure in human male reproductive system. (2Marks)

Ans. :

i) *Testis* : They produce sperms and testosterone hormone which is responsible for male characters.

ii) *Scrotum* : They regulate temperature necessary for production of sperms.

iii) *Urethra and vas deferens* : Transport sperm from testis.

iv) *Prostate gland and seminal vesicle* : They add their secretion to make the sperm transport easier and provide nutrition.

v) *Penis* : Delivers the sperms to the site of ferliziation.

OR

Explain the structure and important role of placenta during gestation period of woman.

Ans :

- During pregnancy period the embryo gets nutrition from the mother's blood with help of disc shaped special tissue embeded in the uterine wall is called placenta.
- It contains villi on the developing side of the tissue.
- Villi provide glucose and oxygen to pass from mother to embryo.
- Removes the wastes generated from the embryo

September 2020

1. a) How does menstruation occur ? (2Marks)

Ans. :

- The uterus prepares itself every month to receive a fertilized egg and thus its lining becomes thick and spongy.
- If the egg is not fertilized, the lining slowly breaks and comes out through the vagina as blood and mucous.

OR

a) Explain the development of fertilized egg into a foetus in a woman. (2Marks)

Ans :

- The fertilized egg starts dividing and forms a ball of cells or embryo.
- The embryo is implanted in the lining of the uterus where they continue to grow and develop organs to become foetus.

b) In humans, how the surgical contraceptive methods can be used to prevent pregnancy ? (2Marks)

Ans :

- If the vas deferens in the man is blocked, sperm transfer will be prevented. Fertilisation will not take place.
- If the fallopian tube in the woman is blocked, the egg will not be able to reach the uterus. Fertilisation will not take place.

MOST LIKELY QUESTIONS FOR 2021(Including previous year questions)

1. What is puberty ?

Ans : The adolescence period in which reproductive tissues begin to mature is called Puberty.

2. What are the changes seen in girls at the time of puberty?

Ans : The various changes occur in girls at puberty are :

a. Hair grow under armpits and pubic region.
b. Mammary glands (or breasts) develop and enlarge.
c. The hips broaden.
d. Extra fat is deposited in various parts of the body like hips and thighs.
e. Fallopian tube, uterus and vagina enlarge.
f. Ovaries start to release eggs.
g. Menstruation (monthly periods) starts.
h. Feelings and sexual drives associated with adulthood begin to develop.

3. "DNA copying an essential part of the process of reproduction" . Justify the statement

Ans :

- To transmit the characteristics of parent organism to its offsprings (progenies)
- While copying occasional variations are produced in offsprings ,
- The changes in the copy of DNA provide an organism the capability to survive in changing conditions.

4. What is self-pollination and cross-pollination ? Name the agents involved in this process.

Ans :

Self-pollination : If transfer of the pollen from stamen to the stigma occurs in the same flower, it is called as self-pollination.

Cross-pollination : If transfer of the pollen from stamen to the stigma occurs one flower to another flower, it is called as self-pollination.

Pollination achieved by agents like wind, water or animals.

5. If a woman is using a copper-T, will it help in protecting her from sexually transmitted diseases?

Ans : No , it won't help in protecting her from sexually transmitted diseases

Copper-T is a contraceptive device which prevents union of sperm with egg.

6. What are the different methods of contraception?

Ans :

(i) Barrier method : In this method, condom, diaphragm and cervical caps are used. These prevent the entry of sperms in the female genital tract during sexual intercourse.

(ii) Chemical method : In this method a woman uses two kinds of pills (oral and vaginal pills). The oral pills are hormonal preparations which suppress the release of ovum in fallopian tube. These are called oral contraceptives. The vaginal pills/ creams are spermicidal. The chemicals in these spermicidals kill the sperms during their journey in the vaginal tract.

(iii) Intrauterine contraceptive devices : Intrauterine contraceptive devices such as copper-T are placed safely in the uterus by a skilled doctor. It prevents the sperms to reach the uterus.

(iv) Surgical method : In this method, a small part of vas deferens of male and fallopian tube of female is cut or tied by surgery. It is called vasectomy in males and tubectomy in females.

7. What could be the reasons for adopting contraceptive methods?

Ans :

a) To control the birth rate and prevent the increase in population.
b) To reduce the adverse effects on mother's body due to frequent pregnancy.
c) To provide safety from sexually transmitted diseases.

8. In female reproductive system,

(i) How does an egg from the ovary reach uterus and develops into foetus?

(ii) What are the changes that occur in the uterus for the development of the foetus?

Ans :

(i) After sexual intercourse, sperm move from the vagina through the cervix and uterus to the fallopian tubes, where one sperm fertilizes the egg.

The fertilized egg (zygote) divides repeatedly as it moves down the fallopian tube to the uterus.

Then zygote divides repeatedly and becomes a solid ball of cells.

(ii) The inner lining of uterus thickens and its blood vessels enlarge to provide nourishment to the fetus.

As pregnancy progresses, uterus expands to make room for the fetus.

9. In sexual reproduction,

(i) how does the re-establishment of DNA amount occur in the new generation?

(ii) how is the amount of variations increase among the individuals of each of the population?

Ans :

(i) When the gametes fuse during fertilization, the resulting new generation organism gets one pair of chromosome (Haploid) from each parent and thus the chromosome becomes diploid.

Thus, the full number of chromosomes is re-established and the specific chromosome number of a species is maintained.

(ii) During fertilisation, 1 gamete from each parent combines to form a zygote.

Each gamete contains a different set of DNA.

Because of recombination and mutation in DNA variations occur in an individual

This variation of an individual transmitted to its population

CHAPTER 9

Heredity and Evolution

ISARADDI'S CLASSES

Previous questions from SSLC Board

April 2019

1. A pure dominant pea plant producing round — yellow seeds is crossed with pure recessive pea plant producing wrinkled — green seeds. The number of plants bearing round — green seeds in the *F*1 generation of Mendel's experiment is (1Mark)

(A) 0 (B) 1 (C) 3 (D) 9

Ans. :

(A) 0

2. What are fossils ? (1Mark)

Ans. :

The preserved traces of the living organisms are called fossils.

3. (i) Write the differences between homologous organs and analogous organs.

(ii) Write the differences between the sex chromosomes of man and sex chromosomes of woman.

(iii) Sex of a child is determined by the father. How ? (4Marks)

Ans : (i) Differences between homologous organs and analogous organs

Homologous organs	***Analogous organs***
Organs of different organisms have common origin	Organs of different organisms have different origin
They have similar structure and perform different function	They have different structure and perform similar function
Ex : Forelimbs of frog and forelimbs of bird	Ex : Wings of bird and wings of bat.

(ii) * Woman has a perfect pair of sex chromosomes, both called *X*.

* Man has a normal sized chromosome *X* and another short sized chromosome *Y*.

(iii) A child who inherits *X* chromosome from her father will be a girl and a child who inherits *Y* chromosome from his father will be a boy. Both the girl and the boy inherit only *X* chromosome from the mother. Therefore sex of a child is determined by the father.

June 2019

1. Observe the table which shows contrast forms of pea plants (1Mark)

Colour of the seed	*Position of the flower*
Green (*G*)	Axial (*A*)
Yellow (*g*)	Terminal (*a*)

The genetic makeup with green seed and terminal flowers is indicated as

(A) gGAa (B) GgAa

(C) GgAA (D) Ggaa.

Ans. :

(D) — Ggaa

2. Name the factors responsible for speciation. (1Mark)

Ans. :

Natural selection

Variations

Geographical isolation.

3. (i) How does relative method help to determine the age of fossils ? (3Marks)

(ii) "Experiences of an individual during its life time cannot direct evolution." Why ?

(iii) "Chromosomes inherited from the father determines the sex of a child." Explain.

Ans. :

(i) Gives the information that, fossils which are closer to the surface are most recent than those in deeper layers.

(ii) Change in non-reproductive tissues cannot be passed on to the DNA of germ cells.

Experiences gained by the organism is not transferred to the DNA and cannot be transferred to the next generation. (Any *one*)

(iii) All children will inherit an *X* chromosome from mother.

Child who inherit an *X* chromosome from father will be a girl.

Child who inherit an *Y* chromosome from father will be a boy.

April 2020

1. The gene for brown coloured hair is recessive that of gene for black coloured hair. What is the hair colour of a person who has inherited a gene for brown coloured hair from mother and black coloured hair from father ?

Ans. :

Black coloured hair

2. The plant bearing round yellow coloured (*RrYy*) seed are self pollinated with the same plant. Represent the result obtained in the *F*2 generation of dihybrid cross with the help of a checker board. Mention the varieties of plants obtained in *F*2 generation. (4Marks)

Ans :

Gametes	*RY*	*Ry*	*rY*	*ry*
RY	*RRYY*	*RRYy*	*RrYY*	*RrYy*
Ry	*RRYy*	*RRyy*	*RrYy*	*Rryy*
rY	*RrYY*	*RrYy*	*rrYY*	*rrYy*
ry	*RrYy*	*Rryy*	*rrYy*	*rryy*

The plants obtained are

Round yellow — 9

Round green — 3

Wrinkled yellow — 3

Wrinkled green — 1

OR

What is evolution ? Explain the three evidences for evolution. (4Marks)

Ans : Phenomenon of gradual change of organisms from simple form into complex form in a long period is called evolution.

Three evidences are :

i) *Homologous organs* :

The organs which have same basic structures but modified to perform different functions are called homologous organs.

Provide the information that organisms of different species might be evolved from common ancestor.

ii) *Analogous organs* :

The organs which have different basic structures but they perform similar function are called analogous organs.

Provide the information that though the organs of different organisms perform same function, they may not have same function but they may not be evolved from common ancestor.

iii) *Fossils* :

The dead remains of past organism under the rocks/deep earthen layers are called fossils.

They help to study evidence and missing link between different species.

They help to understand the sequence of evolution and help in classification of organisms.

September 2020

1. Explain the two methods to estimate the age of fossils. (2Marks)

Ans. :

- Relative method — If we dig into the earth, the fossils we find closer to the earth's surface are more recent than the fossils we find in deeper layers.
- By detecting the ratios of different isotopes of the same element in the fossil material.

2. Mendel crossed plants bearing red flowers (*RR*) with the plants bearing white flowers (*rr*) and produced progeny from them. The plants with red flowers obtained in *F*1 generation were different from the plants with red flowers of parental generation. Why ? Explain with reasons. (3Marks)

Ans. :

- In parent generation, plant bearing red flowers has both the dominant traits *RR*. In parent generation, plant bearing white flowers has both the recessive traits *rr*.
- *F*1 generation plant inherits one copy of dominant trait (red) and one copy of recessive trait (white) from the parental plants *Rr*. But only the dominant trait (red) is expressed.

MOST LIKELY QUESTIONS FOR 2021(Including previous year questions)

1. How does the creation of variations in a species promote survival?

Ans :

- The variations provide stability to the population of various species by preventing them from getting wiped out during adverse conditions.
- The natural environment also changes, and variations in species which become suited to the environment help it to survive.

2. How do Mendel's experiments show that traits may be dominant or recessive?

Ans :
When plants with two contrasting characteristics are crossed each other , the characteristics appeared in first generation were called dominant (i.e. tall plants) and the characteristics that did not appear were called recessive (dwarf i.e. plants).

3. How do Mendel's experiments show that traits are inherited independently?

Ans :

When tall-round seeded plant is crossed with short-wrinkle seeded plant , we find new combinations in F2 progenies like tall-wrinkle seeded and short-round seeded plants .

This shows that the tall/short trait and the round seed/wrinkled seed trait are independently inherited.

4. What are the different ways in which individuals with a particular trait may increase in a population ?

Ans :

- If it gives the benefit of survival through natural selection.
- Due to a sudden increase in a particular trait in a population, i.e., by genetic drift.

5. “Traits acquired during the life-time of an individual is not inherited” . Explain with suitable example.

Answer:

The traits acquired during the life-time are changes in the non-reproductive cells of the organisms and are not capable of being passed on to the next generation.

If a rat accidently lost its tail or we remove it intentionally , this is an acquired character. But this character does not inherited because all progenies of rat are born with tail

6. What are fossils ? What do they tell us about the process of evolution ?

Ans:

Fossils : Fossils are the remains or traces of a dead organism. These are formed through the formation of sedimentary rocks. They provide following information on the process of evolution.

1. They tell about the gradual development of complex structured organisms from simple structured organisms.

2. It is known through them that birds are evolved from reptiles.

7. Why are human beings who look so different from each other in terms of size, colour and looks said to belong to the same species ?

Ans:

Humans may be slightly different in different races of people, but there is no reproductive isolation.

Reproductive isolation differentiates one species from the other.

Human beings may be different in size, colour and looks , they can marry among themselves and produce fertile offspring.

8. In evolutionary terms, can we say which among bacteria, spiders, fish and chimpanzees have a ‘better’ body design ? Why or why not ?

Ans:

Bacteria is a primitive organism as they came into being very early in evolution. But these organisms are still surviving in the present conditions after millions of years. This is because they have adapted well to the changing environment over these years. Same is the case for all other organisms like spiders, fishes and chimpanzees which have adapted to their environment and have survived. Therefore, all the organisms which exist have a body design which is better as it is suited to their environment.

9. Only variations that confer an advantage to an individual organism will survive in a population. Do you agree with this statement ? Why or why not ?

Ans:

No, many of the times the variations are not advantageous to an individual organism but still survive in a population, e.g., take the case of free ear lobe and attached ear lobe.

Some times , variation may be advantageous or disadvantageous to an individual. Ex : feather coloration in peacock is advantageous as it is used attract the opposite sex. But it is disadvantageous as it is recognised by the predators.

CHAPTER 15
Our Environment

ISARADDI'S CLASSES

In this topic only concept 15.2 HOW DO OUR ACTIVITIES AFFECT THE ENVIRONMENT? **is considered for examination**

1. What is ozone and how does it affect any ecosystem?

Ans : Ozone is a molecule formed by three oxygen atoms (O_3)

2. How ozone layer is formed ? Explain with equations

Ans :

- Ozone at the higher levels of the atmosphere is a product of UV radiation acting on oxygen (O2) molecule.
- The higher energy UV radiations split apart some molecular oxygen (O2) into free oxygen (O)atoms.
- These atoms then combine with the molecular oxygen to form ozone

$$O_2 \xrightarrow{UV\ light} O + O$$

$$O + O_2 \rightarrow O_3\ (ozone)$$

3. Why is damage to the ozone layer a cause for concern? What steps are being taken to limit this damage?

Ans :

- The damage to the ozone layer is a cause for concern because if the ozone layer in the atmosphere disappears completely, then harmful ultraviolet radiations coming from the sun would reach the earth. These ultraviolet radiations would cause skin cancer and other ailments in human beings, animals and also damage the plants.
- Ozone layer is damaged by the substance called chloroflourocarbons (CFC) , so we have to avoid using such substances.
- The United Nations Environment Programme (UNEP) unanimously forged an agreement among its member countries to freeze CFC production .

4. Why are some substances biodegradable and some non-biodegradable?

Ans : Substances that are broken down by biological processes are said to be biodegradable.

In our environment, many of the substances are broken easily by decomposers

However, there are other substances also which are not broken down in this manner and are known as non-biodegradable substances.

Since these substances are not degraded by decomposers, so they persist for a long time.

5. Give any two ways in which biodegradable substances would affect the environment.

Ans :

a. They may produce foul smell during decomposition process.
b. They may produce some harmful gases such as ammonia, methane, carbon dioxide, etc., which can further-cause global warming.
c. These substance are the sources for harmful microbes and can spread diseases.

6. Give any two ways in which non-biodegradable substances would affect the environment.

Ans :

a. These inert substances simply persist in the environment. This means that these substances require land area for dumping.
b. Excess of fertilizers, pesticides and other chemicals changes soil chemistry and also affects aquatic life.
c. Most of these chemicals and heavy metal are easily absorbed by the organisms. This causes biological magnification.

7. How can you help in reducing the problem of waste disposal? Give any two methods.

Ans :

(i) Preparing compost : All biodegradable wastes like, kitchen waste , cattle wastes can be dumped in the compost pit.

(ii) By following 3 R's : Reduce , reuse and recyle

- By opting biodegradable substances in our daily life
- Reusing and recycling of plastics and papers

CHAPTER 16

Sustainable Management of Natural Resources

ISARADDI'S CLASSES

Previous questions from SSLC Board

April 2019

1. By constructing Khadin check-dams in level terrains, (1Mark)

(A) underground water level decreases

(B) underground water level increases

(C) vegetation in the nearby areas are destroyed due to excess moisture

(D) underground water gets polluted

Ans. :

(B) — underground water level increases

2. List the disadvantages of using fossil fuels. (2Marks)

Ans :

- When these fhels are burnt, the products are oxides of carbon, water, oxides of nitrogen and oxides of sulphur.
- Oxides of nitrogen and sulphur may lead to acid rain.
- Carbon dioxide is a greenhouse gas. When its concentration in the atmosphere increases continuously, leads to intense global warming.

OR

List the advantages of 'reduce' and 'reuse' to save environment.

Ans :

- By the practice of 'Reduce', we can save

  (i) Electricity (ii) Water (iii) Food (iv) Natural resources.

- By the practice of 'Reuse'

  (i) Environment pollution can be controlled

  (ii) Materials are available for immediate use

  (iii) Energy can be saved

  (iv) Use of raw materials can be minimised.

June 2019

1. (i) How does combustion of fossil fuels cause greenhouse effect ? (3Marks)

(ii) List the reasons for failure in sustaining ground water.

Ans :
(i) Combustion of fossil fuels Releases carbon dioxide to the atmosphere .

The increase in carbon dioxide leads to global worming

(ii) Reasons for failure in sustaining ground water-

- Deforestation
- Growing crops which demand high water
- Pollution due to industrial effluents
- Pollution due to urban wastes.

OR

(i) Reuse of plastic products is better than recycle method. Why ?

(ii) "Local people are stakeholders of forest resources." Explain.

Ans :
(i) In recycling method energy is required , which in turn leads to pollution . There is no need of energy in reuse method.

(ii) Local people depend on forest resources for following purpose -

- For fire wood : Timber and Thatch.
- For bamboo used in huts & baskets
- For implements of agriculture, fishing and hunting.
- To gather fruits, nuts and medicines.
- To fodder for their cattles.

April 2020

1. "Building crescent shaped earthen embankment in level terrain is better than the construction of large dams across the river to store water." Analyse this statement with their effects. (3Marks)

Ans. : Problems of constructing large dams across the river -

- Social problems : Effects of the construction of large dams across the rivers
- Economic problems : Swallop up huge amount of public money.
- Environmental problems : They contribute enormously to deforestation and loss of biological diversity.

Advantages of building crescent shaped earthen embankment in level terrain :

- They recharge the ground water beneath.
- Water does not evaporate, but spreads out recharge wells and provide moisture for vegetation.
- It does not provide breeding grounds for mosquitoes like stagnant water

September 2020

1. In the alpine meadows of the great Himalayan National Park, the practice of regular grazing by sheep was put to an end. What are the effects on the meadows due to this measure ? (1Mark)

Ans. :

Without the regular grazing by the sheep, the grass first grows very tall and then falls over preventing fresh growth.

MOST LIKELY QUESTIONS FOR 2021(Including previous year questions)

1. Why do you think that there should be equitable distribution of resources? What forces would be working against an equitable distribution of our resources?

Ans :

- Everyone has rights to use natural resources. There should be equitable distribution of resources so that all, rich, powerful and poor people get benefit from the development of these resources.
- Rich, greedy and powerful people could work against an equitable distribution of our resources.
- These resources does not reach the people those are far away from their availability.

2. "A short-term goal in resource management is disadvantageous" Justify the statement.

Ans :

- Exploiting resources with short term aim would be self-centred satisfaction. They provide immediate advantages. But later it will be hazardous to the environment.
- For example : Constructing huge dams may fulfill our present need. In long term it cause adverse effect on environment

3. It is essential to have long-term goal in resource management. Why ?

Ans :

The resources can be used for the benefit of the present generation and also conserved for the benefit of generations to come.

This ensures uniform distribution of resources among the people.

4. How can you as an individual contribute or make a difference to the management of

(a) forests and wildlife, (b) water resources and (c) coal and petroleum ?

Ans :

(a) forests and wildlife -

* By reusing and reducing papers we may contribute the conservation of forest

* By refusing the purchase of things made of wild life we may contribute the conservation of wildlife

(b) water resources -

* By reusing waste water for garden

* By refusing things like detergents we may prevent water pollution

(c) coal and petroleum -

* By using public transport rather than individual we can conserve fuels

* By avoiding unnecessary use of electricity

5. "Managing forest and wildlife is challenging task" Justify the statement by any two examples.

Ans :

- It is difficult to observe the activities of people living in and around forest
- Difficulties in controlling the forest fire
- To control the encroachment of forest area
- Hunting wildlife for ethnic tradition

6. Who are the stakeholders ?

Ans :

(i) the people who live in or around forests are dependent on forest produce for various aspects of their life
(ii) the Forest Department of the Government which owns the land and controls the resources from forests.
(iii) the industrialists –who use various forest produce,
(iv) the wildlife and nature enthusiasts who want to conserve nature in its pristine form.

7. Give any two examples for People's Participation in the Management of Forests

Ans :

- Amrita Devi Bishnoi, sacrificed her life along with others for the protection of khejri' trees in Khejrali village .Rajasthan.

- The Chipko Andolan, result of a grass-root level effort to end the alienation of people from their forests. The movement was originated in a remote village called Reni in Garhwal

- With the active and willing participation of the local community, the sal forests of Arabari underwent a remarkable recovery.

8. List any four human activities for deforestation.

Ans :

- Converting forest land in to an agricultural land
- Mining in forest area
- Constructing dams and roads in forest area
- Hectic use of forest products like timber , paper etc.