

Section: B

Question: 02

Short Questions:

— (ii) —

Answer:

In vitro Fertilization:

In vitro fertilization can be defined as the fertilization of the ovum outside the body of the female.

Conditions:

In vitro fertilization is necessary in the following conditions:

- * Less production of sperm in male body.

- * Blockage of fallopian tube in female's body.
- * Low motility of sperm.

Process:

The female body is injected with hormones in order to produce multiple ovums. One ovum is taken in a petri dish and sperm is matched with it and after fertilization the zygote is inserted to the female body for further procedure of pregnancy.

In vitro fertilization is outside process from the body in which the egg is fertilized from the sperm outside the female body and has guaranteed pregnancy if having no some problem inside.

~~Q1)~~

Answer:

Antidiuretic Hormones: (ADH)

Secreted by: - It is the hormone secreted by the posterior pituitary gland.

Function:

- Anti-diuretic hormone (ADH) plays an important role in the reabsorption of glomerular filtrate.

- ADH absorb water from the kidney tubules.

- It plays an important role in osmoregulation of the body by reabsorption.

Need:

- When there is water needed to the body so, ADH hormone is released in order to maintain water balance of the body.

Oxytocin:

- Oxytocin is the hormone secreted by posterior pituitary gland.

Function:

There are multi-functions that are performed by Oxytocin:

1. Oxytocin plays an important role in delivery of the baby by contracting and relaxing the uterus in order to deliver baby safely.

2. Oxytocin perform role in triggering the milk from the nipples of female.

3. Oxytocin is also known as love hormone that is secreted for excitement.

~~(iii)~~

Answer:

Pea Plant chosen by Mendel for his Experiment:

Mendel choose pea plant for his experiment because of the following reasons;

* Easy To Grow:

Mendel choose pea plant for experiment because pea plant was easy to grow in pots or small area.

* Short life Cycle:

Mendel choose pea plant because pea plant has the short life cycle and can grow in short interval of time.

Pollination:

Both the types of pollination are possible in pea plants.

Self Pollination:

Self pollination is possible in pea plants.

Cross Pollination:

Cross pollination is also possible in pea plants.

Contrasting Characters:

Due to the presence of many contrasting characters in pea plant Mendel choose pea plant for his experiment.

~~(iv)~~

Answer:

Semi Conservative model of DNA Replication:

Semi conservative model of DNA replication is the correct model used for DNA replication.

Presented By:

Semi conservative model was presented by Watson and Crick who also presented the double helix structure of DNA molecule.

According to Semi Conservation Model:

According to Semi Conservation model of DNA replication it was stated that;

When DNA is about to replicate first it is divided into two separate strands by the help of enzyme known as DNA polymerase.

After that both the strands develop into a daughter DNA.

Parent DNA:

The DNA which is about to replicate is known as parent DNA.

Daughter DNA:

The DNA produced as a result of replication of parent DNA is known as daughter DNA.

~~(vii)~~

Answer:

Deforestation:

The irregular cutting of tree from the forests or other area for personal purposes is known as deforestation.

- Deforestation is very dangerous to the environment.

Effects of Deforestation on the Environment:

Deforestation have many dangerous effects on the environment. Which are as follows;

Deficiency of Oxygen:

As trees are known as the lungs of the earth. Trees produce oxygen O_2 . So, due to deforestation there will be deficiency of Oxygen.

Destroy habitat for Animals:

As many birds and animals lives in trees so, by deforestation, their habitat will be destroyed.

Soil Erosion:

Trees inhibit soil erosion. If there will be no trees the soil will erode and will not be able for growing crops etc.

Pollution:

Deforestation is the main cause of pollution. Deforestation can cause pollution mainly Air pollution which is very harmful for living beings.

~~(ix)~~

Answer:

Ribs:

Ribs is the cage like structure around the internal organs that protect it from damage.

- There are Twelve pairs of ribs which are divided into following categories;

True Ribs:

True ribs are those ribs that are attached directly to the sternum.

- 7 out of 12 pairs are directly attached to the sternum and are known as true ribs.

False Ribs:

- Ribs that are indirectly attached to the sternum through costal cartilage are known as False ribs.

- Three 3 out of twelve 12 pairs of ribs are called floating ribs.

Floating Ribs:

- Ribs that are not attached to the sternum and floating separately are known as floating ribs.

- 2 pairs out of 12 pairs of ribs are called floating ribs.

~~Diagram~~

~~(x)~~

Answer:

Skin as a Thermoregulatory organ:

Our skin consist of pore from which the hairs are grown.

These pores plays their role in the thermoregulation process by maintaining the optimum body temperature (37°C).

Procedure:

High Temp: When the body temperature rise above the normal temperature so, our skin pores started secretion salt in the form of sweat in order to reduce the body temperature to normal (37°C).

Vaso-~~con~~strict
Vaso-dilate

At Low Temperature:

When the temperature is below the normal so the pores closed and the hair stands on it in order to prevent heat loss from the body to warm the body to normal (37°C).

So, in this way skin is known as thermoregulatory organ as it plays a key role in preventing the body to rise its temperature above the normal and prevent the body to become cool due to low temperature.

Viii

Answer:

Biotechnology:

Biotechnology is the branch of biology in which the organisms are used for the welfare of the human beings.

OR

The use of organisms for the welfare of human beings, this branch of biology is called Biotechnology.

Importance:

Biotechnology has a very great importance in human life. There are many products produced through biotechnology which are very useful.

x. Genetically Modified Organisms (GMOs):

Genetically modified Organisms are those organisms whose genes are modified for some personal use.

For Example;

Genetically Modified Cow:-

A specific gene is inserted in cow due to which the milk production is increased upto twice or thrice than the normal production.

Genetically Modified Chicken:

Genetically modified Chicken is produced for the more production of meat and they grow in little span of time upto 2 months.

Insulin:

- Insulin is produced by the process of Biotechnology for the treatment of Diabetes patients.

It is prepared by rDNA technology.

- Insulin is inserted to the patients whose liver doesn't produce proper insulin in order to reduce glucose level of body.

— (xi) —

Answer:

Fracture:

The breaking of bone at any place due to the applying load more than its potential is known as fracture.

Types of Fracture:

Following are the types of fracture:

Simple Fracture:

- The type of fracture in which the bone is broken but the skin remain intact.

- There is no tearing of skin occur and just bone is broken inside the body.

Compound fracture:

- The type of fracture in which the bone is broken as well as the skin is also teared due to the sharp bone.

- The skin is also teared and the blood vessels are damaged due to which never bleeding occurs.

Diagram

— (xii) —

Answer:

Resting Membrane Potential (RMP):

- It is the type of membrane potential in which neuron remain more positive inside than outside.

Active Membrane Potential (AMP):

- It is the type of membrane potential in which neuron is more positive outside than inside.

Difference:

- Here is the difference between AMP & RMP;

Action Membrane Potential Resting Membrane potential.

AMP occur when neuron is more positive outside than inside.

It occurs when neuron is stimulated.

- It occurs for short span of time

The voltage for AMP is 50mv.

1. RMP occurs when neuron is more positive inside than outside.

2. It occurs when neuron is at rest.

3. It occurs for long time period.

4. The voltage for RMP is -70 mv.

Section: C

Question: OS

(5)

Skeletal System of Humans:

Skeletal system of human beings can be defined as a frame work of bones that give proper shape and support to the body.

Parts of Human Skeleton:

Human skeleton is divided into two main parts;

- 1) Axial skeleton
- 2) Appendicular skeleton.

Here I'll discuss just the Axial skeleton;

Axial Skeleton:

Axial skeleton consists of the following parts:

- 1) Facial Bones.
- 2) Vertebral Column
- 3) Ribs
- 4) Cranial Bones
- 5) Sternum.

Cranial Bones:

There are eight cranial bones in the skull region that protects the brain they are;

Paired	Unpaired
2- Parietal bone	1- Frontal bone
2- Temporal bone	1- Occipital bone
	1- Ethmoid
	1- Sphenoid

Facial Bones:

There are fourteen 14 facial bone the form the facial region of skull. They are.

Paired

Maxilla - 2
Nasal - 2
Zygomatic - 2
Inferior conchae - 2
Lacrimal - 2
Palatine - 2

Unpaired

Mandible - 1
Vomer - 1

Hyoid
Stimulus

Ear bones:

- There are six small bones that are present in ears.

Malleus - 2

Incus - 2

Stapes - 2

All the ear bones are paired.

Vertebral Column:

Vertebral column consists of 33 - vertebrae that are around spinal cord in order to protect it from damage they are;

Cervical Vertebrae:

There are 7 - seven vertebrae that are present in the cervical region.

Thoracic Vertebrae:

- There are 12 twelve vertebrae that are present in Thoracic region.

Lumbar Vertebrae:

There are five S Lumbar vertebrae that are present in Lumbar region.

Sacrum:

There are S Sacrum vertebrae.

Coccyx:-

Coccyx region is having four vertebrae and one bone known as tail region.

Ribs:

There are twelve pairs of ribs connected with Sternum and protect the internal organs.

7 seven pairs are directly connected to sternum are called true ribs.

3 pairs are indirectly connected called false ribs. Two pairs are not connected called floating ribs.

Question: 06

~~(a)~~

Insight Learning:

It is the type of learning behaviour in which the organisms learn not by trial and error but due to thinking and producing the conclusion of the task that how it should be performed.

Can't involve trial and error:

Insight learning can't be done without trial and error method but it is done by thinking and finding conclusion of the problem or task that is assigned;

Experiment:

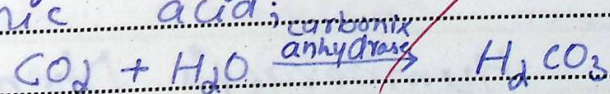
The experiment was performed on a monkey in which the bananas were hung and stick was given in order to take these bananas but the monkey can't reach to get bananas so, the monkey thought the way to get bananas so, it brought the boxes arranged it in a specific manner and then climb up the boxes and got the bananas.

So that's the insight learning in which it thought that how to get bananas and got its conclusion. So trial and error is not involved.

Transport of CO_2 as a bicarbonate ion:

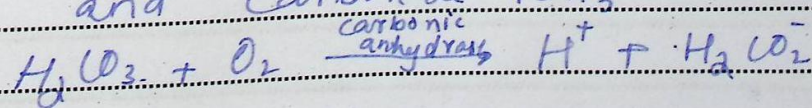
- 70% of Carbon dioxide can be transported as a bicarbonate ion.

- When CO_2 reaches the blood it react with water to form carbonic acid;



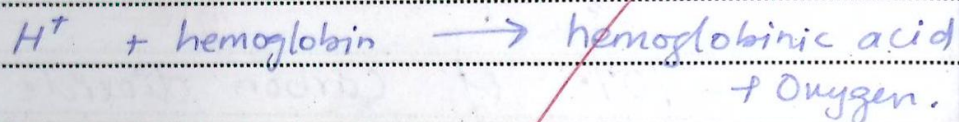
It occurs in the presence of carbonic anhydrase enzyme.

As H_2CO_3 is unstable so it react with Oxygen to form Hydrogen ion and carbonate ion;



Due to H^+ ions the acidity of blood increases but due to some buffers it doesn't occur.

Hydrogen reacts with hemoglobin to produce hemoglobinic acid and O_2 .



As, the carbonic acid goes outside and Chlorine comes inside so, neutralises the acidity - due to which the phenomena occurs known as

Humberger's Phenomena:

Question: 04

(b)

Applications of PCR:

Following are some application of Polymerase Chain Reaction PCR.

1- Gene Sequencing:

It is used in Gene Sequencing.

2- Genome Analysis:

PCR is used in Genome Analysis.

3- Detection of Pathogens:

PCR is used in detection of pathogens.

4. Detect Mutation:

PCR is used to detect mutations in genes.

5. DNA finger printing:

It is also used in DNA fingerprinting.

6. Gel - Electrophoresis:

PCR is used in Gel electrophoresis.

7. Gene Cloning:

PCR is used in Gene Cloning.



Bombay Phenotype:

Bombay Phenotype is a type of epistasis in which the process is that:
- There is a gene H on the chromosome 19 which recognize the ABO blood group of a person.

- Here we should have some cases that represent Bombay Phenotype but their blood group is O but they having Antigen A and Antigen B so, it is proved that there is another factor named H-factor that recognize the blood group as A B O.

A person having HH
will be recognizable as blood
group A or B.

A person having heterozygous
Hh will also be recognizable
because H is dominant over
h gene.

A person having homozygous
recessive hh will be having
blood group O all because
they don't have h factor although
they have Antigen A and B.

So, it is concluded by
Bombay phenotype that another
gene named H is also involved
in ABO blood group recognition.

Handwritten notes:
Genotype
recessive form
Importance of
Antigen