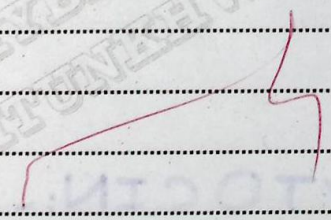
SECTION (B)

Q NO: 02

(i)

FUNCTION OF ADH:-



It is the hormone released by posterior lobe of pituitary gland. It's main function is the reabsorption of water during the process of

urine formation. It is secreted by posterior pituitary gland when there is low amount of water in body. It opens the channel of collecting tubules which is usually impermeable to water. In this, it's release is useful in the retention of water.

OXYTOCIN:-

It is also released by the posterior lobe of pituitary gland.

It's main function is to regulate the uterine contraction. contraction during the delievery of baby. The head of the baby stimulate the receptors in turn of which the release of oxytocin is triggered by posterior lobe of pituitary gland which causes the safe expulsion of baby during late pregnancy.

(ii)

IVF:-

It is the

advance technique in which the fertilization of egg is done in external environment instead of mother's body.

PROCEDURE:-

In this procedure, the healthy sperms from the body of male is taken and stored in cool medium. The egg which is also taken from the body of female is placed in a suitable medium. In this medium the sperm is mixed with an ovum to produce zygote. This medium contains all the nutrients required

for the zygote. The zygote is developed and then implanted in the body of female where the normal process of development take place.

IMPORTANCE:-

It is an important technique to cope with the female infertility where fertilization does not occurs because of the blockage of fallopian tube and also when there is low sperm count in male

(iii)

Mendel chooses pea plant for his famous experiments because of the following main reasons:

REASONS:-

★ It is easy to grow in pot and fields.
★ It has short life generation.
★ It has sharp and easily distinguishable traits.
★ It can reproduce through self-pollination
★ Cross pollination is also possible.

★ It is fairly resistant to pests.

(iv)

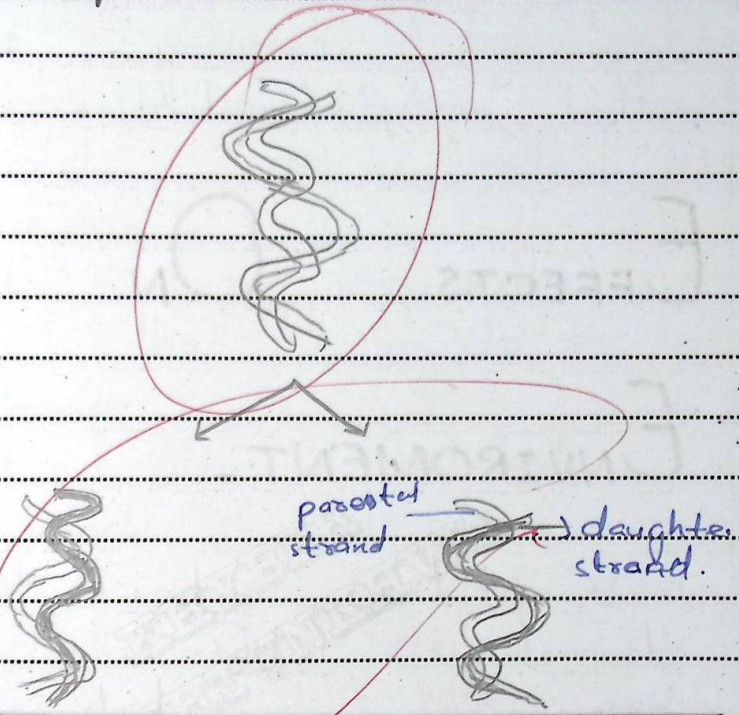
SEMI-CONSERVATIVE MODEL OF DNA:-

Introduction:

This model was proposed by Watson and Crick who also discover the structure of duplex DNA structure.

According to this model the duplex structure of DNA unwinds and the new daughter DNA is formed which has the one strand of the parental DNA and the new strand. In this way it is able to reproduce a daughter DNA in which the parental DNA is partially conserved. Because of the success of this model proved by Stahl experiment it is the most accep-table model.

DIAGRAM:-



(Vii)

DEFORESTATION:-

It is

the removal of plants and trees in an un-mannered way is called deforestation.

EFFECTS ON ENVIROMENT:-

Deforestation has severe dramatic effects on environment which are given below:

★ It causes the loss of habitat for wild life.
★ It is one of the main reason for less rainfall.

★ It causes the soil erosion.
★ It reduces the natural source of food for animals as well as humans.
★ It is responsible for the climate change.
★ It also contributes towards global warming.
★ It may be the indirect cause of the flood in certain region.

BIOTECHNOLOGY:-

The field of biology which deals the techniques and procedures which have prolific effects on the life of human beings is called "Biotechnology"

IMPORTANCE:-

Following are the two main examples which describes it's importance.

★ RECOMBINANT DNA TECHNOLOGY:-

It is the process in which a gene of interest is incorporated in an organism to form recombinant DNA.

Uses:- It can be used to achieve human insulin.

★ DNA SEQUENCING:-

DNA sequencing is the method to find the structural composition of DNA nucleotides.

Uses:- It is highly useful in the investigation of crimes.

(Vi)

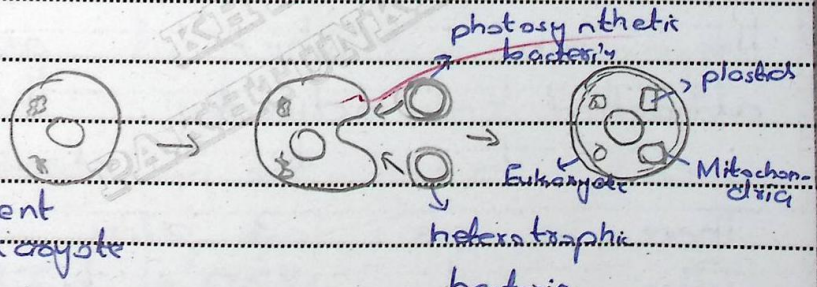
ENDOSYMBIOTIC THEORY OF EVOLUTION:-

It is the theory which suggests that eukaryotes are formed by the migration of some photosynthetic and heterotrophic bacteria in the ancient prokaryotes.

EXPLANATION:-

In this process the photosynthetic bacteria which was

able to synthesizs food in the presence of light invaded in ancient prokaryote to form plastids. Similarly, a heterotrophic bacteria also invaded which results in the formation of mitochondria. In this way eukaryotes are formed



(ix)

TRUE RIBS:-

These are the ribs attached directly to the sternum (chest bone). There are 7 pairs of these ribs in humans.

FALSE RIBS:-

These are the ribs which are attached indirectly through arch to the sternum. There are 3 pairs of false ribs in humans.

FLOATING RIBS:-

These are the ribs

which are not attached to the sternum. There are 2 pairs of floating ribs in humans.

(x)

Skin is a thermoregulatory organ because it is involved in thermal regulation. It can be done through heat loss and heat conservation

HEAT LOSS:-

In heat loss, there is vasodilation in which the blood vessels beneath the

skin epidermis dilates and cause loss of heat from the blood through skin. Skin can also lose heat through sweating.

HEAT CONSERVATION:-

In heat conservation there is vasoconstriction in which the blood vessels beneath skin epidermis and the heat is conserved. Moreover, the skin epidermis has fatty tissue layer and follicle hair which also conserve heat by forming goose-bumps.

Conclusion:-

From the above discussion, it is clear that skin regulates the temperature of body and act as thermoregulatory organ.

(XIII)

SYNAPSE:-

It is the small gap between pre-synaptic neuron and post synaptic neuron in which the nerve impulse is passed.

It is of two types:

ELECTRICAL SYNAPSE:-

In electrical synapse the impulse is passed through the electrical wave of nerve impulse. These gapes are very small such as. 0.2mm.

CHEMICAL SYNAPSE:-

In chemical synapse the nerve impulse is passed through certain chemicals called neurotransmitters. These synaptic clefts are of about 20mm

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SECTION (C)

Q NO: 06

a) INSIGHT LEARNING:-

It is a special type of learned behavior which is not acquired through trials and errors. It involves the logical and reasonable solution of problem just like a man find solution of the problem

by the unrelatable tools is called insight learning.

EXAMPLE:-

The insight learning can be seen in Chimpanzee when the bunch of banana is hung over the normal approach of these Chimpanzees then we can see that these Chimpanzee found table or stool or they form the linkage in which one chimpanzee stood over the other to reach the bunch of banana without any trials and errors or past experiences.

b) TRANSPORT OF CO_2 AS BICARBONATE IONS:-

Almost 70% of the CO_2 is transported in the form of Bicarbonate ion. In this process the CO_2 in the body combines with water to form Carbonic acid.

$$CO_2 + H_2O \rightarrow H_2CO_3$$

The carbonic acid is highly unstable form it dissociates with release of Hydrogen ion.

$H_2CO_3 \longrightarrow HCO_3^- + H^+$

Haemoglobin $+ H^+ \rightarrow$ Haemoglobinic acid

This H^+ ion may increases the acidity but soon it is neutralized by buffer solution of blood.

On the other hand carbonate ion diffuses into plasma. Here the neurotransmitter release Chloride Cl^- ion which is also a negative ion. The carbonate ion and chloride ion moves towards different direction and eventually the chloride ion combines with Potassium (K) to form Potassium chloride and carbonate ion is mixed with Sodium

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to form sodium bicarbonate. In this way CO_2 is transported in the form of bicarbonate ions. The movement of different direction of chloride ion is chloride shift.

Q NO: 04

a) EPISTASIS:-

It is the special type of relation in which the expression of one allele is controlled by the another which is situated or located on other chromosome.

BOMBAY PHENOTYPE:-

Bombay phenotype is an example of epistasis in which the individual having blood groups as A or B behaves like O blood group. The alleles for blood groups i.e I^A, I^B or i are located on chromosome 9. But here is the involvement of H allele which is located on chromosome 19. H allel form H substance which enables the allele I^A or I^B to form antigen A and antigen B. In the absence of H substance they are not

able to produce their respective antigens and the blood groups appears as O phenotypically e.g an individual with I^AI^A or I^Ai on chromosome 9 and hh on chromosome 19 there will be no production of antigen A and blood will show O phenotype. Same is the case for allele I^BI^B or I^Bi. So, Bombay phenotype is the example of epistasis in which the expression of allele for one chromosome is controlled by the alleles on different chromosomes.

b) Uses Of PCR:-

Following are the uses of PCR:-

- ★ It is used to detect the replication of microbes or infectious substances.
- ★ It can be used to detect any serious illness.
- ★ It can be used widely in industries.
- ★ It can be used to identify different genomes.
- ★ It can be used to produce many copies of DNA in short period of time.

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- ★ It can be used in DNA sequencing method.
- ★ It can be used in critical operation of crimes investigation.
- ★ It is also used for fingerprinting.

Q NO: 05

Axial Skeleton:-

Axial skeleton is the central skeleton around which different structures

are built. It is composed of following parts.

1) SKULL:-

The skull is made of cranium and face. Cranium is the case in which brain is protected through the fusion of bones through fibrous joints while face is made of facial bones which constitutes it's structure

★CRANIUM:-

It is made of 8 bones.

Frontal bone (1 bone)
Occipetal bone (1 bone)
Temporal bones (2 bones)
Parietal bones (2 bones)

Sphenoid bone (1 bone)
Ethmoid bone (1 bone)

★ FACE:-

It is made up of 14 bones:-

Zygometic bone (2 bones) form the cheeks region
Nasal conchae: (2 bones) forms the brinks of nose
Nasal inferior (2 bone) forms the interior part of Nose.
Lacrimal bone (2 bones) forms the medial orbit.
Palatine bones (2 bones) forms palatine region)
Maxilla bones (2 bones) forms the upper jaw
Mandible (1 bone) forms the lower jaw

* Vomer (1 bone) found at the region of upper lips and nose end.

2) EAR:-

Ear consists of smallest bones such as incus, stapes, malleus in each ear.

3) NECK:-

There is one "C shaped" bone called hyoid bone in the neck region

4) STERNUM:-

There is one bone in chest region called sternum

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4) VERTEBRAL COLUMN:-

There are 33 vertebrae which form vertebral column of the body. Those 12 in neck region called cervical vertebrae, 7 in chest region called thoracic vertebrae, 5 in lumbar region while 9 in pelvis region i.e 5 of those form sacrum and those remaining 4 form cocyxyl tail bone.

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5) RIBS:-

There are 12 pairs of ribs which form the protective cage for lungs and heart. Out of these 7 pairs are called true ribs connected directly with sternum, 3 pairs are called false ribs connected indirectly with sternum through remaining arch and called 2 pairs are as they floating ribs attached are not with sternum.