



Section B

Question 2

Part-(i)-

Function of Antidiuretic Hormone :-

Antidiuretic Hormone is secreted by pituitary gland. When the blood water level is low. The hypothalamus detect the fall and causes the pituitary gland to secrete ADH. The ADH causes the



Collecting ducts and distal convoluted tubules to permeable for water. Thus opening the channels between collecting ducts which retain the water molecules by kidney. Hence the blood water level rises and diluted urine is produced. This is detected by Hypothalamus and causes the ADH to stop secreting.

Function OF Oxytocin :-

This hormone is released during child birth. During child birth the baby's head cause pressure on uterine



walls causing uterine contractions
and in this response
oxytocin is secreted for
easy ejaculation of baby
from mothers body.

2nd Function

It also produces milk and
stimulation of milk from
mammary gland by causing
pressure on mammary glands.

Part - (ii)

Invitro Fertilization

IVF means invitro fertilization.
Invitro fertilization is the
fertilization of egg and

sperm outside the body or
inside the laboratory.

Procedure

In (IVF) the mothers are injected with ovarian hormones so they produce large number of eggs. These eggs are placed in lab in plates and fertilization is undergone after fertilization of egg and sperm outside body. The healthy embryos are implanted in mothers uterus.

Causes :-

IVF is caused because of blocked fallopian tubes or low production of sperms by male.



Part (iv)

Semi Conservative

model OF DNA

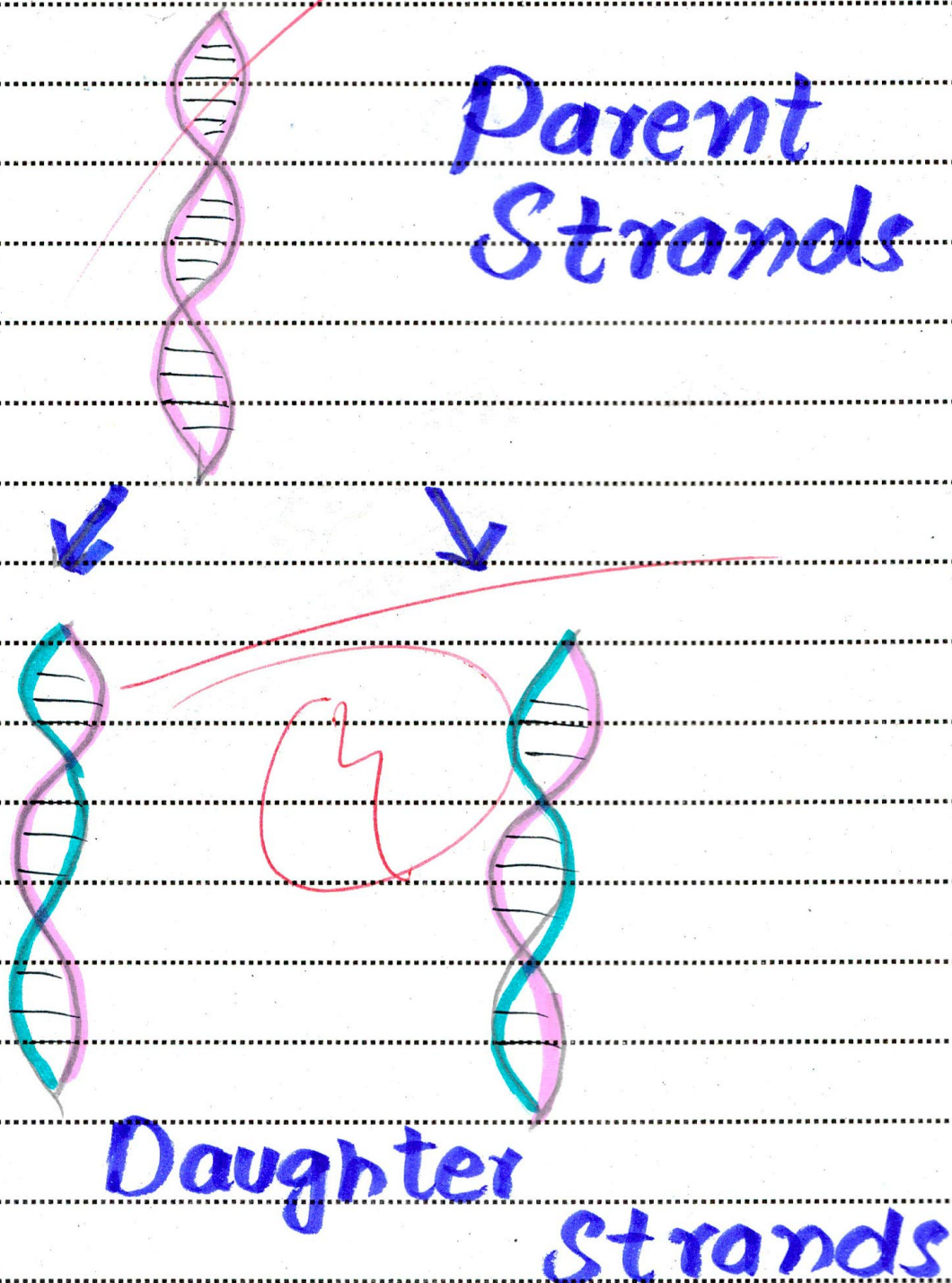
Replication :-

The Semi Conservative model of DNA was introduced by Watson and Crick who also introduced the structure of DNA. According to this model, the parental strands of DNA are unzipped or uncoiled their base pairs become separate and parent strands become



template strands . So daughter strands are produced.

The new daughter cells will have the old and new both strands.





Part No - vi -

Endo Symbiotic Theory OF Evolution :-

According to this theory, the eukaryotes are evolved from prokaryotes. The two separate mutual beneficial prokaryotes are invated which give rise to mitochondria and chloroplast. The ancestral mitochondria are heterotrophs. They undergo cellular respiration and produce energy.



The second invasion was chloroplast. which was also an organelle of eukaryotes.

The modern results of this theory explains that the eukaryotes are involved from prokaryotes and most of the properties of ^{Digest?} eukaryotes resembles that of prokaryote.

Part (iii)

Characteristics OF Pea plant

Mendel uses pea plant for his experiments because of following characteristics of Pea plant ;



- ① Pea plant was easy to cultivate and grow.
- ② It has 7 different traits.
It has different Homozygous and Heterozygous traits.
- ③ It has short time duration.
- ④ It's results are accurate.
- ⑤ It is not time wasting.
- ⑥ It is not affected by environmental conditions.



Part - (ix) -

True Ribs -

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

* 1st eight ribs are true Ribs.

False Ribs

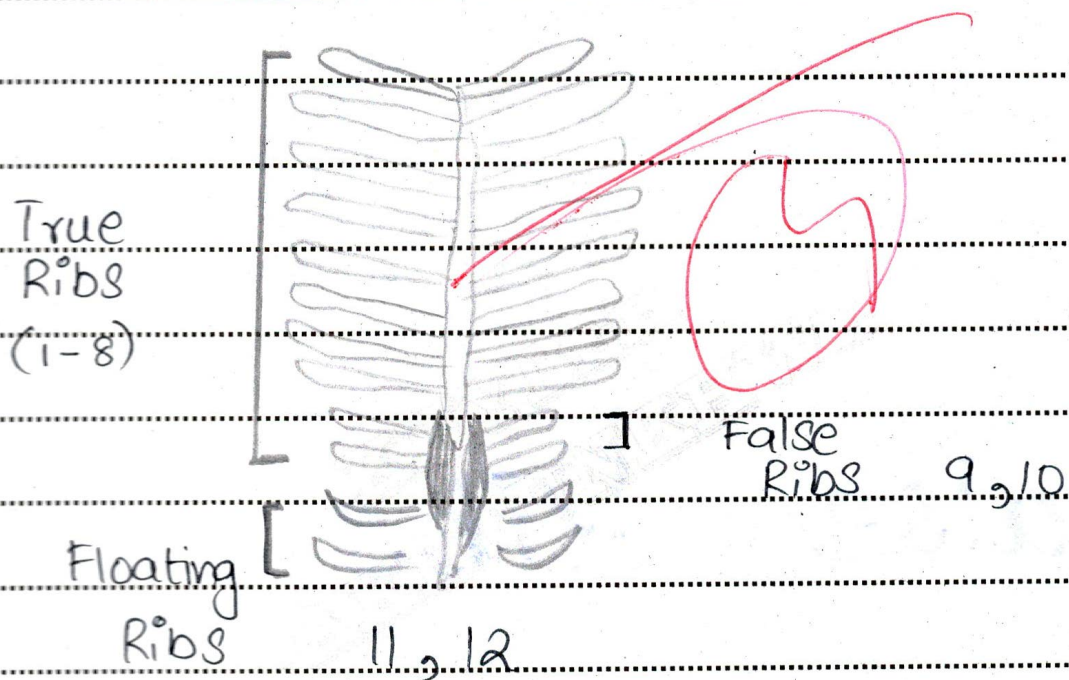
The ribs which are not attached to sternum directly are called false ribs.

* 9, 10 are false Ribs.



Floating Ribs

The ribs which are not attached to sternum and are floating are called floating ribs.



Part (xi)

Simple Fracture OF Bone :-

In this type of fracture, the skin is intact, the skin is not torn out. These types of fracture are not very complicated. These fractures can be treated by physician's hand.

Compound Fracture OF Bone :-

In this type of fracture, the skin is



not intact. The skin becomes wounded and other surrounding tissues also become damaged because these fractures are mild complicated.

These fractures can be treated by using surgical pins and using plaster for the part of body which is fractured so that the bone become intact without moving from it's place.

Part - (xii) -

Resting
Membrane potential



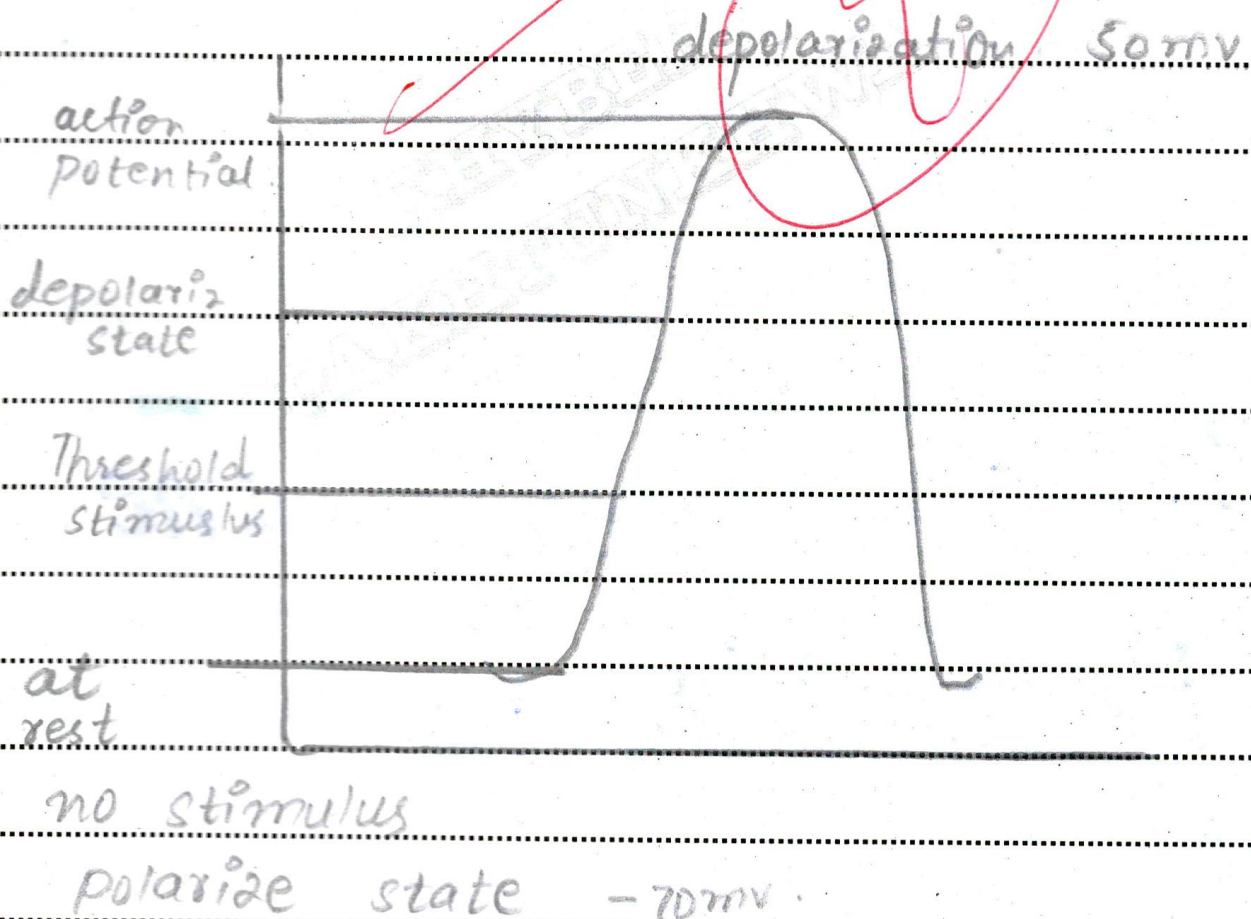
The resting membrane potential is developed because the neuron membrane is not being excited by threshold stimulus and not stimulated by some kind of nerve signal. The Resting membrane potential value is -70 mV . (-) sign shows that there is more negative inside membrane than outside. The membrane will remain at rest unless some stimulus not come.

Active membrane Potential :-

The active membrane potential is that in which the membrane is excited



because of threshold stimulus. This state at which membrane is stimulated is also called depolarized state. The value of action potential is 50 mv. This is the state at which there is more positive inside than outside.



Part - (xiii) -

Synapse :-

The junction between the axon terminals of one neuron or dendrites of another neuron so that message is transmitted from one neuron to other neuron with the help of microscopic gap is called Synapse.

Electrical Synapse

This is the most efficient synapse. In this synapse the message is transferred from Pre synaptic membrane

of neuron by going through a distance of 0.2 nm through synaptic cleft. So that action potential is achieved at post synaptic membrane by opening of Na^+ channels.

Chemical Synapse

The chemical synapse is undergone by a large number of cells. In this synapse the distance of synaptic cleft is 20 nm .

The message is transmitted from pre synaptic membrane to post synaptic membrane with the help of neurotransmitters.



Structure OF Synapse :-

Part - (X) :-

Thermo Regulation

Therm means heat and regulation means to regulate some effect. It is the regulation of temperature inside the

body with respect to
external environment

Skin as Osmo Regulatory Organ

The skin is defined as
the most miraculous
organ to control temperature.
When the temp of skin
becomes low so the
heat becomes to move
out of body through
epidermis. So in this
case our skin adapt
itself.

Goose Bumps

As heat
becomes to go out the



epidermal muscles forms
goose bumps so as to
prevent heat moving
outside and thus
internal temperature becomes
regulated.

Long Question

Question 5

Axial Skeleton OF Human :-

The Axial skeleton consist
of skull, Facial bones,
Cranial bones, ear
bones, Vertebral column,

Ribs .

Skull

Skull is the protective covering of brain. It protect the brain and provide it cushion. Skull consist of facial bones or cranial nerves.

Facial bones

Facial bones are the bones that are covering the face region. There are 14 facial bones. These are,

Zygomatic (2)

Iomer (1)

Inferior nasal conchea (2)



Nasal conchae. (2)

Maxilla (2)

Mandible (2)

patellae (1)

Lacrimal. (2)

Skull bones

Cranial Bones

Cranial Bones are covering the skull part (Brain).

There are 8 cranial bones.

Frontal (2)

Occipital (2)

Ethmoid (1)

sphenoid. (1)

parital. (2)

Temporal (2)



Ear Bones

There are six bones i.e.

Incus (2)

Malleus (2)

stapes. (2)

Vertebral Column :-

Vertebral column are the bones that are covering the spinal cord. Their function is to provide cushion to spinal cord.

There are 26 Bones of vertebral column.

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CONTINUATION SHEET

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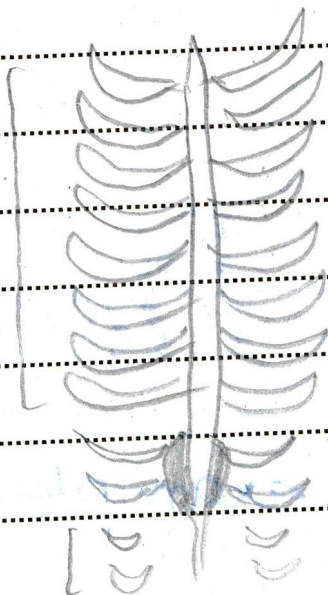
(صرف پورے استعمال کیلئے) امیدوار یہاں کچھ نہ لکھیں

Thoracic Region (Thoracic vertebrae) 12
Neck Region (lumbar vertebrae) (5)
Sacrum Region (Sacral vertebrae) (5)
Fused bones (coccyx) (4)
(tail bone)

Ribs :-

Ribs are divided into
true Ribs which are 8
False Ribs which are 9, 10
Floating Ribs which are 11, 12.

True
Ribs



False Ribs

Floating
Ribs



Question 4

Part (a)

Bombay Phenotype

Epistasis :-

The alleles of gene affect or mask the effect of genes present on another locus of chromosome.

Bombay Phenotype

This is the example of



In which due to a
recessive (hh) allele the
Blood group of a person
becomes (O Blood group).
The Blood group AB
becomes dominant in a
person because of a
dominant (HH) allele
which are present on
chromosome number 21.

ANTIGEN B

The antigen B protein produces
antigen B and antigen
B causes the dominant
allele (HH) to form blood
group AB.

ANTIGEN A

The same is the case with



antigen A due to dominant
allele the blood group
AB is produced.

Recessive Allele

(hh) The recessive allele
will hide the effect of
antigen A or antigen B.
causing the defective
blood group i.e. (O).

Dominant Allele

(HH) The dominant allele
(HH) will cause the
production of A or B.
producing blood group AB.
instead of (O).



Question 6

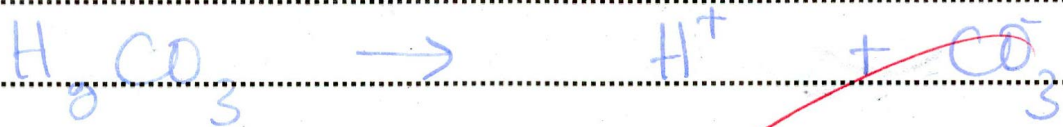
Part b :-

Transport of CO₂ As Bicarbonate ions :-

The CO₂ is mixed with Blood and react with water to produce carbonic acid



The H_2CO_3 is unstable and dissociates into Hydrogen, bicarbonate ions.



The Hydrogen ions causes acidity in Blood and decrease the pH. The hydrogen ions are balanced by Haemoglobin.

Homburgers Phenomenon :-

The Cl^- ions are moved in out to plasma or the Bicarbonate ions move inside the blood. This ions concentration are



balanced by chloride-
 Bicarbonate protein carriers.
 which maintain the balance
 of ions inside or outside
 the plasma. This is
 called chloride shift or
 Hamburger phenomenon.
 The chloride ions react
 with potassium forming
 potassium chloride or
 Na ions react with
 Bicarbonate inside plasma
 forming $\rightleftharpoons$ Sodium Bicarbonate
 ions.

Concentration of CO_2

Concentration of CO_2
 depends on partial pressure
 of CO_2 . If CO_2 is
 more in tissues than the
 phenomenon will be same.

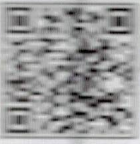


as discussed above. If concentration of CO_2 is more in blood then CO_2 will be released from Bicarbonates into tissues.

Application OF PCR

PCR stands for polymerase chain Reaction.

- ① It is used to find out DNA sequencing.
- ② It is used to find out DNA match.
- ③ It provide all data for gene expression.
- ④ Many students use PCR



machine for their
research on DNA and
Genome.

Insight learning

This is the type of
learning behaviour in
which the organism
solve the solution by
seeing it in first
time. It is not a
trial - error phenomenon.
The organism will respond
to stimulus which is
not watched by an
organism before.

Kohl's

Experiment :-

Kohl's experimented on chimpanzees. ^{Insight}
learning

First He Hanged the bunch
of bananas on top of
roof and sticks or
boxes dispersed in that
Room.

Chimpanzee's Reaction :-

The chimpanzee's first
used sticks to get
the bananas but this
failed than they
suddenly got the

Solution by using
boxes putting them on
one by one and
reached the roof top
and got the bananas.

So in this way in
first respond. chimpanzees
reached bananas by
sudden reaction or
idea.

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PAKET