



Section B

Question no. 02

(i)

ANSWER:

Function of ADH:-

ADH stands for Anti-Diuretic hormone.

It is released from posterior lobe of pituitary gland in result of high level of water in body.

→ Its function is to increase the permeability of collecting duct to increase reabsorption of water from kidney (filtrate) as a result of this reabsorption water level is

maintained in the body.

It was the case when there was a high level of water in the filtrate.

Oxytocin:

It is a hormone released from the posterior lobe of pituitary gland.

→ It is also called emotion hormones.

→ Other name for it is cuddling or love hormone.

→ Stimuli for this hormone is the rhythmic contraction of uterus during child birth.

→ It is released by positive feedback mechanism.

→ As the contraction of cervix (uterus) increases, release of oxytocin also increases.

→ As oxytocin increases, the contraction increases further and as a



result cervix contract more often thus as a result baby is expelled out of the body.

Note:

Both the hormones are released from posterior pituitary gland: But ADH is released by negative feedback while oxytocin is released by positive feedback mechanism.

(iii)

ANSWER:-

Mendel:

Full name of Mendel was Gregor Mendel. He is also called father of Genetics because of his work on pea plant for deriving laws of inheritance.

He worked on pea plant because of the following reasons.

1. Easy to cultivate.
2. Can do self as well as cross pollination.



3. Growth time is less. (i.e 3-months).

4. Can be grown in great amount in less area.

5. Has distinct characteristics i.e
Produces seeds in large number.

Seed colour	green	yellow
Pod colour	yellow	green.
Flower	Axial	terminal
Pod shape	round	wrinkled
Size	Tall	dwarf
Flower colour	white	purple.
etc. seed shape	wround	wrinkled.

Conclusion:

B/c of the above reasons, pea plant was selected by Mendell for his experiments.

(v)

ANSWER:

Transcription and translation.
both are the ^{steps} process of protien



synthesis.

Transcription:

It is the production of messenger RNA from a given sequence of a double stranded DNA.

It contains all those nucleotides which are opposite to the nucleotides of the given DNA.

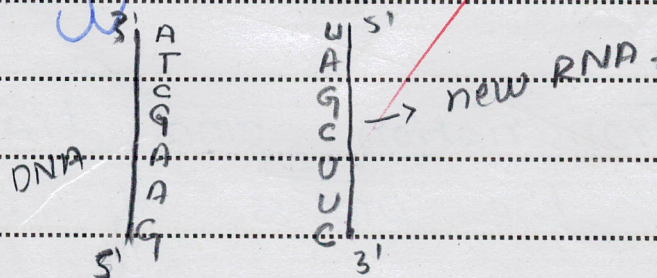
They are completed in three steps.

- (i) initiation
- (ii) Propagation
- (iii) Termination

(i) Initiation occur by DNA polymerase III enzyme.

(ii) Propagation occur by DNA polymerase II enzyme.

(iii) Termination occurs by DNA polymerase I enzyme.





Translation:

Translation is the process in which proteins are synthesized from the mRNA.

→ This occurs in the cytoplasm of prokaryotes and in Eukaryotes occurs in membrane of ^{rough} endoplasmic reticulum.

→ ||

(ix)

ANSWER:-

True, False and Floating Ribs:

TRUE RIBS:-

Those ribs which are directly attached with sternum are called True ribs.

They are 7-pairs out of 12 pairs of ribs.



FALSE RIBS:

Those ribs which are not directly attached with sternum but are attached to sternum through intercostal muscles of ribs.

→ They are 3-pairs out of 12 pairs.

Floating Ribs:

Also called free floating ribs.

→ They are not even attached to the sternum and are hanging just.

→ They are 2-pairs out of 12 pairs.

(xiii)

ANSWER:-

SYNAPSE:-

It is small, narrow junction between pre and post membrane of neuron. They help in the transmission of nerve impulse from pre nerve fibre to the post nerve



fibres, either through chemicals or through electrical signals. There are two types of synapses.

(i) Electrical Synapse:

The type of synapse in which the nerve impulse is transferred through electrical signals. Their synaptic cleft (i.e. space b/w pre and post nerve fibre is) so small that electrical diffusion can easily take place through it.

→ Synaptic cleft is 0.2 nm.

(ii) CHEMICAL SYNAPSE: -

The type of synapse in which nerve impulse is transferred through chemicals known as neurotransmitters.

The neurotransmitters are released from the vesicles of presynaptic membrane in result of a threshold

stimuli which then attach to the receptors on the post-synaptic membrane.

The synaptic cleft is about 20 nm.

Most of the impulse travels in human body through chemical synapse.

(x)

ANSWER:

Role of Skin In Thermoregulation:

The skin's immense blood supply helps regulate temperature. The dilated vessels allow for heat loss, while constricted vessels retain heat.

The skin regulates body temperature with its blood supply. Thus



assists in homeostasis by regulating body temperature.

Note:

Two main processes regulate body temperature.

Vaso dilation: in summer

Vaso constriction: in winter.

(vii)

ANSWER:

Effects of Deforestation on Environment:

As we know that a country 25% land should be covered with forests at least for its healthy environment.

Now deforestation has a deep effect on the health of country.

(i) It leads to air pollution which results in many health problems.



• It is the cause of global warming.

It causes soil erosion which ultimately leads to floods.

It also leads to desertification.

It increases green house gases in atmosphere.

(iv)

ANSWER:

Semi conservative Model of DNA:

According to this model after replication each daughter DNA strand contains one original strand and one new strand.

- This model was proposed by Watson and Crick and it is the most acceptable model.

In this parental DNA is partially conserved.



(vi)

ANSWER:

Endosymbiosis Hypothesis:

Lynn Margulis:

This idea was first given by Lynn Margulis and is known as endosymbiotic hypothesis in which two separate mutually beneficial invasions of a prokaryote cell produced the modern day mitochondria and chloroplast as eukaryotic organelles.

(xii)

ANSWER:

Resting Membrane potential:

It is the charge difference across cell membrane in state of rest.

In RMP, there is no conduction.

of impulse.

It is also called polarized state.

In RMP the membrane is more negative inside i.e. (-70V) and more positive outside (+30V).

In RMP the membrane is more permeable to K^+ ion than Na^+ ion.

In RMP

Active Membrane Potential:

It is rapid up and down shift in membrane voltage.

In AMP the impulse conduction across the membrane occurs.

It is non-polarized state.

In AMP the membrane is more permeable to Na^+ than to K^+ ions.

In AMP the membrane is more positive inside i.e. (+50V) and more negative outside. i.e. (-



Section 'C'

Question no: 05

Answer:-

8+1

AXIAL SKELETON OF HUMAN:-

Skeleton

is the bony structure/framework of our body which help in support, shape of the body. Human skeleton is divided into two parts i.e

Axial skeleton

Appendicular skeleton.

Axial Skeleton:

The type of skeleton which is present in the mid body region. It helps to give the



basic framework to our body.
It has four main parts which collectively have 80 bones.

The four regions of axial skeleton are

Skull

Ribs

Vertebral column

Sternum.

Skull:-

It is the most important region of axial skeleton because it protects the most important and the most weak (جلی) part of our body. i.e. brain.

It is divided into three further parts i.e.

Cranial bones

Facial bones

Ear bones.

Or some times also been divided

into four parts if we consider neck bone not a part of the cranium.

i.e

cranial bones

Facial bones

Ear bones

Hyoid bone.

Cranial bone:

These are the bones surrounding the brain which protects brain from mechanical shocks.

Cranial has total 18 bones excluding hyoid bone.

There are two types of bones in cranium i.e

Paired bones

Unpaired bones.

Paired bones are 2 pairs in number.

i.e total 4 bones.

Unpaired are 4 bones.



Paired bones are

Sphenoid bone → in eyes orbit.

Occipetal bone → at back of head

Frontal bone → at forehead region.

Ethmoid bone. → deep into eyes.

Facial bones:

All the bones located in facial region are called facial bones. They are total 14 in number.

There are two-types of bones in facial region i.e

Paired

Unpaired.

Paired are 6 pairs i.e total 12 in number.

Unpaired are 2.

Paired:

Paired bones of the facial region



are

Maxilla → upper jaw

Lacrimal → in eye orbit

Nasal bone → in nasal region

Inferior nasal conchae → in deep nasal cavity

P_i

Zygomatic → tear bones. in eyes.

Unpaired bones:

Unpaired bones of the facial region are.

Parietal → Upper surface of skull

Temporal. → In side of face, above the ear.

Ear bones:

Ear has three types of paired bones. They are collectively called as auditory ossicles.

They are total six bones in number.

They are the smallest bones of the body.



These bones are

Hammer

Anvil

Axle-

Hyoid Bone:

It is a single U-shaped bone in the neck region. It is not attached to any other bone of the body. It starts at the upper region of C_3 - 3rd cervical vertebrae.

Ribs-

Ribs are present in the thorax i.e. chest region. They protect the lungs which are our most important and axial organ that helps in respiration. There are 12 pairs of ribs which constitute to a total of 24 bones. There are three types of ribs in human body.



True Ribs:

They are attached to sternum.

They are 7-pairs.

False ribs:

They are indirectly attached to sternum i.e. through intercostal muscles.

They are 3-pairs.

Floating Ribs:

They are not even attached to the sternum.

They are 2-pairs.

Vertebral Column:

It is a structure extended from our neck region upto pelvic region which protects the spinal cord of our body. There are 26 ^{bones} ~~vertebrae~~ in the vertebral column.

The vertebral column is divided into 4 types of curvature.

The curvatures gives it comparatively more strength against physical force.

The curvatures are

Cervical region

It has 7 vertebrae extended from the atlas.

The only first two vertebrae are movable all other are immovable.

Thoracic region:

It has 12 vertebrae.

It is present just below the 7th cervical vertebrae and ends in first lumbar vertebrae.

Lumbar region.

This region has 5 vertebrae. It makes the lower back region.

~~Per~~ Sacral region:

It has four vertebrae fused together.

Coccyx region:

Also has four fused



bones in the lower pelvic region.
Thus the total number of vertebrae were 33 but the number of bones here are 26.

Sternum:

It is the only single bone in the chest region. It is a single bone to which other ribs are attached then.

Total number of bones:

Total number of bones in axial skeleton are 80 as

~~cranium~~^{skull} bones = 29

Vertebral column bones = 26

Ribs bones = 24

Sternum = 1

80 bones in total.

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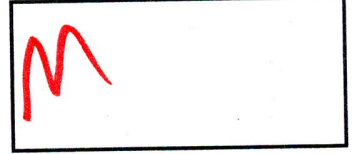
CONTINUATION SHEET



B113

Fic. No.

h1



(صرف ایڈز کے استعمال کیلئے) امیدوار یہاں کچھ نہ لکھیں

Experiment:-

A scientist locked 2-three chimpanzee in a room without a door.

He also kept boxes and sticks in the same room and hanged bananas from its ceiling.

At first the chimpanzee used sticks to catch the bananas but they did not succeed.

Then suddenly they saw the boxes, & came up with the idea that, they could use the boxes (kept one over another) to reach the boxes then.

Thus they kept the boxes one over another and climbed on it thus they reached the bananas.

This is called insight learning. i.e this response was all of a sudden & the situation was never experienced by them before.



Benefit:

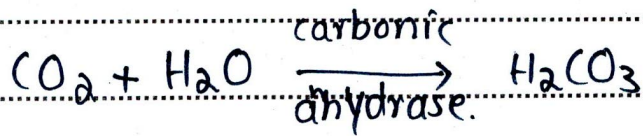
Benefit of the insight learning is that the animal can solve a problem by its own that the situation was never experienced before.

(b) Transport of CO_2 as Bicarbonate ions:-

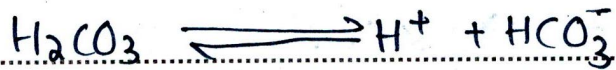
CO_2 is produced as a result of respiration process. CO_2 is transported in the blood in three ways. One of the way is the transport through bicarbonate ions. CO_2 is transferred as bicarbonate ions in a %age of 70%.

Formation of bicarbonate ions:

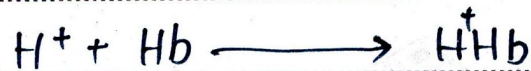
When CO_2 circulates in blood, CO_2 reacts with H_2O molecule in the presence of an enzyme called carbonic anhydrase. They form carbonic acid. As the carbonic acid is very unstable acid thus it quickly deforms in H^+ and bicarbonate ion as;



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As H^+ is an acidic ion thus it decreases the pH of the blood and increase the acidity of the blood. Thus they combine with haemoglobin forming haemoglobinic acid. ~~W~~



The haemoglobinic acid then dissociate into H^+ and haemoglobin. that carry the O_2 in blood.

Now RBCs have some certain ~~to~~ potassium chloride regulated channels which help in the exchange of the two ions.

The bicarbonate ions from RBCs travel into the plasma and combine with sodium there forming sodium bicarbonate



And in reverse ⁰⁴ process the 
Cl⁻ ions diffuse into RBCs binding
with potassium forming KCl
$$K^+ + Cl^- \longrightarrow KCl$$

When these all reaches to the lungs
the sodium bicarbonate diffuses into Na⁺
and bicarbonate ions. The bicarbonate then
enters the RBCs and Na into the plasma.
And the KCl dissociates into K⁺ and
Cl⁻ and then the Cl⁻ ^{remains} diffuses into
the plasma and K⁺ diffuses to RBC.

The HCO₃⁻ combines with H⁺.



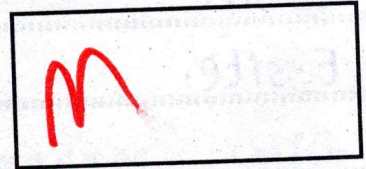
H₂CO₃ then ~~diss~~ dissociates into
H₂O and CO₂ and thus CO₂ is
released in this way.

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CONTINUATION SHEET



Fic. No.

41



(صرف بورڈ کے استعمال کیلئے) امیدوار یہاں کچھ نہ لکھیں

Question no: 03

Translation:-

It is the process of conversion of mRNA into proteins. It occurs in the cytoplasm of prokaryotes and in the RER of the Eukaryotes.

As there are many codons and respective transfer RNAs are present in the cytoplasm freely floating.

The tRNA binds with its respective anticodon on the mRNA on the large small lobe of the ribosome.

The small lobe of the ribosome has three regions i.e.

A-site

P-site

E-site.

02



At A-site the respective codons of the mRNA are expressed and the respective t-RNA travels from the nucleus and comes to the mRNA and binds its anticodon with its respective codon at the P-site of the ribosome.

As the amino acids ~~bind~~ forms at the P-site and are translocated to the E-site so that further codons on the mRNA can appear. As they are translocated the E-site exits the binded codons and ~~bind~~ anticodons to the cytoplasm.

As they are passed from the ribosome proteins are formed by the amino acids ~~bind~~.

The amino acids binds to one another through Mg⁺ ions.

In the above process as the codon appear on the A-site of ribosome the respective t-RNA having anticodon of that mRNA binds that codes



for specific amino acid.

For start of the process AUG codon is necessary on the RNA as it is the start codon that codes for methionine.

But as the desired amino acids are formed in desired amount the stop codons appear. i.e. so that the process could stop.