



Section B

Short Question

Question No 02

(i)

Answer :

Antidiuretic Hormone
(ADH)

→ Also called vasopressin



- This hormones inhibits Urine formation.
- It is released when Solute Concentration increases as a result of water loss.
- This hormones acts on renal tubule to reduce Urine output by ~~reabsorption~~ of water from glomerulus filtrate.

ii) Oxytocin :

- This hormone acts on two target sites before and after childbirth.
- During Childbirth it acts on Uterine muscle to expel the baby out.
- At this time it release in waves which results in labour contraction.
- After childbirth it acts on locating breasts to produce milk for the baby.



- The Suckling of baby causes to release Oxytocine.
- The milk ejection reflex is set off by oxytocine.

~ QUESTION NO 02 ~

~ Xiii ~

Answer:

Synapses:

→ It is the junction between axon terminal of one neuron and the dendrite of another neuron or between axon terminal and muscle fibers, where information is transmitted.



TYPES:

Electrical Synapses:

Electrical Synapses is a mechanical and electrically conductive - link between two adjacent neuron that is formed at a neuron gap between the pre and post-synaptic neuron is known as electric Synapses.

Synaptic cleft:

The gap which separate two adjacent neuron is called Synaptic cleft.

Smaller Synapse:

The space between a ~~electrical~~ Synapse is much smaller than chemical Synapse which help easily in depolarization on post neuron membrane.



Faster conductive - Link:

Electric Synapse conduct nerve impulse faster than chemical Synapse.

ii

Chemical Synapse:

Chemical Synapse are chemical conductive - links between two adjacent neuron in which information of impulse from one neuron is transmitted to another by means of chemical messenger called neurotransmitters.

gap of synaptic cleft:

Chemical Synaptic gap is more than 20nm .

Larger Synapse:

The space between a chemical Synapse is much larger than an electrical Synapse.

Common type:- Chemical Synapse is the most common type

of occurring synapse.

~ (QUESTION NO 02) ~

~ (iii) ~

Answer :

Peas was most suitable plant for Mendel because of the following reasons.

- The plant was easy to grow in pots or in open ground.
- It has a short life cycle.
- The plant has self-pollinating flowers.
- Cross pollination was also possible.
- The plant possess distinct contrasting heritable characters.



~ Q (QUESTION NO 02) ~

~ (Xii) ~

Answer:

RESTING MEMBRAN POTENTIAL

- It is the charge difference across cell membrane in state of rest.
- i) In RMP there is no conduction of impulse.
 - ii) It is polarized state.
 - iii) In RMP the membrane is more permeable to K^+ ion than Na^+ ion.
 - iv) In RMP there is more negative inside more positive charge outside.

the membrane.

2) ACTIVE MEMBRANE POTENTIAL:

- i) It is the rapid up and down shift in membrane voltage.
- ii) In AMP the impulse conduction across.
- iii) It is non-polarized state.
- iv) In AMP the membrane is more permeable to Na^+ ion than K^+ ion.
- v) In AMP there is more negative outside and more positive charge inside the membrane.

Q. QUESTION NO 02 -

- XI -

Answer:

Difference: Simple Vs Compound Fracture:

<u>Simple Fracture</u>	<u>Compound Fracture</u>
→ Clean break in the bone	Bone pierces through the skin
→ No external wound	Associated with open wound.
→ Less risk of infection	High risk of infection.

~ Q UESTION NO 02 ~

~ ~~X~~ ~

Answer:

Skin as a thermoregulatory organ:

- The skin maintain body temp via:
- Sweating (evaporative cooling)
 - Vasodilation (heat retention).
 - Vasoconstriction (heat retention).
 - Acts as a barrier and contain sweat glands and blood vessels that regulate heat exchange.

~ Q UESTION NO 02 ~

~ VIII ~

Answer:

Biotechnology: Use of biological processes and organisms to develop products.

Importance:

Medical: Production of insulin using genetically modified bacteria.

- Agriculture: Bt crops resistant to pests.
- Environmental: Bioremediation using microbes to clean pollutants.

~ Q UESTION NO 02 ~

~ (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.

~ Q QUESTION NO 02 ~

~ IX ~

Answer :

(iv) True Ribs :

Those ribs which are directly connected with Sternum are called true ribs. These are 7 pairs in No.

False Ribs :

(iv) Those ribs which are not directly connected with Sternum, but are indirectly attached through intercostal arch, are known as false ribs. They are 3 - pairs in number.

3- Floating ribs:

Those ribs which are free and are not attached with the Sternum are known as floating ribs. Last 2- pairs of ribs are floating ribs.

- & (QUESTION NO 02) :-

- & (IV) :-

Answers :

SEMI-CONSERVATIVE MODEL:

- 1- According to this model after replication each daughter DNA contains one original strand and one new stand.
- 2- this model was proposed by Watson and Crick and it is the most acceptable model.

3 - In this parental DNA is partially conserved -

(Section C)

(Long Question)

(Question No 04)

Answer: Part (a)

Bombay Phenotype:

It is an example of epistasis

- 2- This is an altered and rare blood group phenotype in which a person is phenotypically "O" but genotypically they can be like A, B or AB.

Explanation :

- 1- The expression of ABO Blood by type antigen by gene I^A and I^B are present on chromosome 9 depends upon another gene called "H" on chromosome 19.
- 2- "H" gene produces an enzyme that produces a glycoprotein present on the surface of RBC.
- 3- The antigens "A" or antigen "B" which are produced by their respective genes are then attached to this sugar.
- 4- The recessive condition of this gene "hh" cannot produce this sugar to the surface of RBC.

Although I^A and I^B genes are present remain unexpressed "O" blood group and the such phenotype is called Bombay phenotype.

Part b)

Answers:

Application of PCR:

PCR is an important technique which is used in the following process.

- 1- It is used for the detection of specific infection agent e.g. HBV, HCV, HIV.
- 2- It is used for the detection of microbes in food and water.



- 3- It is used for genome analysis and physical maps of organisms.
- 4- Reaction for DNA sequencing are also simplified by introducing PCR method.
- 5- There is a PCR-based cDNA transcriptase PCR, which can be helps directly carried out with purified mRNA.
- 6- PCR help to find out crimes from DNA testing.
- 7- PCR is also used in DNA finger printing.
- 8- It is also used for the detection of mutation and embryonic disease.

~ (QUESTION NO 05) ~

Answers:

Axial skeleton:

- 1- The skeleton which lies in the centre or mid line of the body is called axial skeleton.
- 2- It is composed of skull, vertebral column and ribs.

Skull:

- 1- The skull is composed of face, cranium as bones and hyoid bone.
- 2- The primary function of skull is the protection of brain.
- 3- It is composed of 22 bones besides 6 tiny bones of ears and one hyoid bones.

SKULL	Unpaired bone	Paired bone
Cranium bone (8)	Frontal	Pariental
	Occipital	Temporal
	Sphenium	
	Ethmoid	



Facial bone (14)	Mandible Vomer	maxilla Zygomatic lacrimal Nasal Palatine Inferior Concha
Ear bone (6)		malleus Incus Stapes

Neck Bone (Hyoid Bone):

- 1- It is a slender "U" shaped bone between the chin and larynx.
- 2- It is a single bone which does not articulate with other bone.
- 3- This bone serves for the attachment of several muscles that control mandible, tongue and larynx.

Vertebral Column:

- 1- It is a rigid rod on the dorsal side of the trunk forming back bone.
- 2- It extends from the skull to the pelvis.
- 3- It houses and protect Spinal cord.
- 4- It is a place of attachment of pelvic and pectoral girdle.
- 5- In human being it contain 33 vertebrae i.e.

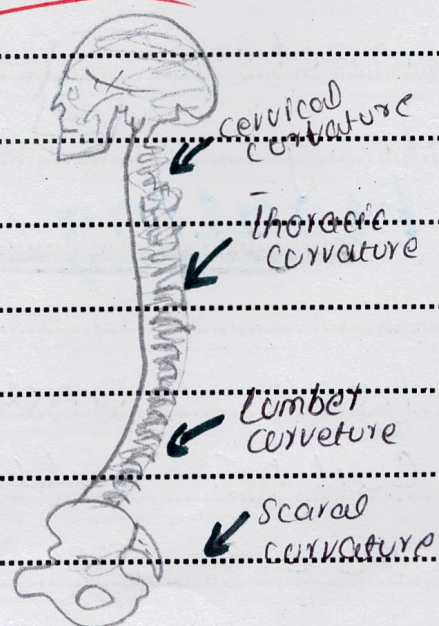
→ Cervical = 7

→ Thoracic = 12

→ Lumbar = 5

→ Sacrum = 5

→ Coccyx = 4



c. Ribs :

It forms chest box or ribcage which protects the lungs and heart.

2- In human there are 12 pair of ribs.

(i) True Ribs :

These ribs are directly attached with sternum.

They are seven pair in number.

ii False Ribs :

These Ribs are not directly attached with sternum.

They are 3 - pair in number.

iii Floating Ribs :

These ribs are free and do not attached with sternum. They are two pair in number.



~ & QUESTION NO 06 ~

~ & Part a ~

Answers :

Insight Learning :

- 1- A type of learning that uses reasons, especially conclusion-inference or judgments to solve a problem.
- 2- In this type of an animal rapidly learn a particular response.
- 3- In this type of learning animals use its own judgment to solve a problems.
- 4- There is no involvement of actual experience in this type of learning.

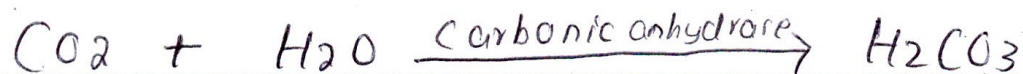


~ (Part b) ~

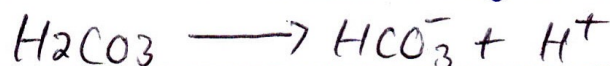
Answers:

As Bicarbonate ion:

- 1- As bicarbonate ion approximately 70% of CO_2 is carried in the blood.
- 2- In this process first CO_2 diffuses from the tissue to blood plasma.
- 3- From the plasma CO_2 enters to RBC where in the presence of an ~~water~~ enzyme called carbonic anhydrase.
- 4- This enzyme is only present in RBC.



- 5- Carbonic acid is very unstable compound so it splits into bicarbonate and hydrogen ion.



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CONTINUATION SHEET



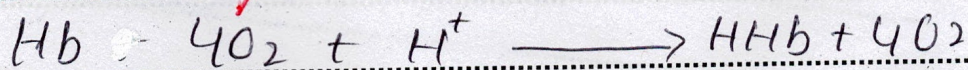
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- 6- Due to high Concentration in RBC bicarbonates ion diffuses to plasma through cell membrane.
- 7- Due to the Splitting of Carbonic acid the Concentration of H^+ ion increases which increases the acidity of blood.
- 8- This H^+ ion is readily associated with Oxyhemoglobin to form hemoglobin acid and oxygen is released to tissues Reaction.



Oxyhemoglobin



Hemoglobin acid