SECTION-B

SHORT QUESTIONS AND ANSWERS

Q#NO# xii

Answer:

Difference between Resting And Active Membrane:

Resting Membrane Potential:	Action Membrane Potential:
It is the charge difference across cell membrane in state of rest.	It is the rapid up and down shift in membrane voltage.
In RMP there is no conduction of impulse.	In AMP the impulse conduction occurs.
It is polarized state	It is non-polarized state
In RMP the membrane is more permealele to K^+ ion than Na^+ ion	In AMP the memberane is more permeable to Na^+ ion then K^+ ion.

In RMP There is more negative inside and more positive charge outside the membrane.	In AMP There is more positive charge inside the membrane.

Question : NO: ix

Answer:

Ribs: In human there are 12 pairs of ribs. Ribs are articulating with each of the Thoracic vertebrae forming a cage like structure which enclose lungs and heart. Out of

These 12 pairs of ribs, 10 pairs are connected anteriorly with the sternum. Attachment of these twelve pairs is given below:

(i) True Ribs :-

Seven out of ten pairs of ribs are directly connected to sternum called true ribs.

(ii) False Ribs :-

The remaining three pairs of ten are indirectly connected with sternum through costal arches called false ribs.

(iii) Floating Ribs:-

The last two pairs of ribs are not connected to the sternum in front are called floating ribs (Monocipital ribs).

Question #NO# 1

Answer:

① Antidiuretic Hormone:

"Also called Vasopression."

Function:

① This hormone inhibits

urine formation.

② It is released when solute concentration increases as a result of water loss.

③ This hormonal acts on renal tubule to reduce urine output by realesorption of water from glomerulus fillrate.

(2) Oxytocin:

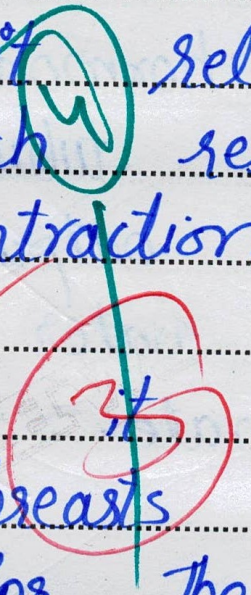
Function:

① This hormone acts on two

target sites before and after child birth.

② During child birth it acts on uterine muscle to expel the baby out.

③ At this time it releases in waves which results in labour contraction.



④ After child birth it acts on lactating breasts to produce milk for the baby.

⑤ The suckling of baby causes to release oxytocin.

⑥ The milk ejection reflex is set off by oxytocin.

Question : NO: V

Answer:

(1) Transcription:

⇒ **Definition:** "The formation of mRNA from one strand of DNA inside the nucleus is called transcription."

Steps:

It completes in three steps:-

S
- Initiation
- Termination
- Elongation

(2) Translation:

Definition: "The formation of protein from mRNA is called translation."

⇒ It is the second phase of gene expression or protein synthesis.

⇒ The mRNA which is formed by transcription reaches to cytoplasm where it attaches with ribosomes.

⇒ The mRNA is decoded to produce a specific amino acid chain or poly peptide.

⇒ In bacteria translation occurs in cells cytoplasm while in eukaryotes the

translation occurs in the membrane of endoplasmic reticulum.

Q#NO# VIII

Answer:

Biotechnology:

⇒ **Definition:** "Uses of biological processes and organisms to develop product is called biotechnology."

⇒ **Importance:**

(i) **Medical:** Production of

insulin using genetically modified bacteria.

(ii) Agriculture:

Crops resistant to pests.
There is a huge use of biotechnology in agriculture.

(iii) Environmental:

Bioremediation using microbes to clean pollutants.

Q# NO# II

Answer:

Invitro Fertilization:

⇒ Definition: "The fusion of male and female gametes outside the body in a test tube or in a laboratory is called invitro fertilization (IVF)"

⇒ Test Tube Baby:

Invitro - fertilization is also called test tube baby formation. The world's first test tube baby was Louise Brown, born in 25th July 1978 in Britin by Miss Lasley Brown.

⇒ Need of (IVF) :-

(1) IVF is offered as primary treatment for infertility

in woman over age of 40 years., or during any abnormal condition - like - blockage of fallopian tube, endometriosis or uterine feleroids.

② When the male member produces less than motile sperms.

③ When the parents or couple can not enjoy the normal fertilization.

Question : NO: X

Answer:

Skin As Thermoregulator

Organ:

The skin maintains body temperature via:

⇒ Through sweating (evaporation cooling) skin controls or regulate temperature.

⇒ Vasodilation (heat release).

⇒ Vasoconstriction (heat retention).

Acts as a barrier and contains sweat glands and blood vessels that regulate heat exchange.

⇒ Skin plays an important role in regulating the temperature of the body by sweating, Vasodilation Vasoconstriction.

Question: No: vi

Answer:

Endosymbiotic Theory:

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

Question # NO# 3 iii

Answer:

Reason For Mendal Selection of Pea Plant :-

Mendle selected pea plant for its experiment because of the following characteristics:

1. Easy to cultivate.
2. Short generation time (3 months).
3. Pollination can be controlled easily.

4- It possess distinct contrasting heritable character.

5- Pea produces seed in large number.

6- They are fairly resistent to pests.

Question #NO# IV

Answer:

Semi Conservative Model:

Accoding to this model after replication each daugher DNA contains

one original strand and one new strand.

2) This model was proposed by Waston and Crack and is the most acceptable model.

3) In this parental DNA is partially conserved.

Question # NO# Xi

Answer:

Difference between Simple And Compound Fracture:

Simple Fracture	Compound Fracture:
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.
Typically less severe than compound fracture.	The bone may protrude through the skin, or there may be an open wound.

SECTION-C

LONG QUESTIONS AND ANSWERS:

Question: No: 4

Part (a)

Answer:

Bombay Phenotype:

(i) 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 are be like A, B or AB.

Explanation:-

1- The expression of ABO blood type agent antigens by gene I^A and I^B are present on chromosomes 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 antigen 'A' or antigen 'B' which are produce by their respective genes are then attached to this sugar.

4) The recessive condition of this gene "h" cannot produce this sugar hence antigen cannot attached to the surface of RBC although I^A and I^B genes are present but remain ~~unexpected~~ unexpressed such type of person has "O" blood group and the such phenotype is called Bombay phenotype.

Q #NO#4

Part (b)

Answer:

Application of PCR :-

PCR is an important tecnique which is used in the following processes:-

1) It is used for the detection of microbes in food and water.

2) It is used for the detection of specific infectious agents eg - HBV, HCV, HIV.

CONTINUATION SHEET

B84

Fic. No. 35 P

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

3) It is used for genome analysis and for generating markers for the construction of genetic and physical maps of organisms.

4) Reactions for DNA sequencing are also simplified by introducing PCR method.

5) There is a PCR-based cDNA transcriptase PCR, which can be directly carried out with purified mRNA.

6) PCR helps 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 diseases.

Question # NO # 6

Part (a)

Answer:

Insight Learning:-

1) A type of learning that uses reason, especially to form conclusion, inferences

or judgment to solve a problem.

2) In this type an animal rapidly learn a particular response.

3) In this type of learning animal uses its own judgment to solve a problem.

4) There is no involvement of actual experience in this type of learning.

Q#NO# 6

Part (b)

Transport of CO_2 As Bicarbonate Ion:-

1) As bicarbonate ion approximately 70% of CO_2 is carried in the blood.

2) In ~~the~~ This process first CO_2 diffuses from the tissue to blood plasma.

3) From the plasma CO_2 enters to RBC where it combines with water forming carbonic acid.

4) This reaction takes place inside the RBC in the presence of an enzyme called carbonic anhydrase.

CONTINUATION SHEET

B84

Fic. No. 35 P

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

5) This enzyme is only present in RBC

$CO_2 + H_2O \xrightarrow{\text{carbonic anhydrase}} H_2CO_3$

6) Carbonic acid is very unstable compound so it splits into bicarbonate and hydrogen ion.

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

7) Due to high concentration in RBC bicarbonate ion diffuses to plasma Through cell membrane.

8) Due to high concentration and spliting of carbonic

acid the concentration of H^+ ion increase which increase the acidity of blood.

9) This H^+ ion is readily associated with oxyhemoglobin to form hemoglobinic acid and oxygen is released to tissues.

Reaction:

$$Hb.4O_2 + H^+ \longrightarrow HHb + 4O_2$$

↓ Oxyhemoglobin

↓ Hemoglobinic acid.

Question # NO# 5

Answer:

Axial Skeleton:

⇒ Definition:-

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.

a. Skull:

1) The skull is composed of face, cranium, ear bone and hyoid bone.

2) The primary function of skull is the protection of brain.

3) It is composed of 22 bones beside 6 tiny bones of ears and one hyoid bone.

2) Neck Bone (Hyoid Bone)

1) It is a slender "U" shaped bone between the chin and larynx.

2) It is a single bone which do not articulate with other bones.

3) This bone serves for that control mandible, tongue and larynx.

B84

3) Vertebral Column:

1) It is a rigid rod on the dorsal side of a trunk forming back bone

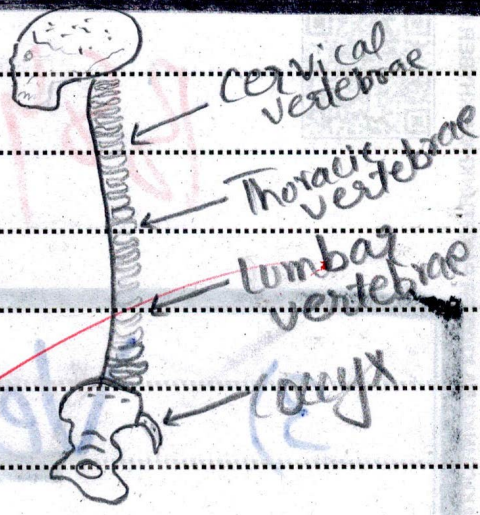
2) It extends from the skull to the pelvis.

3) It houses and protect spinal cord.

4) It is a place of attachment of pelvic and pectoral girdle

In human being it contains 33 vertebrae.

- Cervical = 7
- Thoracic = 12
- Lumber = 5
- Sacrum = 5
- Coccyx = 4



4) Ribs:

1) 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 (7) pair in number.

(ii) **False Ribs:** Those ribs are not directly attached with sternum. They are

(3) three pair in number.

(iii) **Floating ribs:** These ribs are free and do not attached with sternum. They are 2 (two) pair in number.

Skull	Unpaired bone	Paired Bone
Cranium bone (8)	Frontal Occipital Sphinoid Ethmoid	Parietal Temporal
Facial bone (14)	Mandible Vomer	Maxilla, Zygomatic, Lacrimal, Nasal Palatine, Inferior conchs
Ear bone (6)	→	Malleus, Incus, Stapes.