



Section B

(Short Question)

(III)

Answer

peas was most suitable plant for
Mendel because of the following
reasons:-



- i) The plant was easy to grow in pots or in open ground.
- ii) It has a short life cycle.
- iii) The plant has self pollinating flowers.
- iv) Cross pollination was also possible.
- v) The plant possesses distinct contrasting heritable characters.

(XII)

Answer

Resting Membrane Potential

- i) It is the charge difference across cell membrane in state of rest.
- ii) In RMP there is no conduction of impulse.



- iii) It is polarized state.
- iv) In RMP the membrane is more permeable to K^+ ion than Na^+ ion.
- v) In RMP there is more negative inside more positive charge outside the membrane.

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.



(IV)

Answer

Semiconservative Model of DNA Replication

→ proposed model — ?

→ procedure — ?

Dr — ?

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

In this parental DNA is partially conserved.



(XIII)

Answer

Synapse

It is a Junction b/w axon terminal of one neuron and dendrites of another neuron.

- 2) Physically two neuron are not connected
- 1) Synaptic cleft is a space which is between presynaptic knob and postsynaptic which is 0.2 nm in electrical synapse & 20 nm in chemical synapse.

Chemical Synapse

The synaptic cleft is 20nm .

Presynaptic knob contain synaptic vesicle having neurotransmitter.

These synapse show fatigue.

Electrical Synapse

The synaptic cleft is 0.2nm .

2) The presynaptic and post synaptic are attach through Connexon Protein.

1) When presynaptic knob become depolarized some of the Na^+ ion move from presynaptic knob to post synaptic knob through Connexon and bring voltage to -60mV .

2) Electrical synapse never show fatigue.



(II)

ANSWER

Antidiuretic Hormone

- 2) Also called vasopressin.
- 2) This hormone inhibits urine formation.
- 2) It is released when solute concentration increases as a result of water loss.
- 2) This hormone acts on renal tubule to reduce urine output by reabsorption of water from glomerulus filtrate.

Oxytocin

- 2) This hormone acts on two target

sites before and after child birth.

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

At this time it release in waves which results in labour contraction.

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

The suckling of baby causes to release oxytocin.

(II)

ANSWER

In vitro Fertilization

Definition

The fusion of male and female gametes outside the body in a test tube or in a laboratory is called IVF.

Test tube body

is also called test tube body formation

The world's first test tube baby was Louise Brown. He born on 25th July 1978 in Britain by Mrs Lasley Brown.

Need of IVF

1) IVF is offered as a primary treatment for infertility in woman over age of 40 years or during

procedure?

any abnormal condition like blockage of fallopian tube, endometriosis or uterine fibroids.

2) When the male member produces less than required motile sperms.

2) When the parents or couple cannot enjoy the normal fertilization.

(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 invasion of a prokaryote cell produced the modern day mitochondria and chloroplast as eukaryotic organelles.

Diag-?

~ (V) ~

ANSWER

Transcription

The formation of mRNA from one strand of DNA inside the nucleus is called transcription.

2) The process of transcription completed in three steps -



- Initiation / Elongation
- Termination
- Translation



- 1) The formation of protein from mRNA is called translation.
- 2) It is the second phase of gene expression or protein synthesis.
- 3) The mRNA which is formed by transcription reaches to cytoplasm.
- 4) In bacteria translation occurs in cells cytoplasm while in eukaryotes the translation occurs in the membrane of endoplasmic reticulum.

(VIII)

ANSWER



Biotechnology

use of biological processes and organism to develop products.

Importance :-

Medical

production of insulin using genetically modified bacteria.

Agriculture

Bt Crops resistant to pests.

Environment

Bioremediation using microbes to clean pollutants.



(XI)

ANSWER

Simple Fracture

- 1) clean break in the bone. ✓
- 1) NO external wound ✓
- 2) less risk of infection. ✓
- 2) easily recover. ✓

Compound Fracture

- 1) Bone pierces through the skin. ✓
- 2) Associated with open wound.
- 2) High risk of infection.



Section

see

Question 4

Part a

Q

Bombay Phenotypes:-

- 1) 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 antigen by gene I^A and I^B are present on chromosome 9 depends upon another gene called "H" on chromosome.
- 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 produced by their respective genes are then attached to this sugar.
- 4) The recessive condition of this gene "hh" cannot produce this sugar hence antigen cannot attached to the surface of RBCs.



QUESTION 4

Part b

Application of PCR

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

- 1) It is used for the detection of specific infectious agents e.g. HBV, HCV etc.
- 2) It is used for genome analysis and for generating markers for the construction of genetic and physical maps of the organisms.
- 3) Reactions for DNA sequencing are also simplified by introducing PCR method.
- 4) There is a PCR based cDNA transcriptase PCR, which can be directly carried out with purified mRNA.



- 5) PCR helps to find out crimes from DNA testing.
- 6) PCR helps to be used in DNA finger printing.
- 7) It is also used for the detection of mutation and embryonic disease.

QUESTION 6

Part a

Insight learning Kohler Exp?

A type of learning that uses reason especially to form conclusion inferences or judgments to solve a problem.



- 1) In this type an animal rapidly learn a particular response.
- 2) In this type of learning animal uses its own judgment to solve a problem.
- 3) There is no involvement of actual experience in this type of learning.

QUESTION 6

Part b

a) As Bicarbonate ion

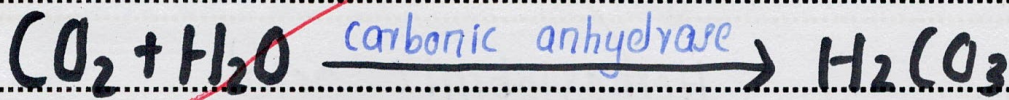
- 1) As bicarbonate ion approximately 70% of CO_2 is carried in the blood.
- 2) In this process first CO_2 diffuses from the tissue to blood plasma.
- 3) From the plasma CO_2 enters to RBCs where it combines with water.



forming carbonic acid.

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

2) This enzyme is only present in RBC.



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



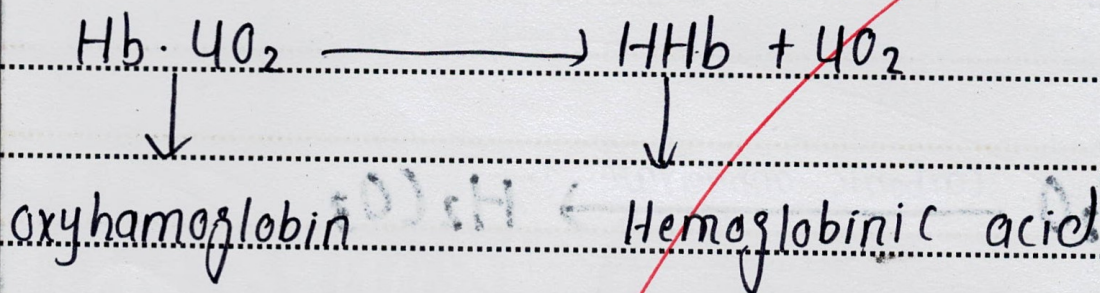
4) Due to high concentration in RBC bicarbonate ion diffuse to plasma through cell membrane.

5) This H^+ ion is rapidly associated with oxyhemoglobin to form hemoglobinic



acid and oxygen is released to tissues.

Reaction



QUESTION 5

ANSWER

Axial skeleton

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

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

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

- 1) It is composed of 22 bones beside 6 tiny bones of ears and ^{one} hyoid bone.

Skull

unpaired bone

Paired bone

Cranium (8)

Frontal, occipital, sphenoid, ethmoid

parietal
Temporal

Facial (14)

Mandible

Maxilla, zygomatic, lacrimal, nasal, palatine, inferior concha

Vomer

Ear bone (6)

Malleus
incus
stapes

Neck 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 bone.
- 3) This bone serves for the attachment of several muscles.

Vertebral Column

- 1) It is a rigid rod on the dorsal border of the trunk thus forming back bone.
- 2) It extends from the skull to the pelvis.
- 3) It houses and protect spinal cord.

Board Of Intermediate & Secondary Education Khyber Pakhtunkhwa

CONTINUATION SHEET

Fic. No.

501

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

B91

It is a place of attachment of pelvic and pectoral girdle

2) In human being it contains 33 vertebrae.

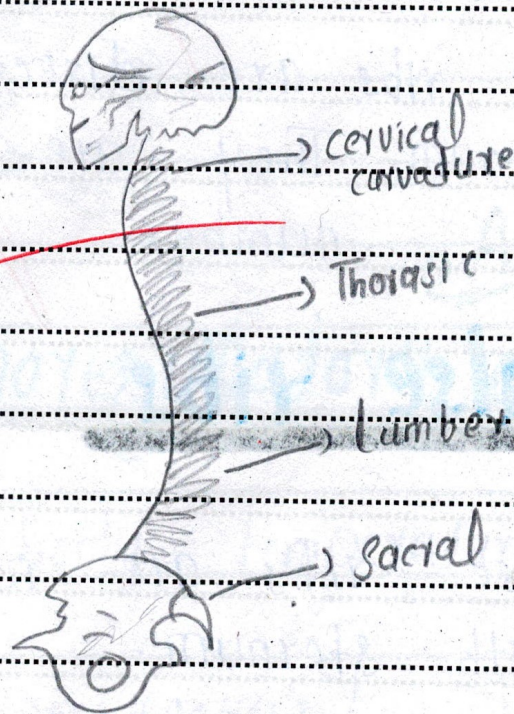
Cervical = 7

thoracic = 12

Lumbar = 5

Sacrum = 5

Coccyx = 4





Ribs

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

2) In human there are 12 pair of ribs.

True ribs

These ribs are directly attached with sternum. They are seven pair in number.

False ribs

These ribs are not directly attached with sternum.

They are 3 pair in number.

Floating Ribs

These ribs are free and do not attached with sternum.

2) They are two pair in number.

(X)

ANSWER

Skin is thermoregulatory organ ^{O.A}

The ~~skin~~ maintain body temperature

^{vra}
Sweating (evaporation cooling)
vasodilation (heat release)



vasoconstriction (heat retention)

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