

★ (Section B) ★

★ Q no 2:- ★

(ii) ★ Answer:- ★

In vitro fertilization (IVF):-

The fusion of male and female gametes outside the body of male and female, in a test tube or in laboratory is called in vitro - fertilization.

Importance of In vitro - fertilization:-

In vitro - fertilization has a major importance in the field of reproduction. If a woman is infertile and cannot be ovulated or if male cannot

produce sperm or cannot produce sufficient amount of sperm, then these healthy gametes are taken from their body and fertilize in a test tube to produce ovum which is then injected into the women uterus for implantation and further developments.

Procedure:-

- ① Gametes from infertile male and female is taken out of their bodies.
- ② Gametes are fused in test tube.
- ③ Healthy ovum is produced.
- ④ Ovum is injected into the women uterus.
- ⑤ Further developments occurs in the uterus of women.



(iii)

Answer:-

Mendal choose pea plant:-

Mendal chooses pea plant for his hybridization experiment because of the following reasons:-

- ① Pea plant was easy to be cultivated.
- ② Pea plant can be cultivated in open ground or pot.
- ③ Pea plant has shorter life cycle.
- ④ Pea plant has very distinct contrasting traits.
- ⑤ Characteristics of pea plant can easily be studied.
- ⑥ Pea plant can be self-fertilized and also can be crossed fertilized.



(ix)

Answer:-

True Ribs:-

There are total 12 pairs of Ribs in the rib cage which protect heart and lungs. Out of 12 pairs, 7 - pairs of ribs are called true ribs because they are directly connected to the sternum.

False Ribs:-

Out of 12 pairs, three pairs of Ribs are not directly connected to the sternum but with the help of cartilages and these ribs are called false ribs.

Floating ribs:-

Last two pairs of ribs out of total 12 pairs are called floating ribs.



because they are not connected to the sternum and are floating in the chest cavity.

(i) Answer:-

Antidiuretic hormone :-

The hormone or chemical which inhibits the urine production.

Functions of antidiuretic hormone :-

- ① ADC increases the permeability of distal convoluted tubule and collecting duct of nephron to reabsorb water from filtrate.
- ② when more water is absorbed, concentrated urine is produced.
- ③ It causes blood volume to



increase.

- ④ It causes contraction of arteries, thus it increases blood pressure.

④

Oxytocin ::

child birth. oxytocin means

Functions of Oxytocin ::

- ① Oxytocin causes strong contraction of uterus muscles during child birth.
- ② Oxytocin help to expel baby during child birth.
- ③ It causes ejection of milk from mammary gland.

(xi)

Answer

Simple bone fracture

① Simple bone fracture is a type of bone fracture in which broken bone remains within the body.

② In simple bone fracture, bone does not expose to environment.

③ Simple bone fracture can easily be cured.

④ Simple bone fracture takes less time to be reduced.

Compound bone fracture

① Compound bone fracture is a type of bone fracture in which broken bone penetrates the body.

② In compound fracture, bone is exposed to the external environment.

③ Compound fracture is complicated to treat.

Compound fracture takes more time to be reduced.

(vi)

Answer:-

Endosymbiotic theory of Evolution:-

This theory is proposed for the evolution of Eukaryotes from prokaryotes.

Lynn Margulis:-

This idea was proposed by Lynn Margulis and is known as endosymbiotic theory of evolution, in which two separate mutually beneficial invasions of prokaryotic cells produces the modern day mitochondria and chloroplast organelles.

Ancestral Mitochondria:-

According to endosymbiotic hypothesis, ancestral mitochondria were small heterotroph which were capable

of using oxygen to perform cellular respiration. They become parts of large cell and become mitochondria.

Ancestral chloroplast::

A second invation brought ancestral chloroplast, which are thought to be small photosynthetic cyanobacteria.

Modern Concept::

Modern concept supports the evidence that endosymbiosis which show that both chloroplast and mitochondria have their own genes, DNA and RNA and reproduce by binary fission without the host life cycle. Therefore they appear to be more similar to prokaryotes than Eukaryotes.



(XIII)

Answer:

Synapse :-

It is the junction between axon terminal of one neuron and the dendrite of another neuron where information is transmitted.

Types of Synapse:-

There are two types of synapse.

Electrical synapse:-

Electrical synapse is a mechanical and electrically conductive-link between two adjacent neurons that is formed at a narrow gap between the pre- and post synaptic neurons is called electrical synapse.



Chemical synapse:-

chemical

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

(xii)

Answer:-

Resting membrane potential

① It is the charge difference across cell membrane in state of rest.

② In it, there is not conduction of impulse.

Active membrane potential

① It is the rapid up and down shift in membrane voltage.

② In it, the impulse conduction occurs.



③ It is polarized state.

④ In it, the membrane is more permeable for K^+ ion than Na^+ ion.

⑤ In it, there is more negative inside than out side of membrane

③ It is depolarized state.

④ In it, the membrane is more permeable for Na^+ ion than K^+ ions.

⑤ In it, there is more negative outside than inside of the membrane

(vii) Answer:-

Effects of deforestation on the environment :-

① Deforestation causes oxygen level to decrease in environment which results in many human problems like asthma, lung problems and breathing



problems.

- ② Deforestation leads to soil infertility and erosion.
- ③ Deforestation causes floods.
- ④ Deforestation leads to land pollution.
- ⑤ Deforestation has adverse effect on the habitat of terrestrial animals.
- ⑥ Deforestation causes CO_2 level to rise in environment which is dangerous for human health as well as for animals.

(v) Answer:-

Transcription :-

Transcription is the process in which genetic information from DNA is copied into messenger RNA or mRNA inside the nucleus.

Translation :-

The process



ribosomes reads the messenger RNA sequence to synthesize proteins by linking specific amino acids in the correct order.

Importance of transcription and translation:

Transcription and translation process are used in protein synthesis. These are the parts of protein synthesis in living organisms.

* (Section C) *

QNO5

(Answer) :-

Axial Skeleton:-

The skeleton which is present in the mid body is called axial skeleton.

Total bones:-

It has 80 total bones.

Functions:-

- ① It provides support to the human body.
- ② It forms axis of our body.

Parts of Axial Skeleton:-

It consists of skull, vertebral column and ribs.

Skull:- → Names of Bones = ?

human skull consists



of 22 bones, besides 6 tiny bones and one hyoid bone.

Cranium:-

protects the brain and composed of 8 bones.

Facial bones:-

There are 14 facial bones present in face.

Ear bones:-

There are six tiny bones in both the ears.

Neck bone:-

There is only one bone in neck called hyoid bone.

Vertebral Column:-

Vertebral column extends from



skull to the pelvis to form back bone.

Bones in Vertebral Column:.

human vertebral column consists of 26 bones.

Functions:.

- ① vertebral column provides support for spinal cord.
- ② It form backbone.
- ③ protect spinal cord from damages.

Parts of Vertebral Column:-

Vertebral column consists of 33 vertebrae.

Cervical vertebrae :.

There are



Seven (7) Cervical vertebrae in the neck region.

Thoracic Vertebrae:

There are 12 thoracic vertebrae in the thorax region.

Lumbar Vertebrae:

There are 5 lumbar vertebrae in the lower back region.

Sacral Vertebrae:

There are five sacral vertebrae in the sacral region.

Coccygeal Vertebrae:

There are 4 coccygeal vertebrae in the coccyx region.

Ribs:-

There are 12 - pairs of ribs.

Functions of Ribs:-

- ① Ribs form a rib cage.
- ② Ribs protect the lungs and lung heart.
- ③ Ribs attached to sternum to form chest cavity.

True ribs:-

Out of 12 - pairs, 7 pairs are called true ribs because they are directly attached to the sternum.

False Ribs:-

Three pairs of ribs are called false ribs because they are not directly



attached to sternum.

Floating Ribs:-

Two pairs are called floating ribs because they are not attached to the sternum.

QNO4 :-

(b) Answer:-

Applications of PCR:-

There are so many applications of PCR, some are given:-

- ① PCR is used for detection of specific infectious agents like HBV, HCV, HIV etc.



- ② It is also used for the detection of microbes in food, water.
- ③ PCR is very helpful in genome analysis, production of markers for genome mapping.
- ④ One of the type of PCR is the RT-PCR which can be carried out by mRNA to synthesize cDNA from mRNA in the presence of reverse transcriptase enzyme.
- ⑤ Reactions for DNA sequencing are also simplified by PCR.
- ⑥ It is very important in criminalology to find crime.
- ⑦ PCR can be used in DNA fingerprinting.
- ⑧ PCR can be used for monitoring the gene in gene therapy.

Q No 4 :-

(a) Answer:-

Bombay phenotype:-

A rare type of blood group which is phenotypically "O" but genotypically may be A, AB, B is called Bombay phenotype.

Bombay phenotype as an example of Epistasis:

- ① The expression of ABO blood group, which is produced by gene $I^A I^B$, depends upon the presence of another gene H is called non-allelic interaction because ABO blood group gene is present on chromosome No-9 while gene H is

present on chromosome No-19.

② The gene - H produces substance H while gene I^A produces enzyme A , which modifies the substance - H into antigen - A and displaying at RBC's surface, as a result genotypically blood group - A is formed.

③ Similarly, the gene - I^B produce Blood group - B in the same way.

④ But if a person is homozygous recessive (hh) for gene - H , they will not produce substance - H and antigen A , B cannot be displayed at RBCs surface, as a result the person is



phenotypically be exhibiting blood group 'O'.

- ⑥ Now it is clear that, in the absence of substance - H, the person will be phenotypically 'O' but genotypically A, B, AB is known as known as Bombay phenotype.

Qno 6 :-

(a) Answer :-

Insight learning :-

① Insight learning is a type of learning that uses reason, especially to form conclusion or judgement to solve a problem.

② In this type an animal



learn a particular response very rapidly.

3) In this type of learning animals use their own judgement to solve a problem.

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

Exp = ?

QNO 6 :-

(B) Answer :-

Transport of CO_2 as a Bicarbonate ions :-

1) As Bicarbonate ions, about 70% of CO_2 is carried in the blood.

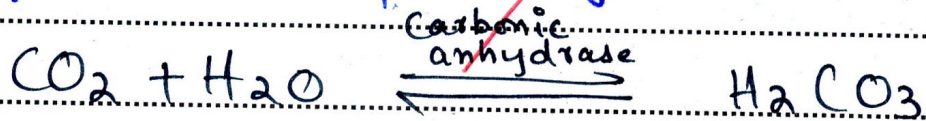
2) In this process first CO_2 is diffused from tissue into the



blood plasma.

3 + 2 = 5

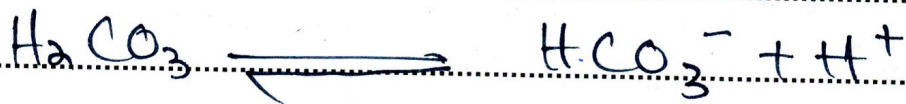
- ③ From the plasma, CO_2 enters to the RBC where it combines with water forming carbonic acid.



- ④ This reaction takes place in the presence of an enzyme called carbonic anhydrase.

- ⑤ This enzyme is present in RBC.

- ⑥ Carbonic acid is very unstable compound, so it splits into bi-carbonate ion and hydrogen ion.



- ⑦ Hydrogen ions react with oxy haemoglobin to form. Haemoglobin acid and O_2 is released into tissues.

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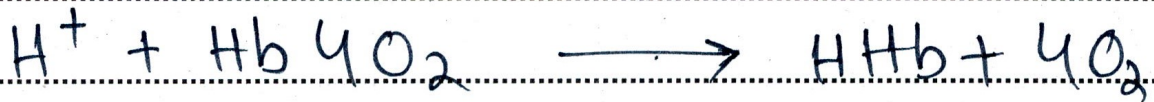
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(صرف بورڈ کے استعمال کیلئے) امیدوار یہاں کچھ نہ لکھیں



⑧ In This way, pH of the blood is maintained to 7.4 by buffer mechanism that exists in the blood.

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