SECTION : B

SHORT ANSWER

Answer : 01

Posterior Pituatory Lobe:

Both the Antidiuretic harmone and oxytocin are stored in posterior pituatory Lobe of pituatory gland.

Antidiuretic Harmone:

It is the harmone secreted in the kidneys to control and

regulate concentration of water.

Function:

When less water:

When there is less water in the body, antidiuretic harmone (ADH) is released by hypothalamous.

Permeability:

Antidiuretic harmone (ADH) makes the renal tubules and collecting tubules permeable which result in reabsorption of water.
Hence, the urine is concentrated.

When more water:

When there is more water concentration in the body, ADH release is prevented.
Hence, urine is dilute due to no permeability of Renal tubules and collecting ducts.

Oxytocin:

It is released by mothers during birth.

Function:

Uterus

Contraction of Vagina during birth:

* During birth, baby head touches the vagina. The impulse is sent to hypothalamus which in turn releases oxytocin. Hence uterine and vaginal contraction are done by oxytocin which results in birth

milk ejection ?

Answer: 02

In Vitro Fertilization: (IVF)

Def:

The process of fertilization outside woman body and induction of embryo

in woman's body is called "In Vitro Fertilization."

Need or Usage Condition:

It is used in the following condition.

* When male sperm is unable to fuse with ovum inside body.
* The speed of sperm is slow enough to not reach ovum in fallopian tube.

Mechanism:

The mechanism of Invitrofertilization is following:

*i) The ovum is taken from female.

ii) Sperm is taken from male.

(iii) Both are fertilized in a dish to form embryo and embryo is kept

for 3 to 4 days to grow up.

(iv) The mature embryo is burraced into uterus of female.

Hence embryo grows into a baby.

Answer: 03

Mendel was Austrian Monk who did experiments on Pea plant.

Interesting point:

Mendel chose pea plant by chance.

Reason:

Following are the reasons due to which mendel took pea plant for his experimentations:

(i) It is Hermaphrodite. It has both male and female parts.

(ii) It can undergo both cross and self pollination.

(iii) It can easily be cultivated.

(iv) It has short cycle.

(v) It has sharp traits.

(vi) It can give large number of seeds.

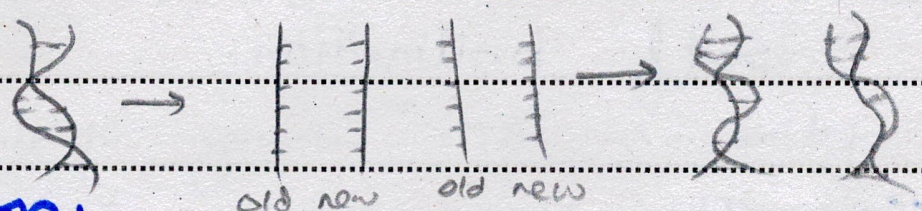
Answer: 04

Semi Conservative Model:

Def:

The model which shows that

parent strand act as a template for formation of daughter strand such that the parent strand is halfly conserved. is called **Semi Conservative model**.



Explanation:

Mechanism:

(i) The DNA (parent) strand unzips. into two strands

(ii) The parent strand acts as a template for the formation of daughter strand.

(iii) Now one daughter and parent strand combine to form a new DNA strand.

Result:

Hence, DNA is semi conserved

Answer: 07

Deforestation:

De means to remove while forestation means forest.

Def:

The process of cutting down of trees is called **Deforestation.**

Effect:

Deforestation has a great effect on the environment. It is the cause of detoriation of environment. following are some of effects:

(i) Deforestation is a great danger to the habitat of animals.

(ii) Deforestation causes salinity.

(iii) Due to deforestation, flood occurs that damages infrastructure.

(iv) The concentration of oxygen decreases which is also a big problem.

Pakistan situation:

There should be 25 % of forests present in the environment but unfortunately pakistan consists of 4.8 % of forests.

Answer : 09

Ribs:

Def:

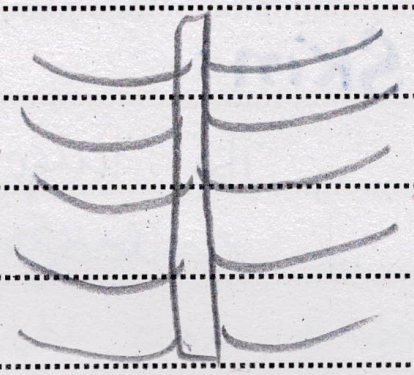
The structure that encloses vital organs i.e (lungs, heart) etc are called **Ribs**.

Number: They are 24 in number and have 12 pairs.

Types:

It has three types

(i) True Ribs
(ii) False Ribs
(iii) Floating Ribs



Ribs

(i) True Ribs:

The first **seven** pairs of Ribs are called True Ribs.

* They are connected to sternum ventrally, while connected to vertebrae dorsally.

(ii) False Ribs:

: The ribs from 8th to 10th pairs are called **False Ribs**.

* They are connected through coastal arch with sternum.

(iii) Floating Ribs:

* The last two pair of ribs are not connected to sternum.
* They are floating in the body.

Answer: 10

Skin:

The largest organ of the body is called skin.

Role:

It has also thermoregulatory role.

Thermoregulation:

Def:

The maintainence of internal body temperature with external environment is called **Thermoregulation**.

Thermoregulatory Role:

(i) Sweating:

Skin maintains the temperature of

skin through the process of sweating. When the person sweats, heat is released.

(ii) Hairs standing:

When hairs stand, the air passes through it, hence vasoconstriction occurs and heat is conserved.

(iii) Hair sitting:

When hairs are sitting on skin, vasodilation occurs and heat is lost from the body.

Answer: 13

Synapse:

Def:

The junction between the axon of one neuron and dendrites of

other neuron or muscle cell is called **Synapse:**

Explanation:

Information is transferred from one neuron to another neuron through synapse. Neurons are arranged in such a way that there is no cytoplasmic connection between them. but still information is transferred.

Electrical Synapse:

Def:

It is electrical and mechanical junction between the two neurons.

Distance:

There is 0·2 nm distance between the two neurons.

Note: Nerve impulses are transferred

fastly in this synapse.

Chemical Synapse:

Def:

It is the chemical junction between the two neurons.

Distance:

There is 20nm distance between the two neurons.

Explanation:

It is the common way of synapse. Neurotransmitters are released by chemical synapse which transport information from presynaptic neuron to post synaptic neuron.

Answer : 12

Def: R.M.P:

The distribution of charges inside and outside the non conducting membrane is called **Resting Membrane Potential.**

Def: A.M.P

The distribution of charges inside and outside of conducting membrane is called **Active Membrane Potential.**

A.M.P	R.M.P
(i) The charge present in +50 Mev	The charge present in -70 Mev.
(ii) Threshold Stimulus is required	No Threshold stimulus is required.
(iii) It is present for a very small interval of time	It is the general condition of membrane of neuron

(iv) The number of Na^+ ions are greater inside the membrane	The number of Na^+ ions are greater outside the membrane

Answer : 08

BioTechnology:

Def:

The technology that is used on living organisms for the beneficial services of human beings is called **Biotechnology.**

Importance:

Biotechnology is very important in life as it has caused an immense effect on the life of human beings.

Example:

(i) **Diary products :** We take certain

dairy products in large number by using biotechnological process called mutation.

(ii) Medicines:

Medicines are also obtained from plants and animals through biotechnological processes.

(iii) Increased Productivity:

Through processes of biotechnology we are able to gain maximum & qualitative yield from plants as well as animals.

SECTION: C

QUESTION: 05

Axial skeleton:

Def:

The main trunk of the body with which the appendicular skeleton is attached is called **Axial Skeleton.**

Explanation:

It is the main axis of the body. It provides support to all delicate organs like (lungs, heart, kidneys, liver etc).

Number: It consists of 80 bones.

Parts:

It is divided into three parts.

(i) Skull
(ii) Ribs
(iii) Vertebral bones.

(i) Skull:

The hard part which protects the brain is called **Skull.**

Bones: It has 28 bones + 1 neck bones = 29 bones.

Parts:

It is divided into three parts.

(i) Facial bones.
(ii) Cranial bones
(iii) Ear bones

(i) Facial bones:

Def:

The bones that are located

in the face are called **facial bones.**

Number: There are 8 bones.

Mnemonics:

Fat people only eat Thick stakes

Bones:

The facial bones are following

(i) Frontal bone - 1 in number

(ii) Parietal bones - exist is pair (2 bones)

(iii) Occipetal - 1 in number

(iv) Ethmoid - 1 in number

(v) Temporal - exist in pair (2 bones)

(vi) Sphenoid - 1 in number.

~~(vii)~~

(ii) **Cranial bones:**

Def:

The bones that are present in cranium are called **Cranial bones.**

Number: There are 14 bones.

Mnemonics:

Vina Cannot make my pet zebra Laugh

Bones:

(i) Vomer bone - (1 bone)
(ii) Inferior Nasal Conchae. (exist in pair)
(iii) Mandible (1 bone)
(iv) Maxilla - exist in pair
(v) Palentine - in pair.
(vi) Zygromatic - in pair
(vii) Nasal - in pair
(viii) Lacrimal - in pair

Ear bones:

Def:

The bones present in ear.

Number: There are 3 bones. which exist in pairs (6 bones)

Bones:

The bones are malleus, Incus, stapes.

Ribs:

Def:

The structure that provides protection to delicate organs i.e (lungs, heart) are called Ribs.

Number: There are 24 bones in total. There are 12 pairs

Parts:

They consist of:

(i) True Ribs
(ii) False Ribs
(iii) Floating Ribs.

(i) True Ribs:

The first seven pairs of ribs are called True Ribs.

Place:

The all connected to sternum ventrally and to vertebrae dorsally.

(ii) False Ribs:

The Ribs from 8th to 10th pair are called **False Ribs.**

Place:

They are connected to sternum through coastal arc.

(iii) Floating Ribs:

The last two pairs of ribs are called **Floating Ribs**

Place:

They are floating in the body.

They are not connected to sternum.

B47

Vertebral Bones:

Def:

Those bones which provide protection to the spinal cord are called **vertebral bones.**

Number: There are 26 vertebral bones.

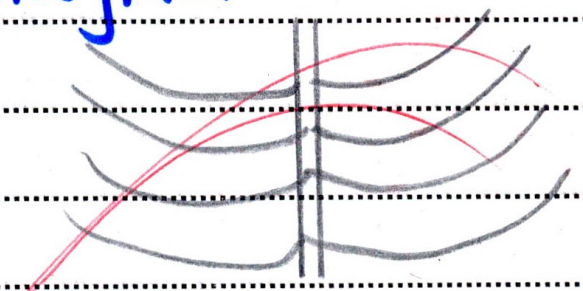
Memorization: 712511

Bones:

The vertebral bones are following.

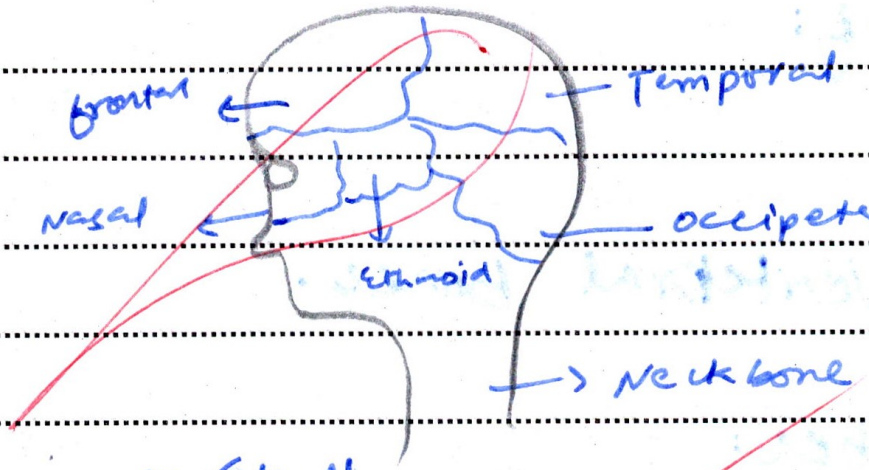
(i) **Cervical bones** - 7 bones in Cervical cavity
(ii) Thoracic bones - 12 bones in Thracic cavity
(iii) Lumbar bones - 5 bones in Lumbar cavity
(iv) Sacral bones - 5 bones but fused to form 1 in Sacral cavity.
(v) Coceyx bones - 4 bones but fuse to form 1 bone.

Diagram:

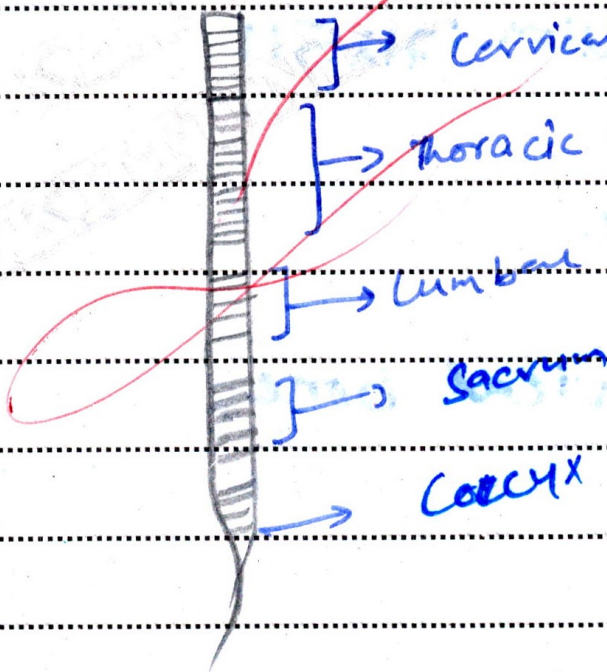


⇒ Ribs

⇒ Ear bones



⇒ Skull



⇒ Vertebral Column

QUESTION: 06

(a) part:

/ 7

Definition:

The type of behaviour that is based on logical analysis and conclusion is called **Insight Learning.**

No Trial and Error: 3

The behaviour of animals is such that it docsnot do any kind of trial and error. Instead it ~~has~~ proper observation for a problem.

Logical Analysis :

These animal have such behaviour that they undergo logical reasoning and proper analysis of a problem. After analysis, they give a calcu-

ated response to any kind of stimulus.

Human: Human is an epitome of insight learning.

Example:

We take the monkeys as an example.

Experiment:

The experiment was done on monkeys which showed insight learning.

Explanation:

(i) Monkeys were put up in the cage.

(ii) Bananas were present at height where monkeys couldnot reach

(iii) In the cage, boxes were also present.

(iv) If boxes can be piled up, monkeys could reach to bananas easily.

(v) The monkeys were observed by scientists.

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CONTINUATION SHEET

Fic. No. 5101

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

mokey reaction:

After thinking for long time they reached to bananas by piling up the boxes

Part (b):

7½

CO_2:

CO_2 can also be transported in the blood as bicarbonate ions.

CO_2 reaction:

CO_2 reacts with water in blood to form hydrogen carbonate

$CO_2 + H_2O \longrightarrow H_2CO_3$

As hydrogen carbonate is insoluble so it is converted

$H_2CO_3 \longrightarrow H^+ + HCO_3$

Buffering by Hameoglobin:

Hameoglobin neutralizes the acidity which was increased due to H^+ by conversion into Hemoglobinic acid and oxygen

Hameoglobinic + H → Hameoglobinic + O_2
acid.

Bicarbonated Chlorine pumps role:

Now $H\bar{C}O_3$ present goes inside the tissue and chloride come outside through pumps. following reaction occurs.

$H\bar{C}O_3 + Na \rightarrow NaHCO_3$

$\bar{Cl} + K \rightarrow KCl$.

Effect of Partial Pressure:

The molecules always move from higher partial pressure to lower partial pressure.

PCO_2 in lungs:

Partial pressure is less in lungs

due to which CO_2 leaves. chlorids shifts?

PCO_2 in tissues:

While the Partial pressure is greater in tissue where CO_2 binds.

QUESTION: 04

Part (a): 8

Bombay Phenotype:

Def:

The Bombay phenotype is the epistatic disease where the children have O blood group as compared to A, & B blood group parents 4

Epistasis:

The allelic interaction in which one allele of gene effects the characteristic of allele present in other gene is called Epistasis.

Bombay Phenotype:

It is called Bombay pheotype because it is common in bombay. 1/10,000 people have this disease. while commonly it is present in 4/1 million people.

Chromosome 19:

Chromosome 19 has H factor that actually controls the blood group.

Chromose 19 is called Epistatic chromosome.

Epistatic: The gene which effects the activity of other chromosome.

Chromosome: 9

Chromosome 9 has A, B enzyme

It is effected by Chromosome 19 therefore it is called hypostatic chromosome.

hypostatic: The gene which is effect by epistatic gene.

B47

Condition when A, B blood group dominant:

The condition when blood A, B is dominant is: that when chromosome 19 has H/H, H/h gene.

Condition for O blood group:

The condition when O blood group forms is that when chromosome 19 has h, h gene.

formation of A, B blood group:

When H substance and Enzyme A, B are combined they give rise to the A, B antigen. Hence person has A, B blood group.

(b) :

Application of PCR:

The following are the applications of PCR.

(i) Sample Detection:

They are used in the detection of sample.

(ii) Criminology:

They are also used in the field of criminology.

(iii) Detection of disease:

They are also used for the detection of diseases.

(iv) Staining:

They are used in the staining

processes as well.