Q:1 1·0 + 1·0 + 1·0 + 1·0 + 1·0 = 5·0

SPACE FOR ANSWERING QUESTION NO. -1

Q 1.

No.1

(a) (iv) Testosterone is secreted by the Leydig cells. 1·0

(b) From (iii) Golgi bodies of the spermatid, acrosome is formed. 1·0

(c) (i) Spz (i) sporozoite is the infective stage of Plasmodium falciparum. 1·0

(d) (iii) Factor term was used by Mendel to denote something in germ cells responsible for tranfmission of character. 1·0

(e) (iv) Electrochemical phenomena is involved in the condu of nerve impulse. 1·0

No.2

(a) The fusion of male and female pronuclei is calle amphimixis. 1·0

Q:2 1·0 + 1·0 + 0·0 + 1·0 = 3·0

(b) Wildlife protection Act was enacted in the year 1972 ~~1983~~ by Government of India. 1·0

(c) The giant honey bee, yielding maximum honey is Apis mengifera. 0·0

(d) The genotype of carrier haemophelia is $X X^H$. 1·0

No.3

(a) The significance of crossing over are –

- It indicates the linear occurances of genes in a chromosome.
- It promotes genetic variation.
- The plant and animal breeders are able to

produce their hybrid and desirable variety in the next generation

- Crossing over reduces linkage, the inheritance of undesired linked genes.
- It induces the natural selection and struggle for existence.

2.0

(c)
- "Ozone Shield" is the layer of ozone gas in the stratospher region of earth's atmosphere.
- The sunlight contain many harmful radi including UV-rays etc. These are absorbed by the ozone layer.
- The harmful radiation may cause skin cancer in animals and destruction of chlorophil pigments in plant. But ozone layer protect th biosphere so called as 'protective shield'.
- Now due to methane and CFC the ozone laye is being perforated above the Antarctica.

2.0

(f)
- BOD is the measurement of total organic ma in sewage water.
- BOD - Biological Oxygen Demand
- When more organic material is present in a water storage the microorganism digest it by the utilization of dissolved oxygen in the water.
- So oxygen demand increases per unit volum

Q-3

2·0 + 2·0 + 2·0 + 2·0 = 8·0

of water.

2·0 • The increase in BOD caused death of fish lik aquatic animal.

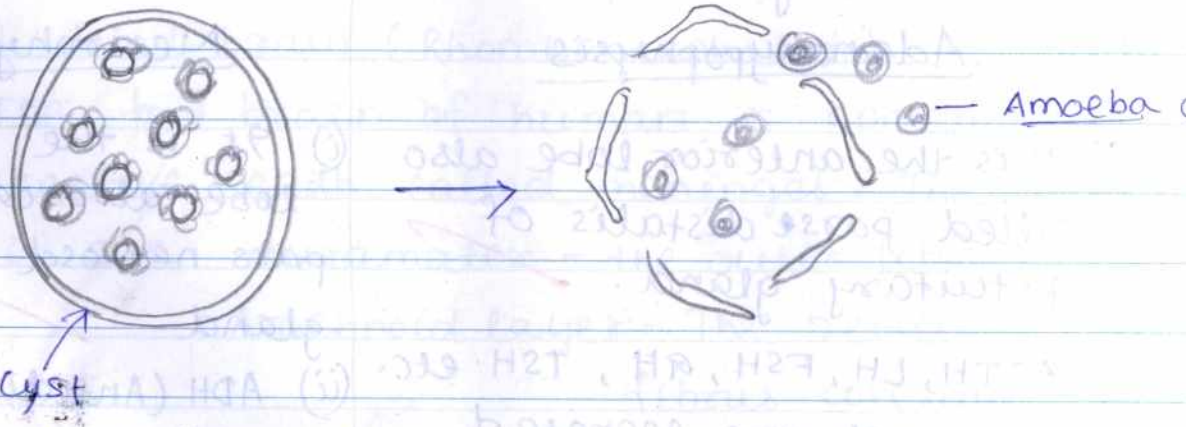
(g) • In Amoeba when unfavourable environmente condition comes it multiplies by Multiple fis

• In Adverse condition it form an outer strong around body which is called as cyst.

• Then the nucleus divides mitotically for s a number of nuclei are present inside the c cyst. The cytoplasm get accumulated around nucl

2·0 • When favorab favourable condition is arrived the nuclei cyst get dissolved and the indi nucleus get out and live freely.

It is called as Encysted multiple fission in Amoeba as more number of offsprigs are form



No.4 (b)

Active Immunity	Passive Immuni
(i) When directly antibodies are injected into an organism against a particular pathogen, the immunity achieved is called active immunity.	(i) When the organis injected with some less infectious pat or protein part of m organism the immu developed in body called as passive im
(ii) Active immunity have short life span	(ii) Passive immunit h longer life span.
(iii) It donot involve direct interaction with the immune system.	(iii) It involves direct interaction with the system of body.
(iv) Mother's milk colostrum containg IgA antibody is an example of active immunity.	(iv) Vaccination dev passive immunit

3.0

(d)

Adenohypophysis	Neurohypophy
(i) It is the anterior lobe also called pars distalis of pituitary gland.	(i) It is the poster lobe also called pars nervosa of pit gland.
(ii) ACTH, LH, FSH, GH, TSH etc. hormones are secreted from it.	(ii) ADH (Antidiuretic and oxytosin are re from it.

Q.4 3.0 + 3.0 = 6.0

(iii) Adenohypophisis makes and secretes the hormone.	(iii) The neurosecretory ce in hypothalamus secret the hormones which is sto in neurohypophysis.
(iv) No direct connection with hypothalamus. It has	(iv) It has direct connecti with axon ending of ner cells in hypothalamus.

3.0

No.5

The Human brain is the centre of control an coordination of the body. It helps in sensati association and response of stimuli.

The human brain weighs 1200 - 1400 gm and located in the cranial cavity of skull.

The brain is a par of central Nervous syste and is divided into 3 parts

(i) Forebrain (Prosencephalon)
(ii) Mid brain (Mesencephalon)
(iii) Hind brain (Rhombencephalon)

- The ~~fore~~ brain of human is covered with protective seath called meninges. The ~~three~~ lay of it are duramater - the outer fibrous coverin Arachnoid layer - The reticular thin fibrous covering Piamater - The inner vascular thin cove
- The space between the coverings are filled wi

cerebrospinal fluid. These all function collectively to (i) Absorb external shock
(ii) Removal of excretory subs
(iii) Develop an pressural equil

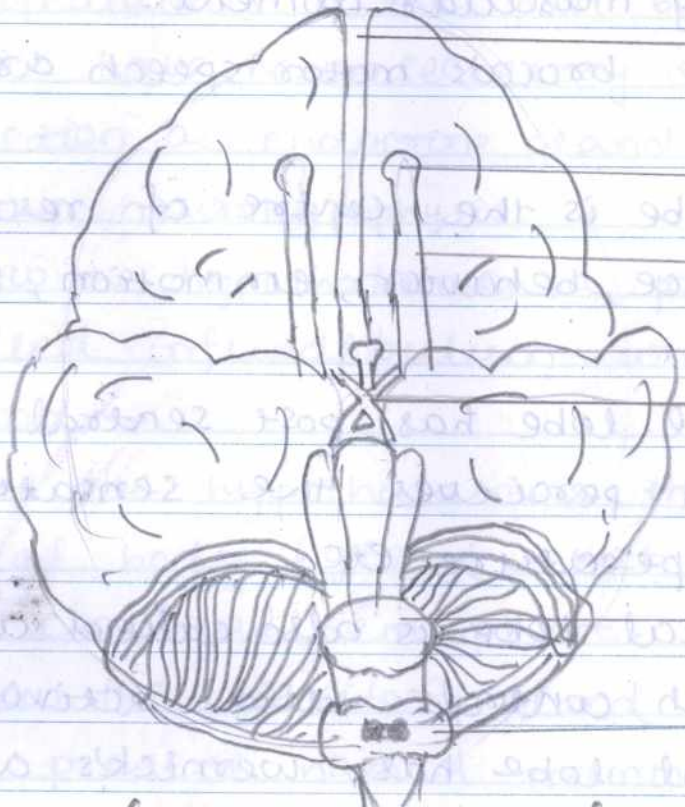
- The anterior part of brain is prosencepha Three sulcus named as central sulcus, lateral sulcus, parieto occipital sulcus d the brain in to four lobes.
- The lobes are - Frontal lobe, parietal lob Occipital lobe and Temporal lobe.
- Frontal Lobe.(
- Prosencephalon is divided into three parts
(i) Frontal lobe Cerebrum : It is the larges part of the brain and occupying 80% of total area.
(ii) Olfactory lobe : It is the anterior most p of cerebrum containg gustatory area.
(iii) Diencephalon : It is the posterior part of forebrain situated above mid brain

✓ Olfactory Lobe (Rhinencephalon)
- Olfactory lobe contain two projection na olfactory tract and two bulb like enclong called as olfactory bulb.
- The nerves arising from olfactory lobe he in smell.

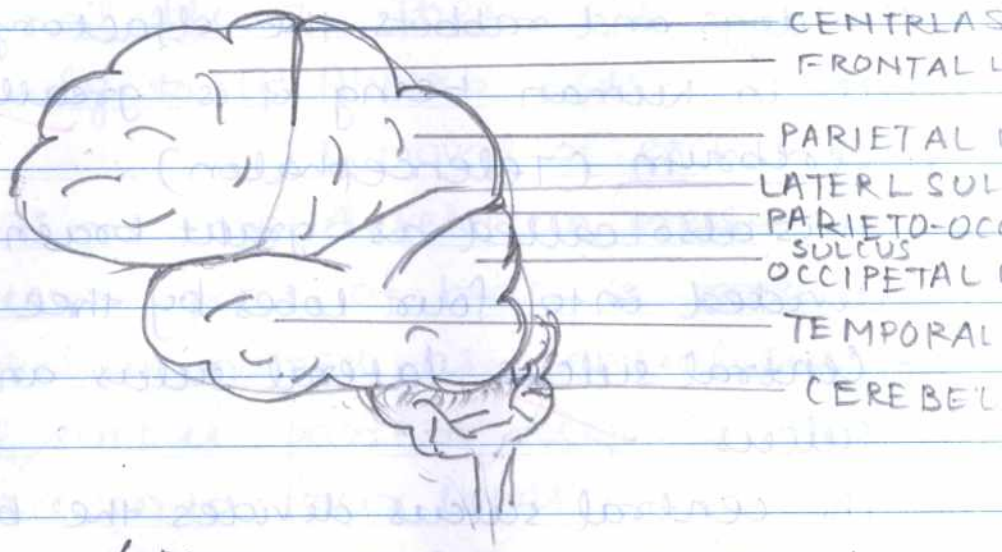
- In dogs and rabbits the olfactory lobe is lar
but in human being it is greatly reduced

✓ Cerebrum (Telencephalon)

It is also called as great brain. which is divided into four lobes by three sulcus nam
- Central sulcus, lateral sulcus and parieto occ
sulcus.
- The central sulcus divides the ~~brai~~ cerebru
into two parts. Those are frontal lobe and
parietal lobe.
- lateral sulcus divides the cerebrum to form
temporal lobe where as the parieto-occip
sulcus form occipetal lobe.



(Ventral View of Brain)



(MEDIN SECTION OF BRIN)

→ Frontal lobe has association area, precent area and premotor area.

The precentral area controls the volunt muscular moment and premotor are con involuntary muscular moment.

- It also have broca's motor speech area.

Function

(i) Frontal lobe is the centre of resonatio intelligence, behavior, emmotion, satisfa etc.

→ The parietal lobe has post sentral or sen area which percieves the sensation of touch, temperature etc.

→ The occipetal lobe is also called as visu cortex which controls visual activities.

→ The temporal lobe has wernick's area w

help in language understand and perception. It also have the area of hearing, body equil

→ Diencephalon

Diencephalon is divided into 3 parts - Epithalamus, Hypothalamus and Thalam

- The epitalamus fuses with the piamater in diencephalon to form anterior choroid plexu It secretes cerebro spinal fluied.
- Thalamus is the central part of brain made of fibrous nervous tissue. It is also called as relay station as it coordinates between the two cerebrbral hamisphere and posterior p of brain.
- Hypothalamus is the part below the thalamu which have neuro secretory cells. These cells function as endocrine gland and send hom to the neurohypophysis.
- Below the hypothalamus a projection is prese called infundibulum which holds the pi gland.
- Above the hypothalamus the pineal stalk pineal body / gland which projects toward the cerebral hemisphere.
- Below the pituitary gland two bulb like bo are present named mammalary body wh

function is yet unknown.

Function

(i) Hypothalamus is the thermostat as it regul
the body temperature, inflammation als.

(ii) It secrets certain releasing factor
and inhibiting factor which regulates the
hormonal seretion of pituitary gland and ot
parts of body.

(iii) The pituitary gland releases growth hor
and control the activity of other glands.
(Bend master of Endocrine Aurchestra)

(iv) The pineal gland secretes melatonin ho
which has 'biological clock' like functio

Q.5
1·0 + 3·0
× 1·5
= 6·0

- The two cerebral hemispheres are sep
are being divided by longitudinal fissu
A transverse fibrous strip corpus callosu
holds the two hemisphere.
- The mid brain is divisible into corpora
quadrigemina and crura cerebri.
- The Hind brain have 3 parts - cereb
pons varolii and medulla oblongata.
- The ventricle (cavity containing CSF) in
hemisphere is called para coel, in diencc
is called diocoel and in medulla oblongata
pons varolii is calle
metatoel.

No. 7.

Sex Determination

The establishment of different sexes in an individual is called as sex determinati

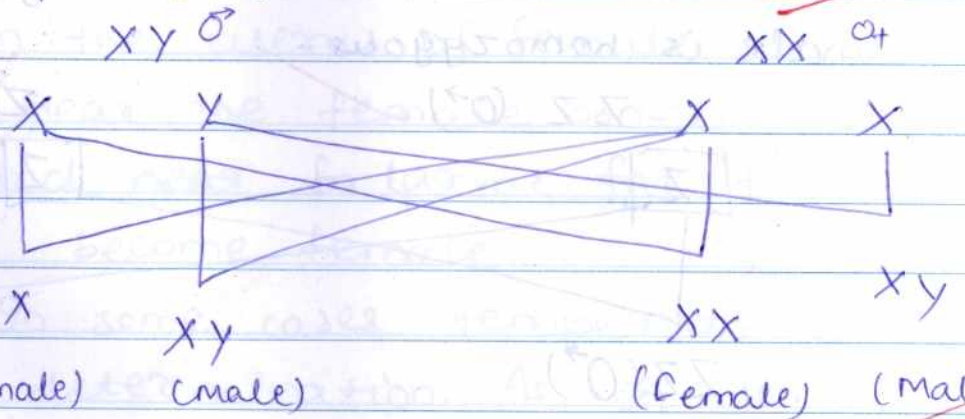
The human body have 46 chromosomes in each cell. Among the 23 pairs 22 are auto and a pair is sexchromosome. The sexchrom have two allels - X and Y chlormosomes. Th presence of sex chromosome is responsible for establishment of different sexes.

Chromosomal Teory of Sex Determination

It was established by Steven and Wilso in 1905. According to them the ~~X and Y~~ ch sex chromosome inheritance describes the sexes.

(1) ~~XX~~ XY - Type.

The female is homomorphic (XX) and male is dia morphic (XY) in this case.

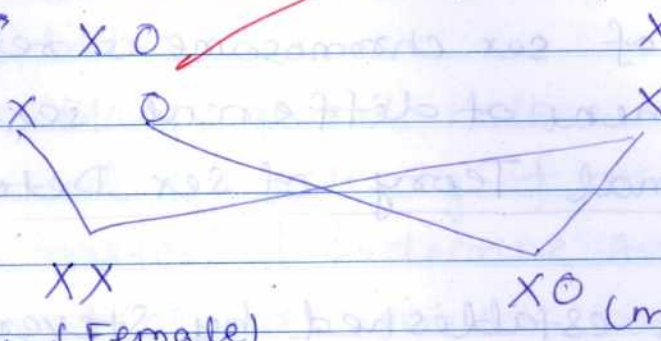


If the X- chromosome makes gamete fuses w

gamete with Y- chromoseme the offspring male and if gamets of X- chromosome fuse with another X- the offspring in female, e.g. Man, Drosophila

(ii) XO - Type.

Here the male chromosome is heteromorphic and female is homomorphic.

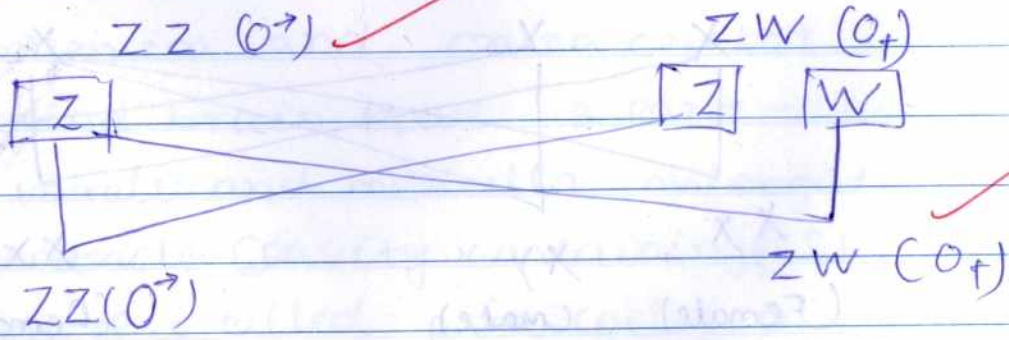


If gamete having X- chromosome fuses with gamet having X- a female is formed where as the other type produces male.

e.g. ~~reptiles, birds~~. grasshopper

(iii) ZW - Type.

Here the female is heterozygous and male is homozygous.

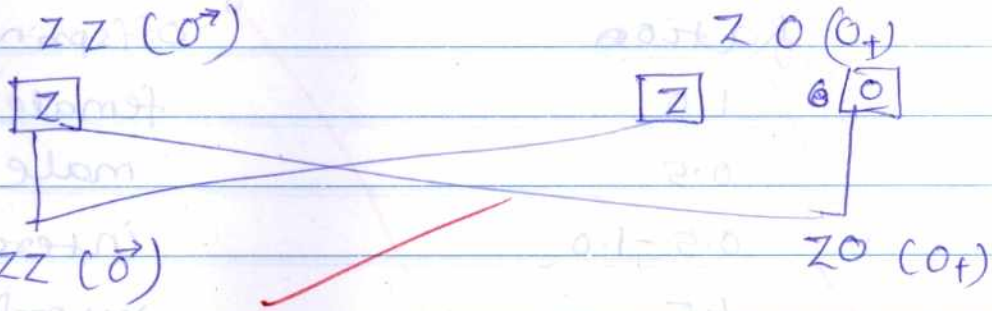


When the gamete having Z- chromosome

fuses with ~~gamete~~ another similar gamet the offspring is male and if the the gamet wit Z- chromosome fuses with gamete having W-chromosome the offspring is female.
e.g. Silkmoth.

(iv) ZO - type

Here the female is heterogygotic and male heterozygotic containg one Z chromosome.



e.g. reptiles, birds.

Environmental Effect on Sex Determinatio

Bridge supposed that in some cases th environmental condition describes the sexes in individual. As in bot Bonelia the mal lives in the uterus of female Bonelia. Th larvae near the female bonelia ~~are~~ beco male and ~~near~~ ~~fa~~ larvae far from fema bonelia become female.

In some cases temperature effect of sex determination. As in tortoise wh high temperature exist the offsprigs are fe

and in low temperature the off springs male.

Genic Balance Theory

Scientist experimented on drosophila and suggested that the dererminiation of sex in individual is determined by the ratio of no. of set of autosomes and X-chromosome. According to this theory

Ratio	Offspring
1.0	female
0.5	male
0.5 - 1.0	intersex
1.5	superfemale
0.33	super male.

Q.7

4.0 + 1.0 + 0.0 = 5.0