

Section - A      (Biology)

- |       |     |   |
|-------|-----|---|
| A.1   | (c) | ✓ |
| A.2   | (b) | ✓ |
| A.3   | (b) | ✓ |
| A.4   | (d) | ✓ |
| A.5   | (c) | ✓ |
| A.6   | (b) | ✓ |
| A.7   | (b) | ✓ |
| A.8   | (b) | ✓ |
| A.9   | (d) | ✓ |
| A.10) |     |   |

1) Herbivorous animals eat grass which contains cellulose, ~~and~~ which is complex to digest, hence to digest cellulose they require long intestine.

ii) Carnivores animals eat meat, which is ~~not~~ complex to digest hence they require ~~long~~ short intestine to digest it.

2

A. ii) A) Lymph is a ~~component~~<sup>liquid</sup> of Lymphatic circulatory system.

Functions of Lymph

i) It sends the blood components that leaks through capillaries tissue back to blood stream.

ii) It transports emulsified fats from intestine and helps body to fight against infections.

A. 12) i) In humans when chromosomes of mother and father transfers to child via meiosis.

ii) 22 pair of chromosome are same, but 23<sup>rd</sup> pair of chromosome decides the sex of child. Mother contains homozygous XX genes while father contains heterozygous XY gene.

iii) The progeny will get X chromosome from mother & either X or Y from father. If X & Y combines then child will be boy

X ♀ X

♀ X

♂ X

♂ X

♂ X

♂ X

♂ X

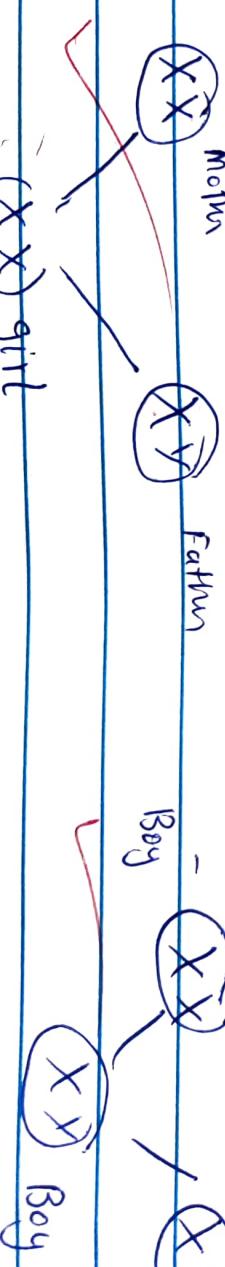
Mother

Father

Boy

Boy

Boy



Q.13)

i) Ozone layer helps to shield the surface from of earth from UV rays. If ozone layer was not there then UV rays may cause us many diseases like skin cancer, skin burns, weak immunity, harm to aquatic life.

ii) To limit the damage to this shield, in 1987, in UNEP all countries decided to reduce & cut off carbon-fluor emmission, HCFC's, Methyl Bromide, Methyl chlorofluor emmissions.

Methyl Bromide, Methyl chlorofluor emmissions.

3

A.14) i) Yes! a recessive trait can appear in the offspring even if it is not seen in parents

of both parents

It may not been in phenotype

ii) It may happen while DNA replication, g from a gene or a recessive allele is taken, and in progeny it makes homozygous recessive trait, then recessive will appear in child's phenotype.

gene.

Let us take example of Tallness.

$T\text{t}$  X  $T\text{t}$  (here both parents are physically tall)

$T$	$\begin{array}{ c } \hline T \\ \hline T \\ \hline T \\ \hline \end{array}$	$t$
$t$	$\begin{array}{ c } \hline T \\ \hline t \\ \hline T \\ \hline t \\ \hline \end{array}$	$t$

2 1

Tallness : ~~Shortness~~ = 3:1 , there are 25% chances that child will be short.

A) Because some water is required to be thrown out of body with urea & uric acid, to make ~~process~~ <sup>transportation of</sup> easier.

### (c) Bowman's Capsule

?

D) i) Amount of excessive water in body.

ii) Amount of waste generated by cells. More waste require more water to be thrown out.

iii) Some water is always thrown out of body to make transportation easier.

1

8

Dendrites ✓

A.16) (B)

Node of Ranvier

Nucleus

L

C

H

J

K

L

M

N

O

P

Q

R

S

T

U

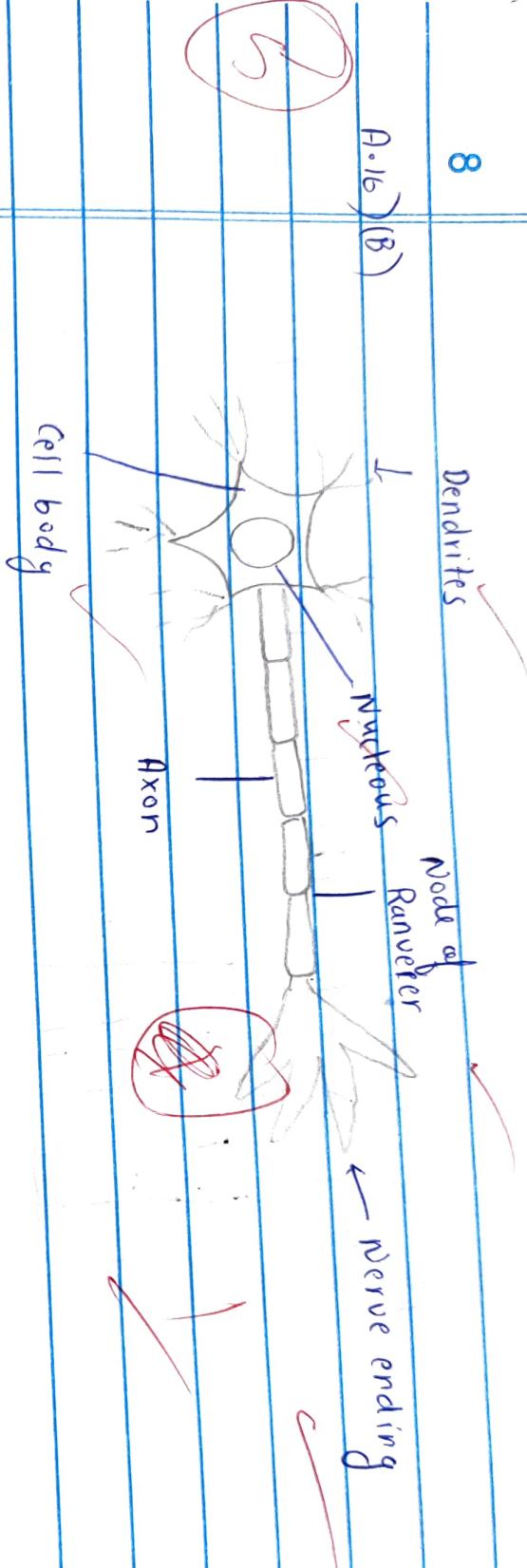
V

W

X

Y

Z



- ↳ Neurotransmitters are detected at Dendrites.
- ↳ Then it is converted into electrical impulse ~~by~~ in cell body.
- ↳ Impulse passes through axon and reaches nerve ending.
- ↳ There is synapse b/w nerve ending & Dendrite b/w two neurons.
- ↳ Nerve ending releases neuro transmitters for next neuron.

Section - B (Chemistry)

- A.19) (a) ✓ (1)  
 A.19) (b) (1)  
 A.19) (c) (1)  
 A.19) (d) (1)

- A.20) (a) (1)  
 A.21) (b) (1)  
 A.22) (c) (1)  
 A.23) (d) (1)

- A.24) (a) (1)

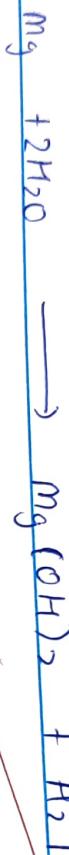
A.25) i) After some time that bundage will become hard & solid.



(POP)  
 (Gypsum)

A.26)

i) K, Na is first case, Ca in second case, Mg in third case.



(3)

A.27)

i) Carbon exhibit tetra valency because it has 4 valence electron

in outermost shell.

ii) If it gains 4 electron then it will become unstable due to small size of nucleus.

iii) If it loses 4 electron, it requires very high ionisation energy.

iv) So carbon decides to do mutual sharing of electron with other atoms.

A. 20)

i) Substance ~~A, D or E~~ can be used to preserve milk for long time.

ii) ~~B~~ ~~C~~ is the ~~C~~ is the strongest acid, because pH shows

us amount of  $H^+$  ions, more  $H^+$  ions more acidic & and less value of pH. In this case substance C has least value of pH hence it is the strongest acid.

A. 21)

- A) Because  $HNO_3$  is a highly oxidising agent ~~&~~ it converts  $H_2$  into  $H_2O$ , in  $H_2O$  hence Al becomes less reactive in  $HNO_3$ .
- B) Because Na & Mg are highly reactive elements ~~&~~ they are more reactive than Carbon also. They do not occur in oxide form in nature.
- C) Because in ionic compound there ~~is~~ is high force of attraction, when they are in solid they are highly packed so electron cannot move freely, but in molten state force of attraction b/w atoms reduces

So electron moves ~~freely~~ in molten state and conduct electricity.  
Because Iron reacts with its surrounding like moisture, air, acid etc and gets corroded, which is not known as Rusting of Iron. To protect it from rusting we cover it with other metals like zinc, ~~the~~ which is known as galvanisation.

E) These are highly reactive elements, it may react with atmosphere hence these are ~~not found~~ in free state in nature, we can get them through electric refining.

### Section-C (Physics)

- (3)
- A-30 (a) ✓
- A-31 (a) ✓
- A-32 (a) ✓

A-33)  $E = W \times T$

( $500 \text{W} \times 6 \text{h}$ )  $\Rightarrow$  ~~600 Watt hour for Bulb per day~~  
 (600 Watt-hour)  $30 \Rightarrow$  ~~18000 Watt-hour for Bulb per month~~  
 $\Rightarrow$  ~~18 kW-hour energy for bulb per month~~

For geyser  $\Rightarrow$  ~~30 kW-hour per month~~

Total energy consumed in 30 days  $\Rightarrow$  ~~48 kW-hour~~

A-34)

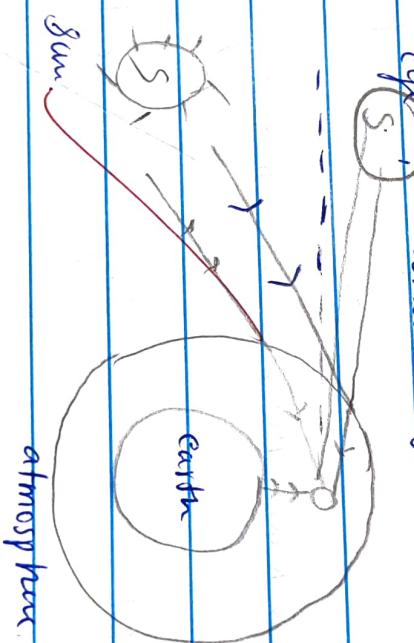
- i) Aperture  $\rightarrow$  It is the length of lens from extreme points.
- ii) Principal axis  $\rightarrow$  The line which connects Pole, focus and centre of curvature is known as Principal axis.

A. 35)

Q) Sun seem to rise 2 min before the actual sunrise and set two minutes after the actual sunset due to atmospheric refraction.

(3)

When sun ~~is~~ is below horizon, the rays of sun enters atmosphere which is dense than space and acts as a denser medium, so rays of sun starts to bend towards normal layer by layer atmosphere becomes more dense and light bends more, and reaches to our eye where sun is below horizon.



A3c) (A)

~~When one volt of~~

~~is travelled at 1 V of voltage,~~

~~then resistance which is produced is one ohm.~~

$$(B) V = IR \Rightarrow R = \frac{V}{I} = \frac{220}{5} = 44 \Omega$$

$$\frac{1}{176} + \frac{1}{176} = \frac{n}{176} = \frac{1}{44}$$

$$\boxed{n=4}$$

~~4 resistors of  $176 \Omega$  each are required to place in parallel to produce  $44 \Omega$  of resistance.~~

16

Q. 37)

Step - 1 →

Take a wire can be easily passed.

③

Step - 2 →

Put cardboard around current carrying conductor

Step - 3 → Put some iron fillings on it

Step - 4 → Shake the cardboard and you'll see that iron fillings are arranged in the pattern of circular magnetic field. You'll see circular loop, which are magnetic field lines for a current carrying conductor.

~~(A) 30 A~~  $A_1 = A_3$  + Because total current throughout the circuit will remain same.

~~(B)~~  $A_2 = 4 A_1 \Rightarrow A_2 < A_1$

$$(C) V_i = I R_{eq}, \quad \cancel{V =} \quad \boxed{R_{eq} = \frac{3}{2}} \quad \boxed{I = 1 A} \quad (\text{given})$$

$$V = I R \Rightarrow V = \frac{3}{2} \times 1 A \Rightarrow \boxed{V_i = 1.5 V}$$

$$(D) \quad R_{eq} \Rightarrow 1 \Omega$$

$$I = 1 A \quad \Rightarrow \quad V = I R \Rightarrow \boxed{V = 1 V}$$

(A.3q) (B)

(a) Concave mirror

$$\text{Magnification} = \frac{-V}{U} \Rightarrow V = -60 \text{ cm}, U = -15 \text{ cm}$$

$$m = \frac{-V}{U} \Rightarrow m = -4$$

(ii) Distance b/w object & image is  $\Rightarrow 45 \text{ cm}$ 

(c)

