कुल पृष्ठ संख्या–24 (कवर पेज सहित)   क्रम संख्या....

माध्यमिक शिक्षा बोर्ड, राजस्थान, अजमेर
माध्यमिक परीक्षा

(राधाक्षण द्वारा स्वयं भरा जाना चाहिये)

Candidate's Roll No. In English

(In Figures)

(In Words) ------

परीक्षार्थी का नामांक हिन्दी में

शब्दों में -----

नोट :– परीक्षार्थी उपरोक्त के अतिरिक्त उत्तर पुस्तिका के अन्य किसी भी भाग में अपना नामांक नहीं लिखें।

माध्यम – हिन्दी ✓   अंग्रेजी ☐

विषय ....विज्ञान....

परीक्षा का दिन.... सोमवार ....

दिनांक 25-03-19

नोट :– परीक्षार्थी के लिए आवश्यक निर्देश इस पृष्ठ के पिछले भाग पर उल्लेखित हैं। जिन्हें सावधानी पूर्वक पढ़ लें व पालना अवश्य करें।

परीक्षक हेतु निर्देश :– (1) परीक्षक को उपरोक्त सारणी अनुसार प्राप्तांक भरना अनिवार्य है, अन्यथा नियमानुसार दंडित किया जायेगा।

(2) परीक्षक उत्तर पुस्तिका के अन्दर के पृष्ठों के बायीं ओर निर्धारित कॉलम में लाल इंक से अंक प्रदत्त करें।

(3) कुल योग भिन्न में प्राप्त होने पर उसे पूर्णांक में ही परिवर्तित कर अंकित करें (उदारार्थ : 15 ¼ को 16, 17 ½ को 18, 19 ¾ को 20)

प्रश्नवार प्राप्तांकों की सारणी
(परीक्षक के उपयोग हेतु)

प्रश्नों की क्रम संख्या	प्राप्तांक	प्रश्नों की क्रम संख्या	प्राप्तांक
1		19	
2		20	
3		21	
4		22	
5		23	
6		24	
7		25	
8		26	
9		27	
10		28	
11		29	
12		30	
13		31	
14		योग	
15		प्राप्त अंकों का कुल योग (Round off)	
16		अंकों में	शब्दों में
17			
18			

परीक्षक के हस्ताक्षर ....संकेतांक ☐☐☐☐

प्रमाणित किया जाता है कि इस उत्तर पुस्तिका के निर्माण में 58 जी.एस.एम. क्रीमवोव कागज ही उपयोग में लिया गया है।165/2019

परीक्षार्थियों के लिए आवश्यक निर्देश

1. समस्त प्रश्नों का हल निर्धारित शब्द सीमा में इसी उत्तर पुस्तिका में करना है। विशेष परिस्थिति में अतिरिक्त उत्तर पुस्तिका पृथक से उत्तर पुस्तिका भरी हुई होने पर पर्यवेक्षक एवं वीक्षक की अनुशंषा पर ही उपलब्ध कराई जायेगी।

2. प्रश्न–पत्र पर निर्धारित स्थान पर अपना नामांक लिखें।

3. प्रश्न–पत्र हल करने के पश्चात् जिस पृष्ठ पर हल समाप्त होता है, उस पर अन्त में "समाप्त" लिखकर अन्त के सभी रिक्त पृष्ठों को तिरछी लाईन से काटें।

4. निम्न बातों का विशेष ध्यान रखें अन्यथा अनुचित साधनों की रोकथाम अधिनियम के तहत कार्यवाही की जा सकेगी।

   (i) उत्तर पुस्तिका के ऊपर/अन्दर तथा प्रश्नोत्तर के किसी भी भाग में चाही गई सूचना के अलावा अपना नामांक, नाम, पता, फोन नम्बर अथवा पहचान की कोई अन्य प्रकार की सूचना आदि अंकित नहीं करें अन्यथा "अनुचित साधनों के प्रयोग" के अन्तर्गत कार्यवाही की जावेगी।

   (ii) उत्तर पुस्तिका के पृष्ठों को फाड़ें नहीं। उत्तर–पुस्तिका के मुख पृष्ठ पर अंकित संख्या के अनुसार पृष्ठ पूरे होने चाहिये। परीक्षार्थी उत्तरपुस्तिका प्राप्त करते ही पृष्ठ संख्या की जांच कर लें यदि पृष्ठ कम/अधिक या क्रम में नहीं हैं तो वीक्षक से तुरन्त बदलवा लें।

   (iii) परीक्षा केन्द्रों पर पुस्तक, लेख, कागज, केलक्यूलेटर, मोबाईल, पेजर आदि किसी भी प्रकार का इलेक्ट्रोनिक उपकरण तथा किसी भी प्रकार का हथियार आदि ले जाना निषेध हैं।

   (iv) वस्त्र, स्केल, ज्योमेट्री बॉक्स पर कुछ न लिखकर लावें। टेबुल के आस–पास कोई अवैध सामग्री नहीं होनी चाहिये, इसकी जांच कर लें।

   (v) अपनी उत्तर पुस्तिका/ग्राफ/मानचित्र आदि परीक्षा भवन से बाहर ले जाना दण्डनीय अपराध है, अतः परीक्षा समाप्ति पर उत्तर पुस्तिका वीक्षक को बिना सौंपे परीक्षा कक्ष नहीं छोड़ें।

5. उत्तरों को क्रमानुसार एक ही स्थान पर लिखें। प्रश्न क्रमांक भी सही अंकित करें, अन्यथा दण्ड स्वरूप परीक्षक को 1 अंक कम करने का अधिकार है। बीच में उत्तर पुस्तिका के पृष्ठ रिक्त न छोड़ें। गणित विषय के लिए रफ कार्य उत्तर पुस्तिका के अंतिम पृष्ठों पर करें तथा तिरछी रेखा से काटें।

6. जहाँ तक हो सकें प्रश्न के सभी भाग के उत्तर, उत्तर पुस्तिका में एक ही स्थान पर अंकित करें।

7. भाषा विषयों को छोड़कर शेष सभी विषयों के प्रश्न–पत्र हिन्दी–अंग्रेजी दोनों भाषा में मुद्रित है। किसी भी प्रकार की त्रुटि/अन्तर/विरोधाभास होने पर हिन्दी भाषा के प्रश्न को ही सही माना जाये।

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Section - A

Ans.1 Canines

Ans.2 Karl Landsteiner.

Ans.3 Compressed Natural Gas.

Ans.4 Potential energy:- The energy possess by an object due to virtue of its position or shape is called potential energy.

Ans.5 Solar energy.

Ans.6 Caffea arabica.

Ans.7 Genetic diversity:- The variations or differences found among the same member of species due to genetic unit is called genetic diversity.
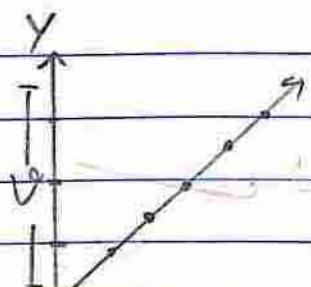
Ans.8 Iron (Fe)

Ans.9 IgE antibody.

Ans·10 'Rh' antigen.

Ans·11

V = Potential difference

I = electric current

[straight line graph]

Section - B

Ans·12 <u>Moon</u> is the natural satellite of earth.

According to an hypothesis, related to origin of moon, it is considered that around 4·40 billion years ago, a celestial body of size of mars collided with earth. Due to this collision a lot of <u>debris</u> left out which further took form of moon.

<u>Importance for earth:-</u>

* Moon controls the rotational speed of earth.

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* It is responsible for high tides and low tides in sea on earth due to its gravitational force.

Ans.13 The fossils are naturally preserved remains or traces of animals and plants lived in geological past

The fossils create their replica (an exact copy) or impression on rock or stone. Delicate parts of animals and plants like skin, fa destroys but hard structures like bones, teeth remain preserved. The fossil obtained from amber or lac are very fine. This is how the fossil formation takes place and we come to know about the dead remain of past.

Radio Carbon dating (C-14) is the method used to determine the age of fossil.

Ans.14 Yuri Gagarin.

The facilities available to solve the problem of food are:

(i) For astronauts, food comes in soilded packets with their names from Earth but due to lack of provision of cooling and heating it becomes stale and thus fast supply of food is done.

(ii) Astronauts take food from straw in the liquid form and magnet is used to stick knife and fork to plate, otherwise they will float in air due to weightlessness.

The facilities available to solve the problem of living are:-

(i) The health of astronauts suffers due to living for a long time in weightlessness on ISS. Thus, tread mill are available for better health.

(ii) There are several compartments in ISS. They can do gardening. There

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are solar panel fitted on ISS for electricity supply. Thus, they can live easily.

Ans. 15. a) High beam of light should be used on highways because it helps the driver to see clearly and also provide distinct visibility. Otherwise, accidents may happen.
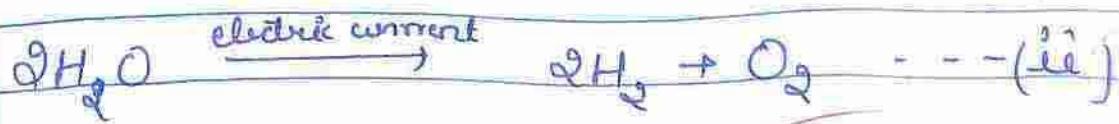
b) Concave mirror - head lights.
Convex mirror - rear view mirror

Ans. 16 a) Dracunculus medinensis (Guinea worm)

b) Morphine and codein.

c) Submucous fibrosis.

Ans. 17 a) $C + O_2 \longrightarrow CO_2$ ----(i)
equation (i) is addition reaction.

$$2H_2O \xrightarrow{\text{electric current}} 2H_2 + O_2 \quad ----(ii)$$

equation is dissociation or deco-
mposition reaction.

b)

Addition reaction -(i)	(ii)--Decomposition reaction
In this reaction, two or more than two reactants combine with each other to give single product.	In this reaction, the reactant bre- ake to give two or more than two pro- ducts.
$A + B \longrightarrow AB$	$AB \longrightarrow A + B$

c)

Catalytic inhibitor	Catalytic promotor
The substances that decrease the rate of reaction of catalyst are called catalytic inhibitor.	The substances that increase the rate of reaction of catalyst are called catalytic promotor.

Ans.18 In forest, there is abundance of trees and trees bind the fertile soil with the help of

its root. Forests also protect the soil erosion. The massive biodiversity in forests helps in protection of fertile. Forest not only protect fertile soil but also helps in its formation.

Measures:-
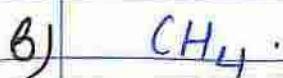
(i) The ratio of afforestation and defforestation should be equal.

(ii) Forests with large biodiversity should given importance rather the uniform forests.

(iii) Rules of social forestry should be followed.

(iv) Jhoom cultivation should be banned

Ans.19 Sanskrit language.

Charak was a great doctor of Ayurvedic medicines. 2000 years ago, charak knew about the genetic disorders. He knew the factors that determines the sex
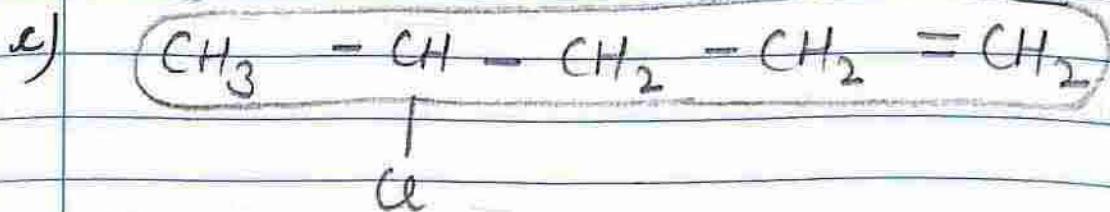
baby. According to him, any lameness or blindness in baby is due to some disorder relat--ed to gene in mother and fa--ther.

Ans.20 a) Ethylene glycol.

B) CH_4.

c)

$$\overset{5}{CH_3} - \overset{4}{CH} - \overset{3}{CH_2} - \overset{2}{CH_2} = \overset{1}{CH_2}$$
$$\overset{|}{Cl}$$

IUPAC name:- 4-chlouro 1- Pentene.

Ans.21 Those wastes that emit out from hospitals and clinics,

The biogredable waste that emits out from hospitals, clinics or any medicinal sources are call--ed biomedical waste. Exc:- cotton.

Hepatitis-B and AIDS are the diseases caused by them.

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Incineration method :- In this method, the waste (especially biomedical waste) is burnt at very high tem-perature and thus residue left is very less. This biomedical waste is disposed by converting it into the ash, vapour and gases. But this is controversial method, as this causes harm to environment.

Section - C

Ans. 22 (a) Protein.

(b) Rohu (labio rohita) and catt catl are fresh water fishes.

(c) Rice barn, maize barn, some cere small marine plants and animal wheat husk etc. are included in diet of fishes.

(d) For maximum production of fishe in pond it is necessary that 1)their should be fresh and pure water in pond 2)Their should be sufficient disolve oxygen. 3) land
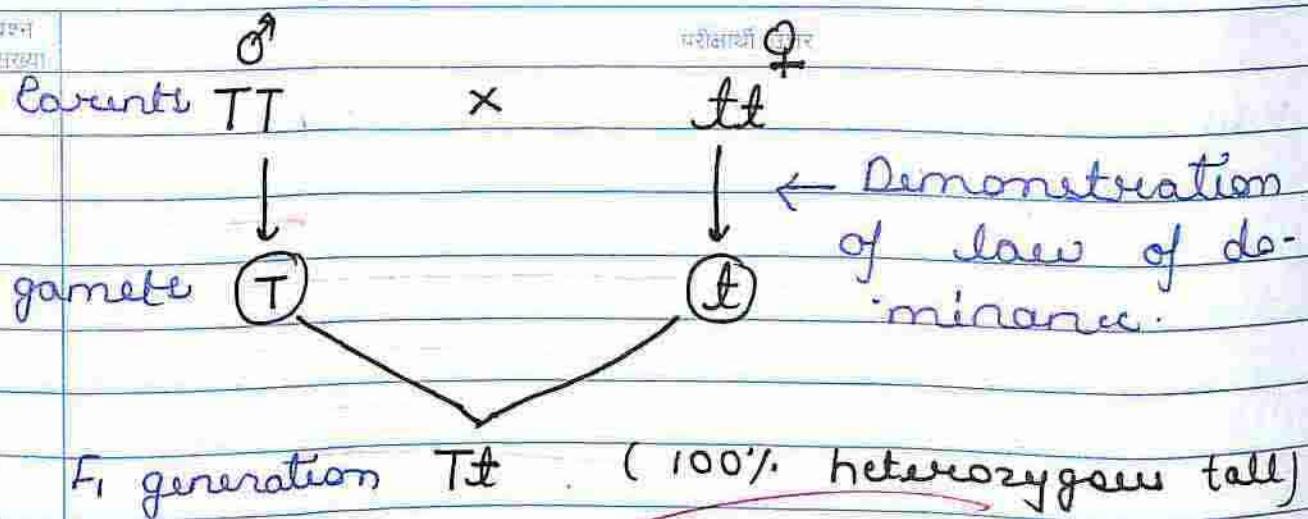
should be have mositure and humidity. 4) There should be proper techniques for fish cap- turing.

Ans.23 Mendel's law of dominance:-

This law of inheritance is ba- -sed on **monohybrid cross**. Acc- -ording to this law, when two plants with contrasting homozy- -gous traits are crossed then the traits that appear in F_1 generation are dominant traits and that are not expressed in F_1 generation are recessive traits.

Example:- When homozygous (pure) tall plant (TT) is crossed with homozygous recessive dwarf plant (tt), then in F_1 generation, 100% heterozygous tall plants are obtained. Thus, tall plant are dominant traits and dwarf plant are recessive traits.

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♂   परीक्षार्थी ♀

Parents TT × tt

gamete ⓣ   ⓣ ← Demonstration of law of dominance.

F_1 generation Tt (100% heterozygous tall)

Importance:-

(i) The lethal genes in an organism are recessive that don't show their appearance due to dominant genes.

(ii) The disease resistant and high yielding plants can be grown due to mendel's law of inheritance.
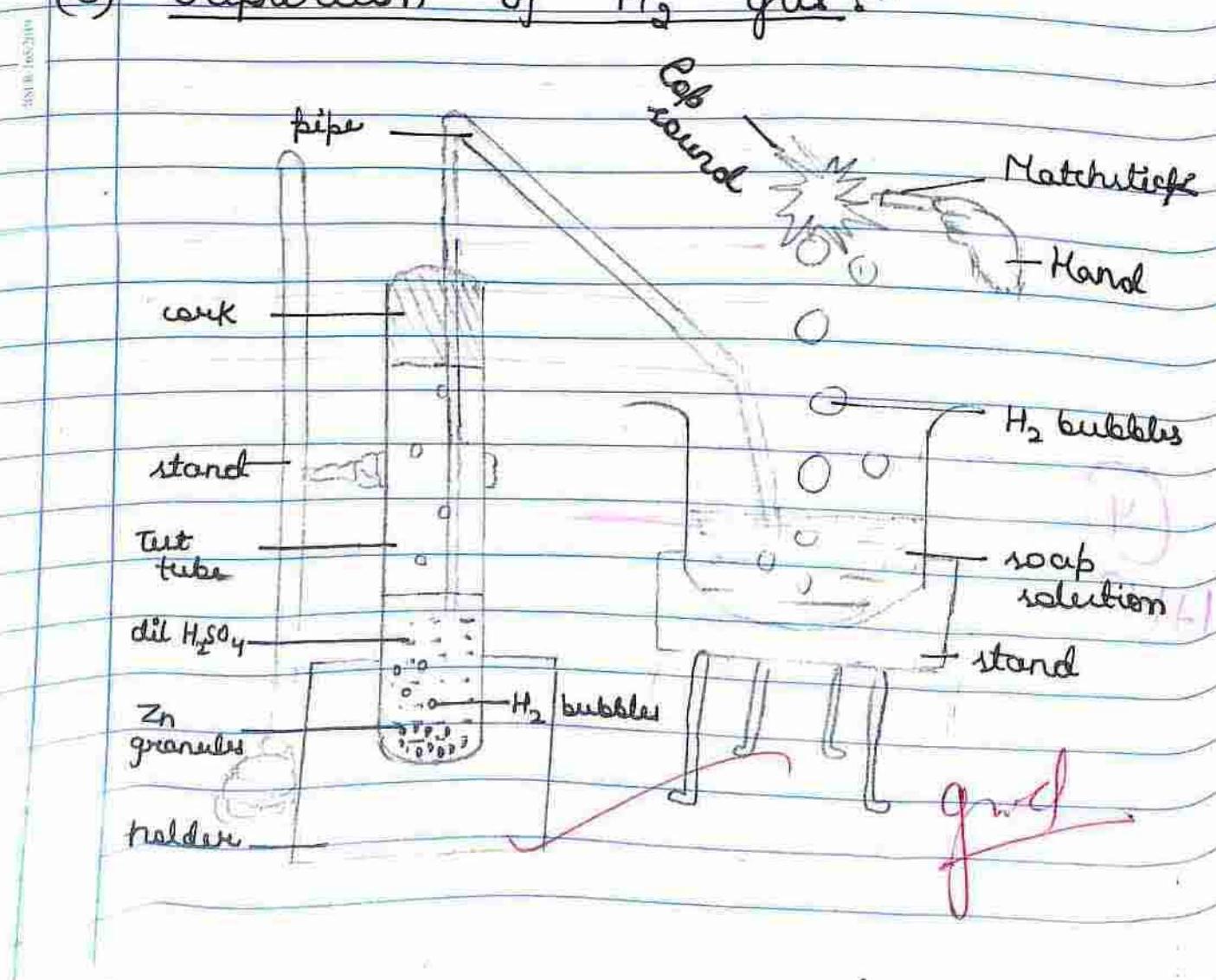
Ans.24 (i) Milk of magnesia ($Mg(OH)$ is a mild base. Sometimes the stomach secrets more HCl. This causes pain and irritation in stomach. This leads to acidity. Hence, to neutralise it, Milk of magnesia is used.

(ii) We know that, sulphuric acid

H_2SO_4, is called 'King of acids'. It is used in factories, cells and batteries. Mostly, it is consumed in industries for production process and in machinery. As much as, it is consumed we come to know about industrial development. Thus, industrial development of any country is measured on its basis.

(B) <u>Preparation of H_2 gas :-</u>

pipe

Cap sound

Matchstick

Kand

cork

H_2 bubbles

stand

Tut tube

soap solution

dil H_2SO_4

stand

Zn granules

H_2 bubbles

holder

Ans.25 Construction of Alternating current generator:-
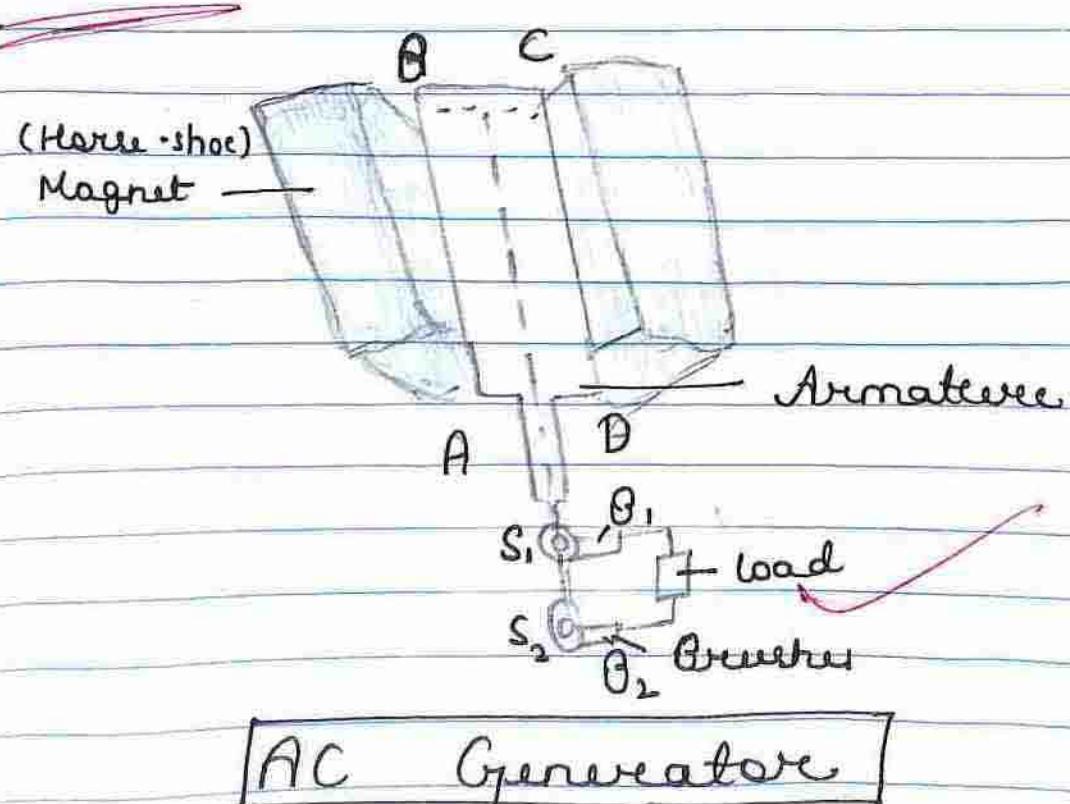
(i) **Horse-shoe magnet:-** In AC current generator, strong magnet (Horse-shoe shaped magnet) are used with **N-S** pole.

(ii) **Armature coil:-** An insulated copper wire wrapped on pig iron is called coil. This helps in generating current by rotation.

(iii) **Slip rings:-** Two slip rings name S_1 and S_2 are used. These are ring-like in shape.

(iv) **Brushes:-** Two carbon brushes C_1 and C_2 are used that remain attached with the axle.

Working:-

When axle rotates then the coil or armature rotates and cuts the magnetic field lines. This leads to generating induced current. Now, let AB moves up and CD come down and direction of cu

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-ent it ABCD. Now, according to fleming right hand rule induced current generate in coil and it flows clockwise from B_2 to B_1 through ABCD. After half rotati- -on, CD comes up and AB moves down and the direction of curren is DCBA through B_1 to B_2 and with I anticlockwise. Thus, after half rotation polarity of curren changes. This I called AC genera- -tor.

(Horse-shoe) Magnet ———

Armature

A B

S_1 B_1
load
S_2 B_2 Brushes

| AC Generator |

Ans-26 a) given:- mass of person (m) = 75Kg

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height of person (h) = 5m
time take (t) = 25 sec.
g = 10 m/s².

Power = ?

We know that, $\boxed{P = \dfrac{mgh}{t}}$

so, $P = \dfrac{75 \times \cancel{10}^{2} \times \cancel{5}}{\cancel{25} \; \cancel{5}}$

$$\boxed{P = 150W}$$

Hence, power consumed by person is 150W.

6) given :- mass of block (m) 9Kg
velocity (v) = 4m/s
spring constant (K) = 4×10⁴N/
compression = (x) = ?

We know that kinetic energy of blog moving is $= \dfrac{1}{2} mv^2$.

$E_K = \dfrac{1}{2} \times 9 \times (4)^2$

$E_K = \dfrac{1}{\cancel{2}} \times 9 \times \cancel{4}^{2} \times 4 = \boxed{72 \text{ Joules}}$

Potential energy of block is $\frac{1}{2}kx^2$.

$$\epsilon_p = \frac{1}{2} \times 4 \times 10^4 \times (x)^2$$

$$\epsilon_p = 2 \times 10^4 \times x^2$$

ϵ_k Kinetic energy of block to come to rest will be equal to potential energy of block.

$$\boxed{\epsilon_k = \epsilon_p.}$$

$$= 72 = 2 \times 10^4 \times x^2$$

$$= \frac{72}{2 \times 10^4} = x^2$$

$$= \frac{36}{10^4} = x^2 \quad \text{(adding square root)}$$

$$= \sqrt{\frac{36}{10^4}} = x^?$$

$$= \sqrt{\frac{6 \times 6}{10 \times 10 \times 10 \times 10}} = x^?$$

$$= \frac{6}{10 \times 10} = x^? \quad , \quad \frac{6}{100}$$

$$\boxed{x = 0.06\,m}$$

Compression in the spring is 0.06m

Ans.27 According to the, technology assessment report 1987, biodiversity refers to,

"Variations and variability found among living organisms and eco-logic complexes in which they occur".

Bio means living and diversity means differences. So, biodiversity means differences found among living organisms.

Importance of biodiversity :-

(i) **Medincinal value:-** About 40% med-cines are obtained from herbs. Bark of cinchona is used to treat Malaria disease. Vincristine and vinblastine are used to treat incurable leukemia. Taxus bakata is used to treat cancer. Rauwolf serpentina is used to treat high blood pressure. Brahmi, Gilloy, Tulsi to treat AIDS.

(ii) **Economical value:-** (i) Biodiversity gives us timber, fibre, gum, rubber

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resin, lac, silk, vegetables, fruits.

(ii) With the help of biodiversity, 'Naveen-10' variety of wheat was developed from dwarf variety of wheat from Japan.

(iii) Today, 20 crops resistant genes are used in paddy development programme.

(iv) Biofuel plants like Jatropha & Karanj are very useful at present.

Ans.28 (i) The process of removal of waste material from the body is called excretion.

(ii) Mechanism of glomerular formation :-

The glomerulus is found in Bow-man capsule. The renal artery after entering in Bowman capsule forms a bunch of afferent arteriole called glomerulus.
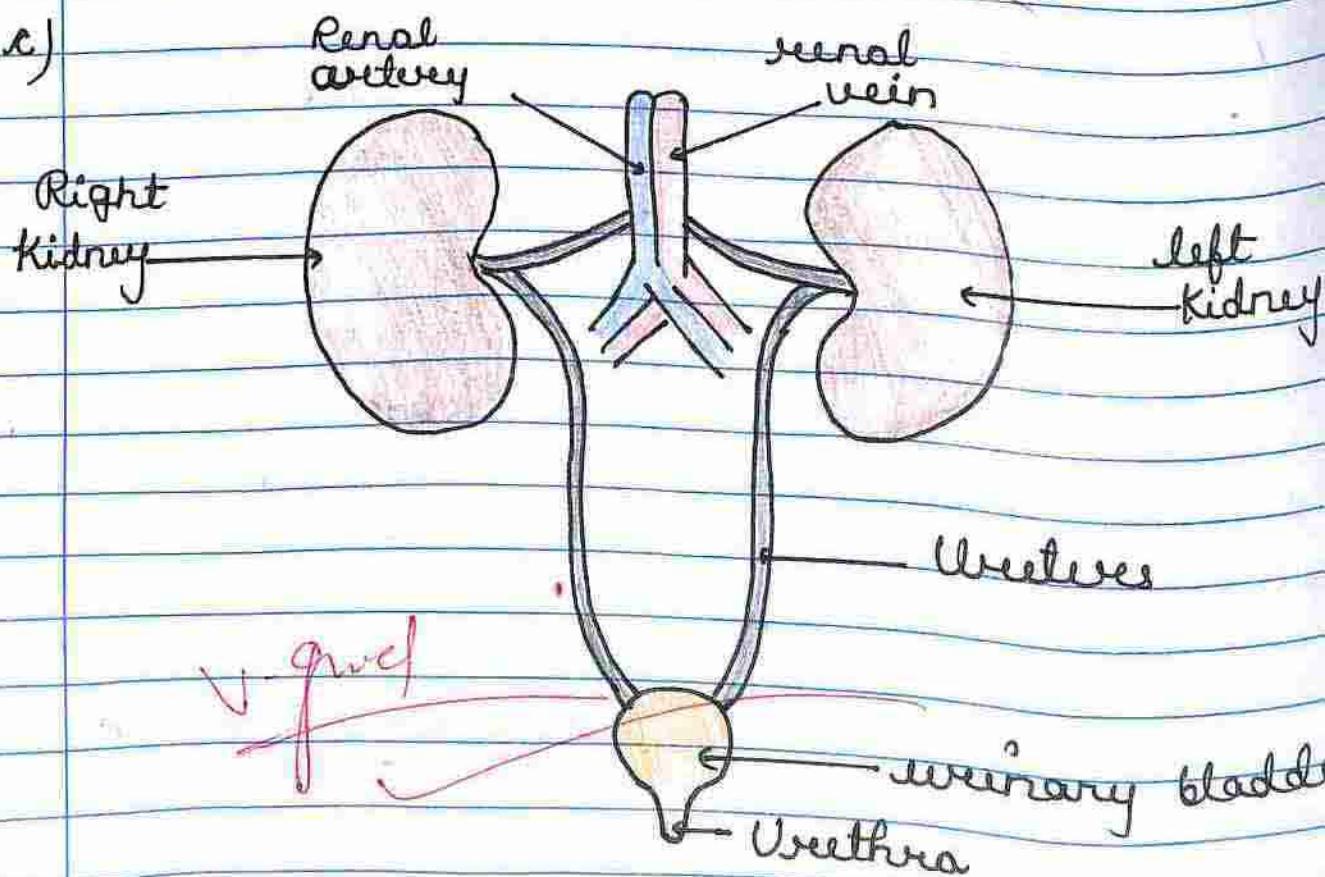
When renal artery brings impure blood to kidney in nephron, then it is firstly filtrated by glom

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-erculus. It secrets a filtrate called glomerular filtrate that performs the function of purifying impure blood. It perform the purification of 1000 - 1200 ml blood per minute. Here, amino acids, glucose, salts and urea gets purified. Then the pure blood again goes to body parts through renal vein. In this way, glomerulus helps in urine formation; by filtering or separating urea from impure blood.

c)

Renal artery
renal vein
Right Kidney
left Kidney
Ureters
V. good
urinary bladder
Urethra

Human Excretory System.

Ans.29 a) On going left to right in period, metallic character decreases due to decreasing atomic radius, increasing effective nuclear charge (Zeff) and increasing ionisation enthalpy due to which electron removal process becomes harder and it is hard to form cation.

b) Doberiener gave triad law.

Doberinere made the group of three elements having similar physical and chemical properties. These were called doberiener's triad. In a triad the average mass of first and third element is approxim-ately equal to second element. Also the properties of first & third element are similar to second element. This is triad law.

c) Electron.

Sir J.J thomson gave plum pu--dding model. According to him, an atom is positive hollow sphere of 10^{-10} meter. In this positive sphere

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negatively changed particles called electrons are embedded ununiformly in an equal amount. Due to this reason, atom is electrically neutral. He gave example of watermelon.

Ans: In watermelon, fleshy part is positive sphere and the seeds are electron embedded ununiformly.

Ans. 30 a) The ratio of height of image with the height of object is called magnification.

$$m = \frac{h'}{h}$$ and h' = image's height
h = object's height

b) The ability of eye lens to see near by object and far by object clearly is called power of accomodation of an eye.

Range of vision:- The distance between near vision of eye (25cm) and distinct vision of eye (∞) is called the range of vision or eye range.
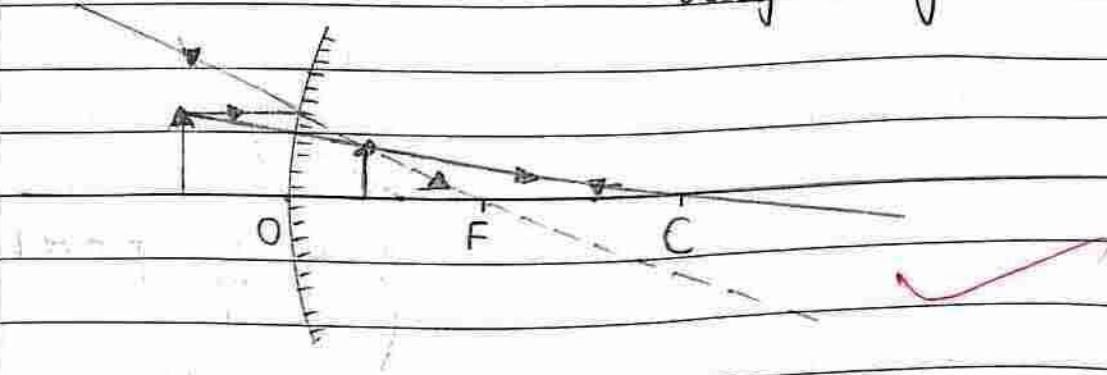
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(C) In convex mirror,

Ray diagram.

Position of object — Between ∞ and pole

Position of image — Between pole and focus behind the mirror.

Size of image — Diminished.

Nature of image — Virtual & erect.

Completed.