STUDENT'S NAME	Panchami M.S	Total Marks Obtained
Class : 10th	Subject Science	
Roll No.	Date 02/01/2025	

Science Model Paper - 01

Part - A
[PHYSICS]

I

1. B) Pole
2. C) electric current and potential difference.

II

3.

4. Properties of Magnetic field lines :
   - Field lines emerge from north pole and merge at south pole.
   - At the poles field lines are crowded.
   - No two field lines are intersect each other.
   - Inside the magnet, the direction of field lines is from its south pole to its north pole.

III

5. Hypermetropia means far-sightedness and in which the person is able to see far objects clearly, but not able to see the nearer objects clearly. In this case image forms behind the retina. It is caused due to lower power accomodation or eye ball is too short.

   → Two causes for hypermetropia are -
   - The focal length of eye's lens is too long.
   - The eyeball becomes too small.

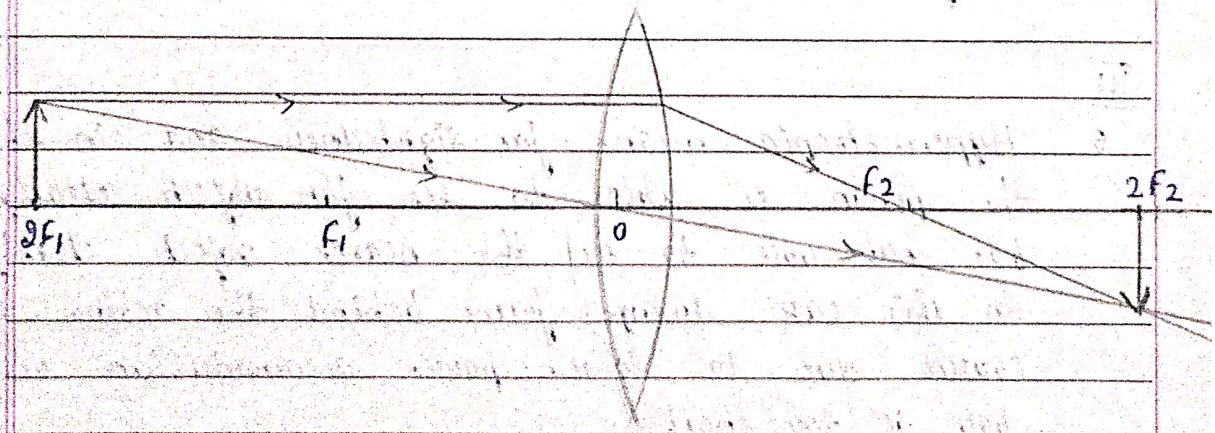
6. i. At point X, the magnetic field direction is into the plane of the paper. At point Y, the magnetic field direction is out of plane of the paper.

ii. The right-hand thumb rule helps decide the direction of magnetic field.

7. • The parallel circuit divides current through the electrical gadgets.
• When one component fails, the whole circuit does not fail.
• The total resistance in parallel circuit decreases, so that
• Electrical gadgets get current as per their resistance required.

IV

i.



Position :- At $2F_2$
Size :- Same size as object.
Nature :- Real and inverted.

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9. The procen of splitting of white light into seven prominent colours by pasing it through glau prism is called dispersion of light.

⇒ Formation of rainbow in the atmosphere -

- It is caused by dispersion of sunlight by tiny water droplets present in the atmosphere.
- The water droplets in the atmosphere act like small prisms.
- They refract and dispene the inident sunlight, they reflect it internally and finally refract it again.
- Due to the dispersion of light and internal reflection different colour reach observer's eye.

(01)

The phenomenon of scattering of light by the colloidal particles is called Tyndall effect.

⇒ When a white light enters the earth's atmosphere, it get scattered away due to atmosphere - air molecules. Since, blue light is scattered more than other colours because it travels as shorter, and it has minimum wavelength, so, blue colour scatter the most and sky appears blue.

10. • Take a small aluminium rod and suspend it horizontally using connecting wires.
• Places a strong horse-shoe magnet in such a way that rod lies between the two poles with the magnetic field directed upwards.
• Connect the aluminium rod in series with a battery, a key and a rheostat.
• Now pass the current through a

aluminium rod in one particular direction.
- The rod displaces towards one side.
- Reverse the direction of current flowing through the rod. The rod displaces towards opposite side.

V

11. a) Laws of refraction of light:
- The incident ray, the refracted ray and the normal to the interface of two transparent media at point of incidence, all lie in the same plane.
- The ratio of sine of angle of incidence to the sine of angle of refraction is a constant for the light of given colour and for given pair of media.

b) - The light ray bends towards the normal.
- Because the ray of light goes from a rarer medium to denser medium.

(or)

a) Laws of reflection of light:
- The angle of incidence is equal to angle of reflection.
- The incident ray, the normal to the mirror at point of incidence and reflected ray all lie in same plane.

b) The magnification produced by plane mirror is +1 which means that size of image formed is exactly equal to size of object and formed behind the mirror. The positive sign shows that the image formed is virtual and erect.

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12. Given :- $I = 10\,A$

$V = 220\,V$

Now,

$P = VI$

$P = 220 \times 10$

$P = 2200\,W$

$\Rightarrow \frac{2200}{1000}\,kw = 2.2\,kw$

$\Rightarrow P = 2.2\,kw$

$t = 8\,h$

Electric energy consumed in one day

$\Rightarrow 2.2 \times 8$

$= 17.6\,kwh$

Energy consumed in 30 days

$= 17.6 \times 30$

$= 528\,kwh$

Cost $=$ Rs 5.00×528

$=$ Rs $2,640$

∴ The total cost of using it for 30 days at Rs 5.00 per 1 kwh is ₹ 2,640

Royal gold

PART - B
[CHEMISTRY]

VI

13. D) a redox reaction.
14. C) Six and twelve
15. B) Catenation.

VII

16. Rancidity can be prevented using following methods -
- By adding antioxidants.
- Keeping food in air tight containers
- Replacing air by nitrogen.
- Refrigeration

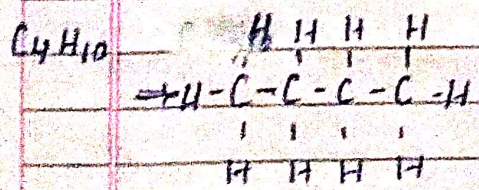
17. The pH value of an antacid is more than 7. B) because antacids are basic in nature.

18. Ethanol is oxidised into ethanoic acid by heating with oxidising agents like alkaline potassium permanganate or acidified potassium dichromate. It involves the loss of hydrogen atoms and addition of oxygen atoms.

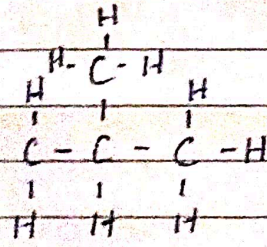
VIII

19. Compounds with identical molecular formula but different structural formula are called structural isomers.

C_4H_{10}



Butane



Iso-butane

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(or)

Functional groups are specific groupings of atoms within molecules that have their own characteristic properties, regardless of the other atoms present in a molecule

⇒ • The functional group present in propanal is aldehyde or -CHO
• The functional group present in propanol is alcohol or -OH.

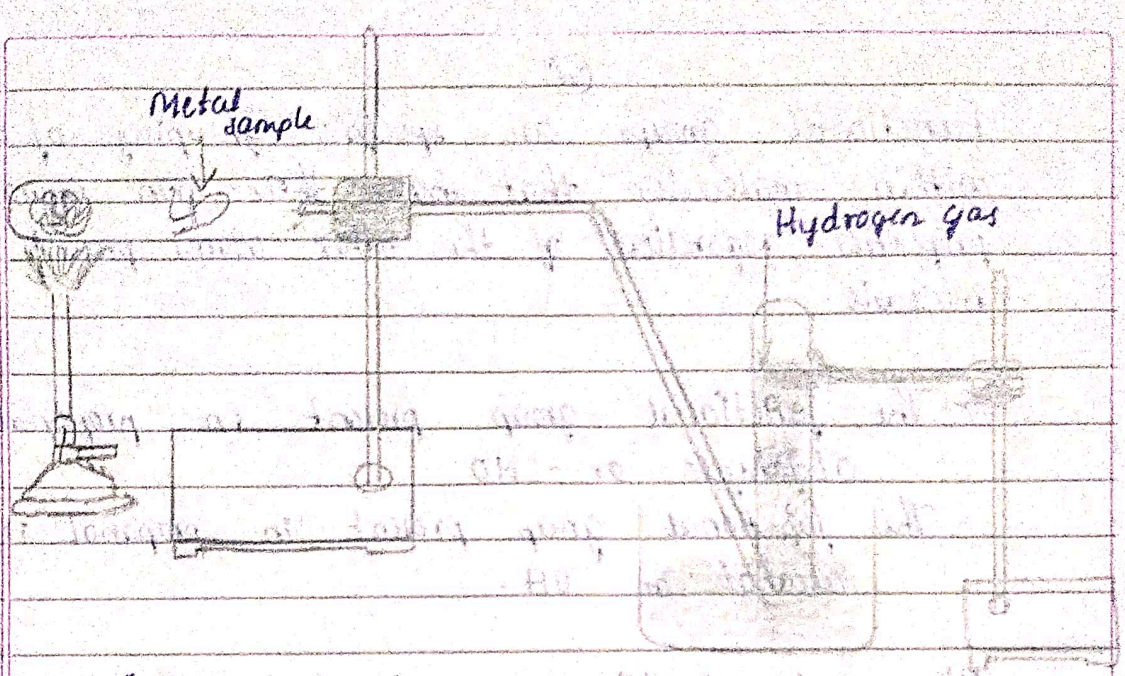
20. Blue and red litmus paper can be used to determine the nature of acids and bases by indicating a significant colour change.
• Blue litmus paper : Turns red in acidic solutions and remains blue in basic solutions.
• Red litmus paper : Turns blue in basic solutions and remains red in acidic solutions.

21.

Saturated hydrocarbons	Unsaturated hydrocarbons
• Single bond is present between carbon atoms.	• Double or triple bond between carbon atoms
• Less reactive	• More reactive.
• Generally gives clean blue flame.	• Burns with yellow sooty flame.

IX

22.



Action of steam on metal.

23. i) $CH_4(g) + 2O_2(g) \longrightarrow CO_2(g) + 2H_2O(g) + Energy$

ii) $2K(s) + 2H_2O(l) \longrightarrow 2KOH(aq) + H_2(g)$

iii) $Fe(s) + CuSO_4(aq) \longrightarrow FeSO_4(aq) + Cu(s)$

(01)

It is an example for Double displacement reaction. Because, chloride and sulphate ions are exchanged.

$$Al_2(SO_4)_3 + 3BaCl_2 \longrightarrow 2AlCl_3 + 3BaSO_4 \downarrow$$

24. Bleaching powder is synthesized by the action of Chlorine gas on calcium hydroxide.

$$2Ca(OH)_2 + 2Cl_2 \longrightarrow CaOCl_2 + H_2O$$

→ Chemical name of bleaching powder is calcium oxychloride.

→ Molecular formula of bleaching powder is $CaOCl_2$.

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→ Uses of bleaching powder :-

- It is used as bleaching agent in textile industry, paper industry and in laundries.
- Used as oxidising agents in many chemical industries.
- It is used to make drinking water free from germs.

X

25. a) Roasting : Zinc sulphides are converted into oxides by heating strongly in the presence of excess air.

$$2ZnS + 3O_2 \xrightarrow{\text{Heat}} 2ZnO + 2SO_2$$

The metals oxides are then reduced to corresponding metals by using suitable reducing agents such as carbon.

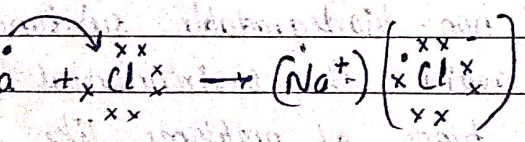
$$ZnO + C \longrightarrow Zn + CO$$

b) $Na \rightarrow Na^+ + e^-$

2,8,1 2,8

$Cl + e^- \rightarrow Cl^-$

2,8,7 2,8,8



Formation of Sodium Chloride.

PART-C

[BIOLOGY]

XI

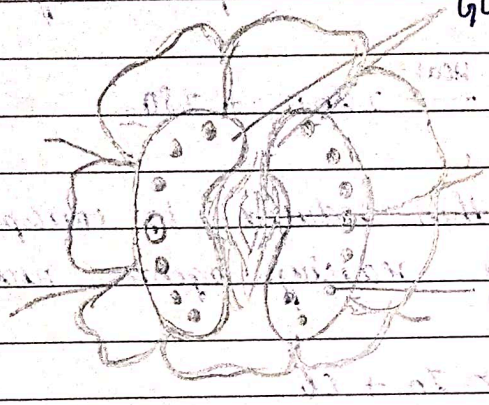
26. D) Multiple fission.

27. c) Lactic acid.

28. c) Fertilization of egg is possible only in structure of figure - A.

XII

29.



Open stomata.

30. Sexual reproduction leads to more variations because here two parents are involved and it involves the mixing of genetic material from both parents.

31. Yes, the use of non-biodegradable substance should be minimized to avoid the environmental pollution. It causes many types of problems like

- Biomagnification.
- Soil depletion.
- Ecological imbalance.

XIII

32. Ozone is a gas made up of three oxygen atoms that occurs in both the earth's upper and lower atmosphere. The ozone layer protects the earth from UV rays from sun. So it is necessary to

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Protect our ozone layer.

(01)

Algae → insects → fish → hawk is an example of aquatic ecosystem.

If the number of organisms in the third trophic level of food chain increases, it can cause an imbalance in the food chain.

33

F_2	R	r
R	RR	Rr
r	Rr	rr

The genotypic ratio of plants is 1:2:1

XIV

34. Women has a perfect pair of sex chromosomes, both called XX, Man has a normal sized chromosome X and another short sized chromosome Y. A child who inherits X chromosome from her father will be a girl and a child who inherits Y chromosome from her father will be a boy. Both the girl and boy inherit only X chromosomes from the mother. Therefore, sex of a child is determined by father.

(01)

During Dihybrid cross by Mendel, it was observed that when two pair of traits were considered, each trait expressed independently of other. Thus, Mendel was able to propose law of independent assortment which says about the

Independent inheritance of traits.

35. Phototropism, thigmotropism and chemotropism are co-ordinated in the apparent movement of creepers through a process called the trophic response. This process allows creepers to navigate towards a suitable support by taking into account light, chemical, and mechanical cues.

(or)

- Insulin : Controls the sugar level in blood
- Estrogen : Promotes development of sex-organs in females and regulates menstruation cycle.
- Thyroxine : It regulates the metabolism of carbohydrates, protein and fats.

36. If transfer of pollen from stamen to the stigma occurs one flower to another flower it is called as cross pollination.

After fertilisation, the zygote divides several times to form an embryo within the ovule. The ovule develops a tough coat and is gradually converted into seeds. The ovary grows rapidly to form fruit. Meanwhile, the petals, sepals, stamen and style and stigma may shrivel and fall off.

XV

37.

i) Cerebrum

ii) Cerebellum

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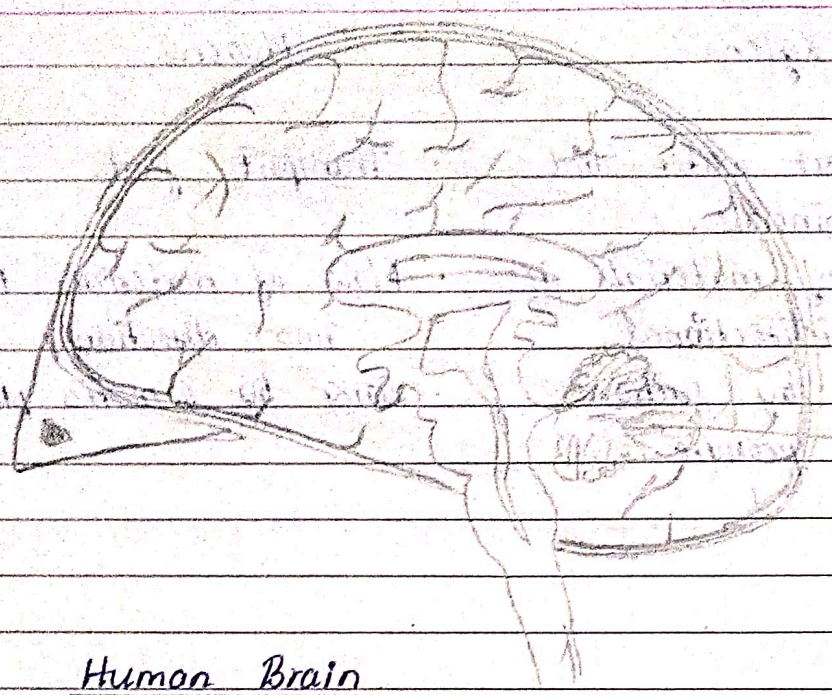
37.



Human Brain

XVI

38. a) The proces of digestion in small intestine of man-
- Small intestine is the site of complete digestion of prokins, carbohydrates and fats.
- Enzymes in the intestional juice convert prokins into amino acids, complex carbohydrates into glucose and fats into fatty acids and glycerol.
- Digested food is absorbed by villi present in the walls of intestine.

⇒ Importance of Double circulation in our body,
- It avoids deoxygenated and oxygenated blood from mixing.
- This type of separation of oxygenated and deoxygenated blood ensures a highly efficient supply of O_2 to the body.
- This is useful in case of humans who constantly need energy to maintain their body temperature.

Xylem	Phloem
• Transport water and minerals.	• Transport food.
• Flow of materials is unidirectional.	• Flow of materials is in Two direction.
• Works by suction pressure.	• Works by osmotic pressure.