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

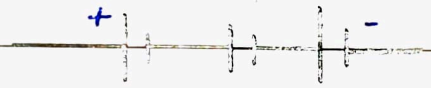
Science Model Paper -

PART - A
[PHYSICS]

I 1. B) diverges the light rays.
2. D) Cataract.
3. A) Current

II 4. $f = 25\,cm$

$R = 2f$
$= 2(25)$
$= 50\,cm.$
∴ The radius of curvature is 50 cm.

5. 

Combination of cells.

III 6. Accommodation occurs when eye adjusts its focal length. During accomodation, the ciliary muscles supports to contract and this helps to adjust the focal length of lens this makes our eye accomodate to see the objects at different distances.

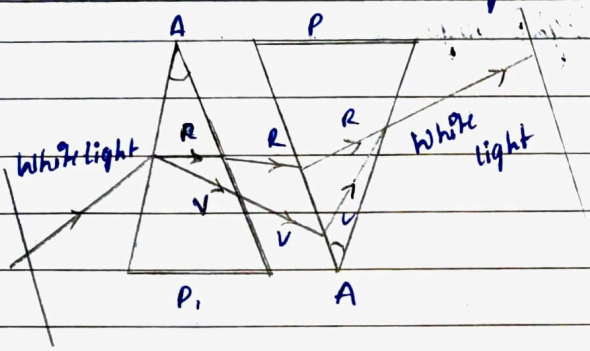
(OR)

Stars appear to be twinkling. It is because of atmospheric refraction. In the atmosphere due to this the star appears to change its position due to continuous refraction.

7. The number of circular turns of insulated copper wire wrapped in the form of cylinder is called as Solenoid. When an Iron core is placed inside the solenoid and an electric current is passed through it. It acts as electromagnet.

IV

8.



9. Ohm's law: The potential difference applied across the conductor is directly proportional to electric current at a constant temperature.

$$V \propto I$$

$$\boxed{V = IR}$$

→ An ammeter is connected in series with the circuit to measure the current flowing through it.

→ A voltmeter is connected in parallel with the circuit to measure the voltage or potential difference between two points.

10. (6)

Joule's law of heating states that the amount of heat generated in an electrical conductor is directly proportional to -

- Square of current for given resistance.
- Resistance for a given current.
- Time for which the current flows through the resistor.

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(3)

⇒ Fuses are connected in series in the circuit to be protected from excessive flow of current fuses are connected. When excess flow of current takes in the circuit the fuses melts and stop the flow of current through the circuit.

10. ⇒ • Take a small compass and a bar magnet. Place a magnet on a sheet of white paper fixed on a drawing board.
• Place the compass near north pole of the magnet mark the position of two ends of the needle.
• Now move the needle to a new position such that the south pole occupies the position previously occupied by its north pole.
• Join the points marked on the paper by a smooth curve which represents field line.

⇒ Because at the point of intersection the compass needle would point towards two directions which is not ponible.

(or)

⇒ Overloading can occur when the live wire and the neutral wire come into contact.
• This occurs when insulation of wires is damaged or when many electrical appliances are connected to one circuit simultaneously.

⇒ Functions of earth wire :-
• This is used as safety measure for appliances have metallic body in domestic circuit.
• This provides a low resistance conducting path for the current.

V 11a) For first wire $R_1 = \rho \frac{l}{A} = 4\ \Omega$

For second wire $R_2 = \rho \frac{l/2}{2A} = \frac{1}{4} \cdot \rho \frac{l}{A}$

$$R_2 = \frac{1}{4} \times 4 = \frac{4}{4} = 1$$

$$\boxed{R_2 = 1\ \Omega}$$

b) Given: $R_1 = 5\ \Omega$

$R_2 = 10\ \Omega$

$R_3 = 30\ \Omega$

$V = 12\ V$

$$\frac{1}{R_p} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$$

$$\frac{1}{R_p} = \frac{1}{5} + \frac{1}{10} + \frac{1}{30}$$

$$\frac{1}{R_p} = \frac{1}{5} \times \frac{6}{30} + \frac{1}{10} \times \frac{3}{30} + \frac{1}{30} \times \frac{1}{30}$$

$$\frac{1}{R_p} = \frac{6+3+1}{30} = \frac{10}{30} = \frac{1}{3}$$

$$\boxed{R_p = 3\ \Omega}$$

∴ The total resistance in a circuit is 3ohm.

VI

12. a) The bending of light ray, when it passes through one medium to other.

⇒ The higher refractive index of refraction indicates that light travels slower. for diamond that light travels more slowly in diamond than in vaccum.

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66. Uses of concave mirror,
- Used in torches, search-lights
- Used in shaving mirrors
- Used in vehicle head lights.

→ Mirror formula,

$$\frac{1}{f} = \frac{1}{v} + \frac{1}{u}$$

f = focal length
v = Image distance.
u = object distance.

PART-B
[CHEMISTRY]

VIII 13. C) brass

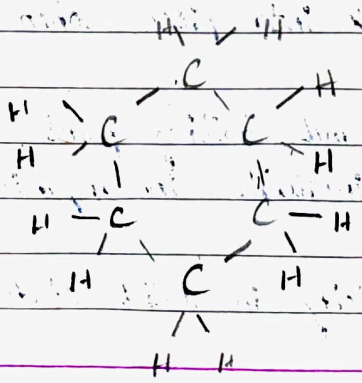
14. D) Barium chloride and sodium sulphate.

15. A) Carbon dioxide.

VIII

16. Two ways to prevent the rusting or corrosion of iron are,
- Oiling
- Greasing or painting.

17. 5th Member
C_6H_{12} - Cyclohexane.



18. Thermite process is the reaction of iron oxide with aluminium is used to join railing of railway tracks or it is used in join of cracked machine parts.

IX

19. i) $2FeSO_4 \xrightarrow{heat} Fe_2O_3 + SO_2 + SO_3$

$\rightarrow 2FeSO_4(s) \xrightarrow{heat} Fe_2O_3(s) + SO_2(g) + SO_3(g)$

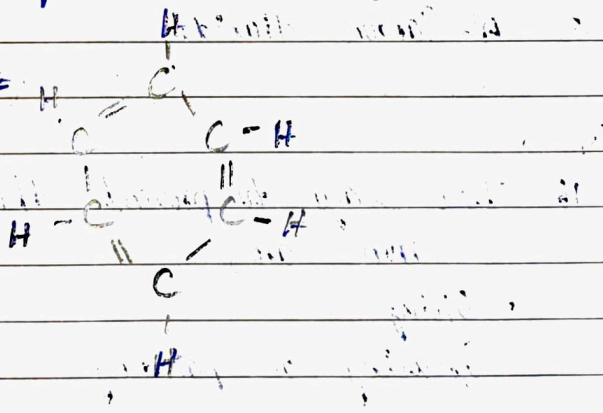
ii) $CH_4 + O_2 \rightarrow CO_2 + H_2O$

$\Rightarrow CH_4(g) + 2O_2(g) \rightarrow CO_2(g) + 2H_2O(g)$

20. Alkynes are unsaturated hydrocarbons having triple bonds between carbon atoms.

$\Rightarrow$ Molecular formula of Benzene = C_6H_6

Structural formula =



21. Properties of ionic compounds:

i) Generally solids.

ii) Generally brittle and breaks into pieces when pressure is applied

iii) They have high melting and boiling points.

iv) Soluble in water and insoluble in organic solvents.

v) They do not conduct electricity in solid state.

(7)

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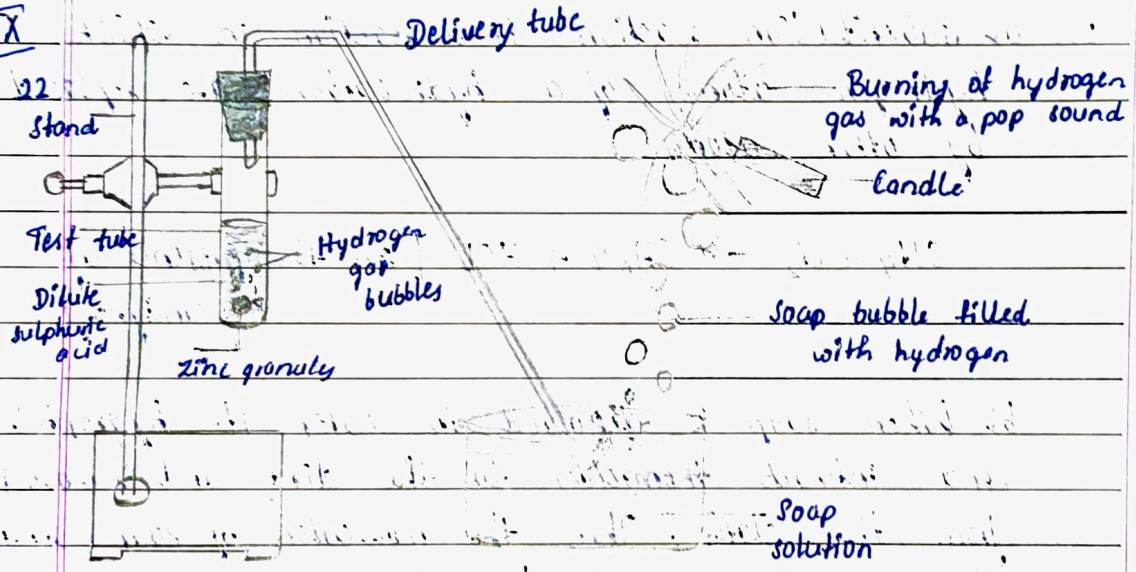
(01)

a) Because aluminium oxide is a metal oxide which reacts with both acids and bases to give salt and water.

b) Calcium floats on water because the bubbles of hydrogen gas which are formed during the reaction stick to the surface of calcium metal and hence, calcium floats on water.

X

22



Reaction of zinc granules with dilute sulphuric acid.

23 i) Calcium oxychloride.
ii) Sodium bicarbonate
iii) Calcium sulphate hemihydrate.

24

Calcination	Roasting
The ores are heated strongly in the presence of ~~excess~~ limited air.	The ores are heated strongly in the ~~limited~~ excess air.

• It is used for mainly for carbonate ore.	• It is used for mainly for sulphide ores.

⇒ After the roasting or calcination process. Metals are converted into oxides. Then these oxides reduced to corresponding metals by using suitable reducing agent such as carbon.

$$ZnO + C \rightarrow Zn + CO$$

XI

25. a) Substitution reaction is a reaction in which hydrogen atoms of a hydrocarbon are replaced by other atoms.

$$CH_4 + Cl_2 \rightarrow CH_3Cl + HCl$$ [In the presence of sunlight].

b) When soap is dissolved in water its hydrophobic end interacts themselves to the dirt and remove it from the cloth. Then the molecules of soap arrange themselves in micelle formation and trap the dirt at centre of cluster. These micelles remain suspended in the water.

(or)

a) Carbon can gain four electrons. But it would be difficult for the nucleus with six protons to hold on ten electrons, that is four extra electrons. It can lose four electrons but it would require a large amount of energy to remove four electrons.

(9)

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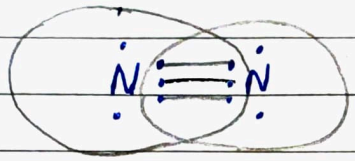
b) Nitrogen

Atomic no = 7

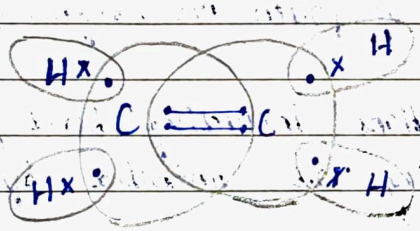
K	L
2	5

Nitrogen atom shares three electrons forming a triple covalent bond.



:N ≡ N:

⇒ C_2H_4 → Ethene.



PART C

(BIOLOGY)

XII

26. B) Alveoli

27. D) Playing skills.

XIII

28. The process in which plants remove excess water through stomata present in leaves is called transpiration.

29. The folding up of leaves in a sensitive plant on touching is not a tropism because it is non-directional movement.

30. Two advantage of vegetative Propagation are -
- Large number of plants obtained in a short interval.
- It preserves the genetic characters of parent plant.

XIV

31.

Germination of pollen on stigma.

32. Medulla : Involuntary actions including blood pressure, salivation and vomiting are controlled by the medulla.

Cerebellum : It controls posture and equilibrium of the body.

33. i) Nephrons are called as functional unit of kidney because nephrons filter the waste products from the blood.

ii) The small intestine is called the site for complete digestion because after the digestion of proteins in stomach all the other digestion and absorption occurs in small intestine.

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XV

34. When a tall pea plant is crossed with a pure dwarf pea plant, the first generation [F_1] plants will all be tall. This is because of Mendel's law of dominance, which states that only one form of trait will appear in next generation. So the F_1 plants will be tall.

⇒

F_2	T	t
T	TT	Tt
t	Tt	tt

F_2 generation,

Genotypic ratio is 1:2:1
Phenotypic ratio is 3:1

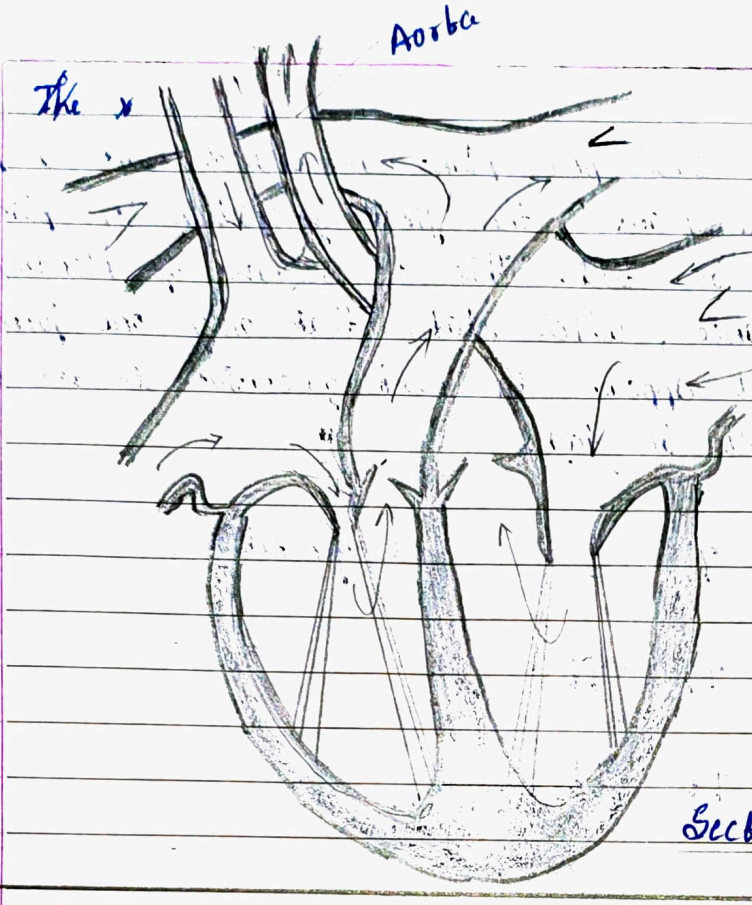
(OR)

F_2	RY	Ry	rY	ry
RY	RRYY Round yellow	RRYy Round yellow	RrYY Round yellow	RrYy Round yellow
Ry	RRYy Round yellow	Reyy Round green	RrYy Round yellow	Rryy Round green
rY	RrYY Round yellow	RrYy Round yellow	rrYY wrinkled yellow	rrYy wrinkled yellow
ry	RrYy Round yellow	Rryy Round green	rrYy wrinkled yellow	rryy wrinkled green

Round yellow - 9
Round green - 3
Wrinkled yellow - 3
Wrinkled green - 1

Phenotypic ratio - 9:3:3:1

35. The x



Section of Human Heart

36. The various steps in a food chain at which the transfer of food takes place from one organism to another organism.

Flow of energy is unidirectional because the energy is lost by the organisms of food chain which cannot be reused by plants in photosynthesis. The energy transferred to herbivores does not come back to producers

(or)

Ozone is a gas made up of three oxygen atoms that occurs in both the earth's upper and lower atmosphere. It protects the earth from harmful UV rays from reaching earth's surface.

The major cause of ozone depletion is use of Chlorofluorocarbons used in refrigerators, sprays and air conditioners. which damages the ozone layer.

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XV

37. The pathway in which the reflex action is executed is called as reflex arc.

i) Photoreceptors convert into electrical impulses
ii) Sensory neurons receive the signals from receptors.
iii) Sensory neuron carry this stimuli to spinal cord.
iv) Spinal cord transports or sends the message to brain.
v) Brain sends a response to muscles through motor neuron.
vi) Pupil contracts.

38. a) • During the pregnancy period the embryo gets nutrition from mother's blood with help of disc shaped special tissue embedded in the uterine wall is called placenta.
• It contains villi on developing side of tissue.
• Villi provide glucose and oxygen to pass from mother to embryo.
• Removes the wastes generated from the embryo.

b) Prostate gland : They produces fluid and that nourishes and transports sperm.

Testosterone hormone : Helps in the production of sperms.