DON BOSCO SCHOOL
CHITRADURGA

STUDENT'S NAME	Kushal. S.N
CLASS	SUBJECT
ROLL NO.	DATE 12/02/2025

(1) -: Model Question Paper - 03 :-

-: Science :- KSEAB PAPER :-

PART-A

[PHYSICS]

I.

1. [C] Ampere.

2. [A] Ciliary muscles.

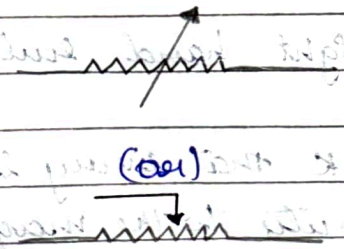
II

3.

[i] Electric cell

⇒ 

[ii] Rheostat

⇒ 

4. While live wire and neutral wire are connected directly to the household Electrical appliances from the electric Pole short circuit occurs.

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III

5. In domestic circuits ~~not~~ resistors should be connected to Parallel instead of Series because :-

- The Parallel circuit divides current through the electrical gadgets.
- when one component fails, the circuit does not fail
- The total resistance in Parallel circuit decreases, So that
- Electrical gadgets get current as Per their resistance required.

6. * Every Point on the wire carrying current would give rise to the magnetic filed.
* Appears as straight lines at the center of the loop.
* By applying the right hand rule.
* It is easy to check that every Point to the wire contributes to the magnetic field lines in the same direction within the loop.

[OR]

- This is used as a safety measure for appliances have metallic body in domestic circuit.
- This provides a low resistance conducting Path for the current.
- Any leakage of current in the appliance Keeps its potential to that of the earth and user may not get a Severe electric shock.

7. NO, a rainbow as depicted in the figure cannot be observed on the Moon's surface because the moon lacks a significant atmosphere with water droplets necessary for the refraction and dispersion of sunlight that creates a rainbow. Essentially, there is no medium for light to interact with to form the rainbow colors.

IV

8. Stretch the first finger, the middle finger and the thumb of your left hand mutually perpendicular to each other in such a way that the index finger represents the direction of the current in the conductor, then the thumb will represent the direction of motion of the conductor.

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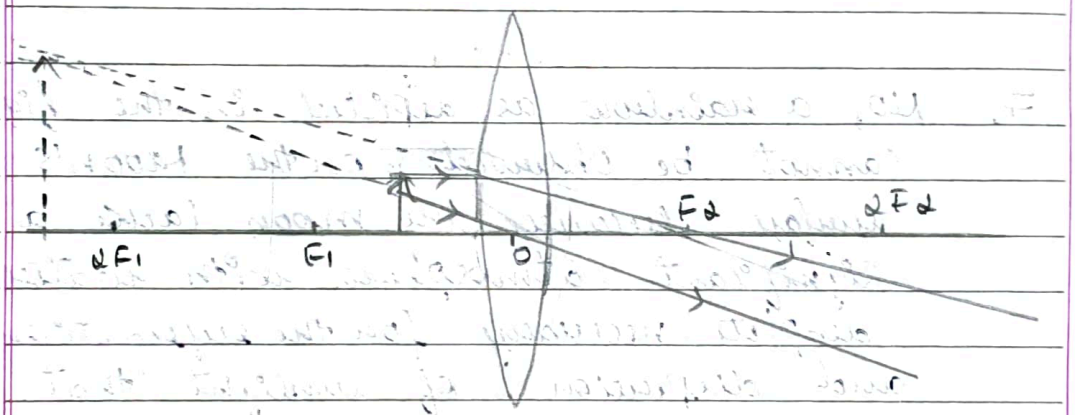
Factors on which the force acting on current carrying conductor depends

- Strength of Magetic field.
- Strength of electric field.
- Length of conductor.

9.



Position: Image is formed beyond 2F1
Nature: Image is virtual & erect.

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10. Hypermetropia - long sightedness

A Person having this defect can see distant objects distinctly but cannot see near objects clearly. In such a case, a formed image is formed behind or beyond the retina.

This defect is due to
- Shortening of the eyeball
- Focal length of eye lens becomes more.

Correction: using a convex lens of suitable focal length the image can be made to form on the retina.

[OR]

The refractive index of the earth's atmosphere keeps varying in different regions. With increasing altitude, it goes on decreasing due to decreasing density of air. Hence, the starlight entering the earth's ~~at~~ atmosphere undergoes continuous refraction it bent towards the normal before reaching our eyes. This causes changes in intensity of starlight entering our eyes. Thus stars appear to be twinkling.

If we consider a planet as a collection of large number of point sized sources of light, the total variation in the amount of light entering our eye from all the

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individual point sized sources will average out of zero, there by nullifying the twinkling effect.

V

11. $R = 4\,m$

$f = +2\,m$

$u = -10\,m$

$v = ?$

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

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

$$\frac{1}{v} = \frac{1}{2} - \frac{1}{-10}$$

$$\frac{1}{v} = \frac{5+1}{10}$$

$$\frac{1}{v} = \frac{6}{10}$$

$$v = \frac{5}{3}$$

$$\boxed{v = -1.667\,m}$$

$$m = \frac{-v}{u}$$

$$= \frac{+(1.667)}{+10}$$

$$\boxed{m = 0.1667}$$

Nature: Virtual & Erect

Size: Diminished.

RAJDHANI

12.

a] The Potential difference V across the ends of a given conductor is directly proportional to the current flowing through it, provided its temperature remains constant.

b] The resistance of a conductor depends on the following factors:

- R is directly proportional to the length of the conductor.
- R is inversely proportional to the area of cross-section
- The Nature of the material
- Temperature.

c]

A	B
$\rho = 10\ \Omega m$	$\rho = 2.63 \times 10^{-8}\ \Omega m$

material A can be used as an insulator because it has high resistivity.

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PART-'B (8)

[CHEMISTRY]

VI

13. [C] Sodium Carbonate.

14. [B] Concentration of H^+ ions increases.

15. [C] Elements A and C

VII

16. Process of coating iron or steel objects with a thin layer of zinc. is called galvanisation.

17. Nitric acid is a good oxidising agent and hence it oxidizes hydrogen into water.

18.

(i) Acid aldehyde.

(ii) Bromoethane

VII

19. White tooth enamel is Calcium Phosphate and a very hard substance, which gets affected when PH of our mouth falls below 5.5

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(a)

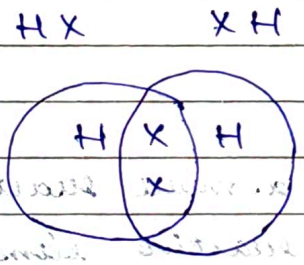
Toothpastes which are alkaline are used to clean the teeth by neutralising the excess of acid in food to prevent tooth decay.

20. water of crystallization is the number of molecule of water which are loosely bonded to one molecule of salt.

(i) Copper sulphate crystals containing waters of crystallization are blue but on heating they turn white.

21.

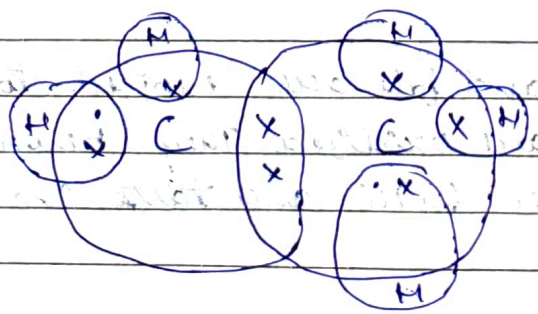
(i) H - 2



H–H

H_2 molecule.

(ii) Ethane - C_2H_6



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IX

Ans.

a]

(i) $NaOH + H_2SO_4 \longrightarrow Na_2SO_4 + H_2O$

$\Rightarrow$ $2NaOH + H_2SO_4 \longrightarrow Na_2SO_4 + 2H_2O$

(ii) $K + O_2 \longrightarrow K_2O$

$\Rightarrow$ $4K + O_2 \longrightarrow 2K_2O$

b]. $ZnO + C \longrightarrow Zn + CO$

Oxidised reactant = C

Reduced reactant = ZnO

[OR]

(ii) A chemical reaction where a more reactive element displaces a less reactive element from its salt solution is called displacement reaction.

(ii) If the decomposition is carried out by heating it is called thermal decomposition.

(iii) when oils and fats are exposed to air or oxygen are oxidised They become rancid and their smell and taste change.

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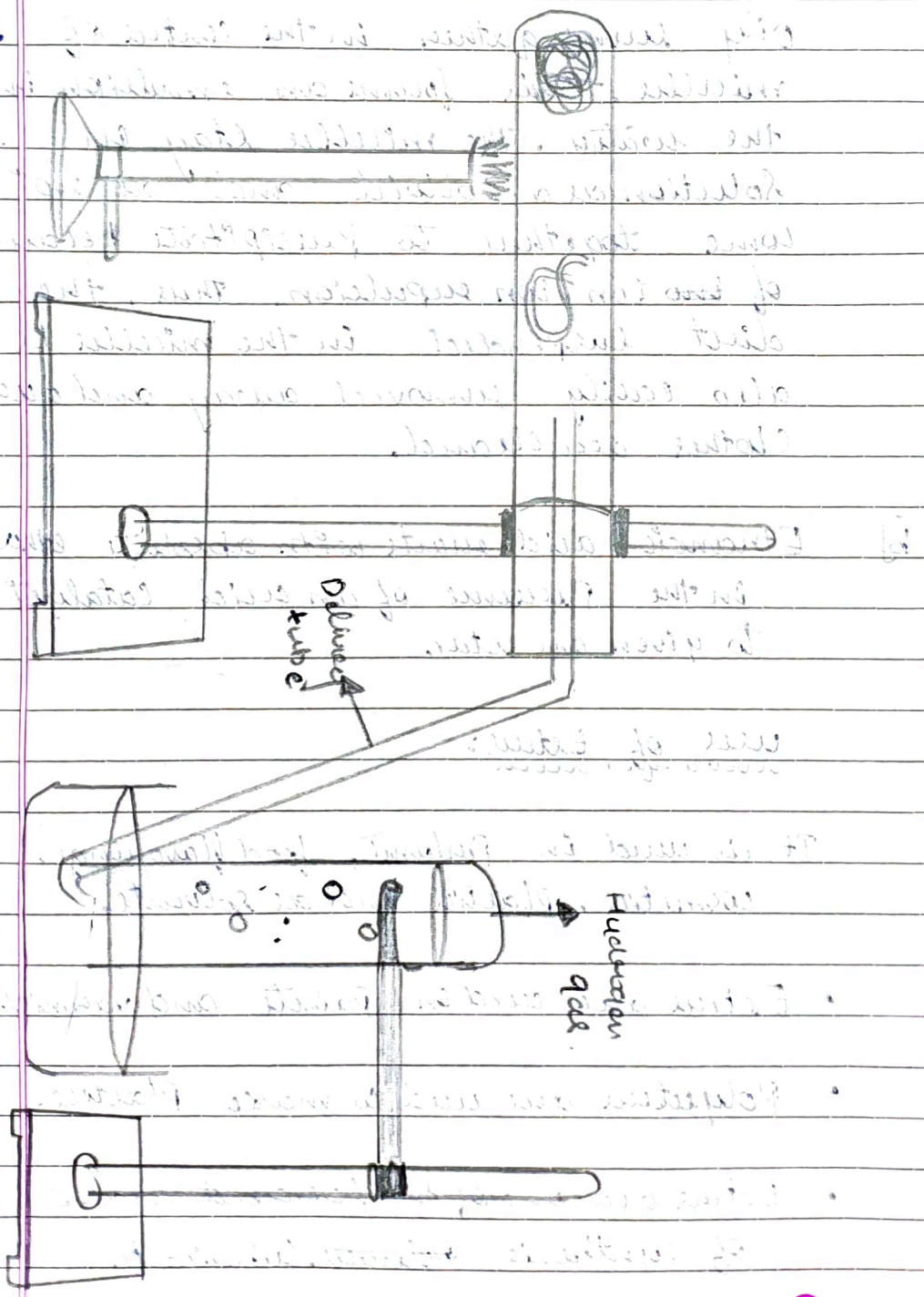
23. The reaction between an acid and a base to give a salt and water is known as neutralisation reaction.

$$NaOH + HCl \longrightarrow NaCl + H_2O$$

24.



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X

Q5

a] The cleaning action is characterised by a soap micelle. The ionic end of soap micelle dissolves in water and the other end dissolves in oily stains. These micelles are able to clean because oily stains gather in the centre of micelle. This forms an emulsion in the water. The micelles stay in solution as a colloid and do not come together to precipitate because of ~~the~~ ion-ion repulsion. Thus, the dirt suspended in the micelles is also easily removed away and our clothes are cleaned.

b] Ethanoic acid reacts with absolute ethanol in the presence of an acid catalyst to given an ester.

~~use~~ use of Esters:-

It is used in perfume, food flavourings, cosmetics, plastics and as solvents.

- Esters are used in paints and varnishes.
- Polyesters are used to make plastics.
- Esters are one of the largest classes of synthetic ~~Petrols~~. lubricants.

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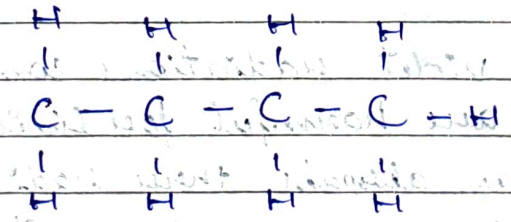
[OR]

Saturated carbon compounds	unsaturated carbon compounds
* Single bond exists b/w two consecutive carbon atoms.	* Double and triple bond Exists
* less reactive	* More reactive
* Give clean flame when they burnt	* Give yellow / black flame.
* Subjected to substitution reaction.	* subjected to both addition and substitution reactions.
Ex: Alkanes, Cycloalkanes	Ex: Alkene. Alkynes benzene Etc...

b]. Compounds with identical molecular formula but different structures are called structural isomers.



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PART - 'C' (14)

[BIOLOGY]

XI

26. [A] Fragmentation

27. [B] the transportation of water from root to shoot

28. [B] Stigma ⟶ Pollen tube ⟶ Ovary

XII

29. Both vasotomy in males and tubectomy in females are effective surgical methods/ways of contraception that are Permanent and irreversible. which is why they are termed terminal methods.

30. Ozone is a molecule containing three Oxygen atoms (O_3)

The ultra violet radiations coming from the sun are harmful for living beings. This layer absorbs these radiations coming from the sun and does not allow them to reach the earth's surface.

31. Because, during DNA copying certain errors take place leading to changes in the Proteins that are synthesised that lead to altered body defense.

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VIII

32. Biodegradable substances :- substances that are broken down by biological process are said to be Biodegradable.

Ex: plant and animal wastes.

Non-biodegradable substances :- There are other substances also which are not broken down in this manner are said to be non-biodegradable

Ex: plastics.

[OR]

In a food chain, Energy travels upwards through trophic levels from producers (plants) to consumers. Progressively decreasing decreasing at each level due to energy loss as heat, while harmful materials tend to accumulate and become more concentrated at higher trophic levels.

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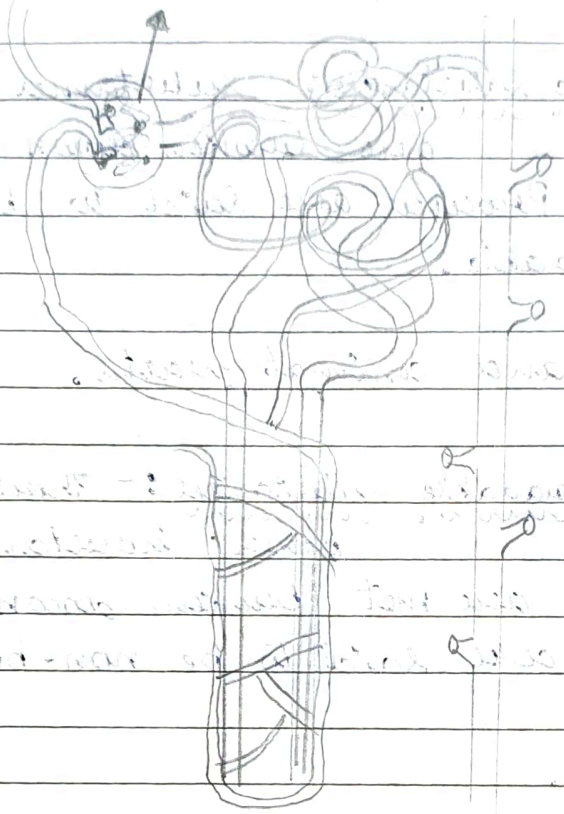
33. Bowman's capsule



(½)

34. Digestion is the process of breakdown of complex food substance into simple substance. Secretion of various glands like stomach, salivary gland, Pancreas liver and intestinal gland are involved in the process. Bile the gland whose secretion contains lipase and converts fats into simpler fat.

[OR]

Arteries:

- Carry oxygen rich blood away from the heart.
- Have the thickest walls and are the largest blood vessels.

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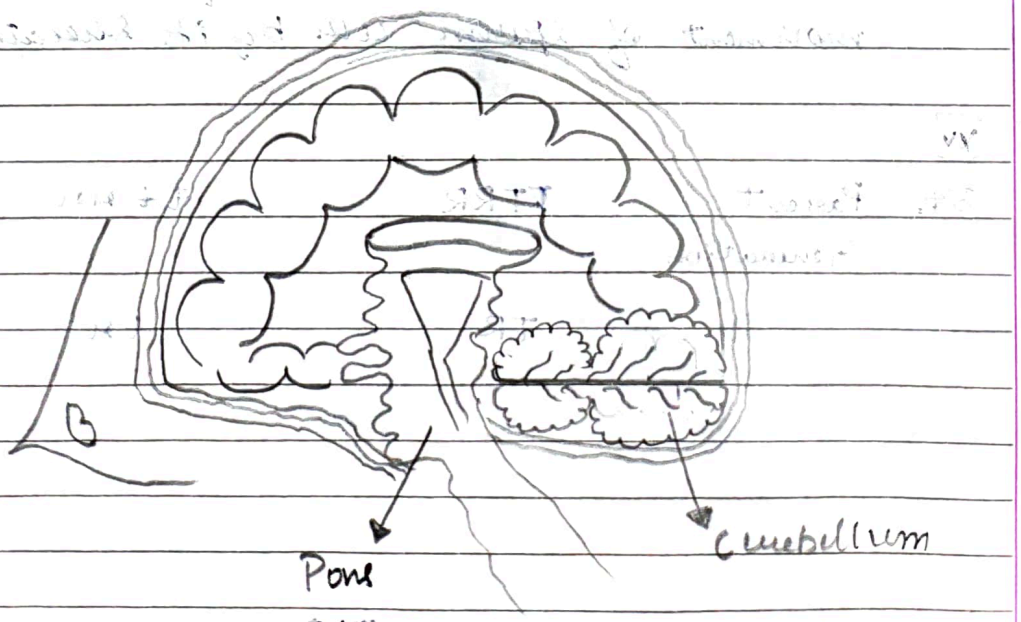
- The aorta is the largest artery, connecting to the heart and Picking up oxygenated blood.

Capillaries

- Connect arteries and veins.
- Have thin walls that allow blood to come into close contact with body tissue.
- Surround body cells and tissues to deliver and absorb oxygen, nutrients, and other substances.

Double circulation evolved in mammals, which have a four chambered heart. This allowed mammals to have more complex movements to escape Predators, and to have more energy for food sourcing and reproduction.

35.



36. The uterus providing as protected environment for the developing fetus while the Placenta actively supplies it with nutrients Oxygen and removes waste Products.

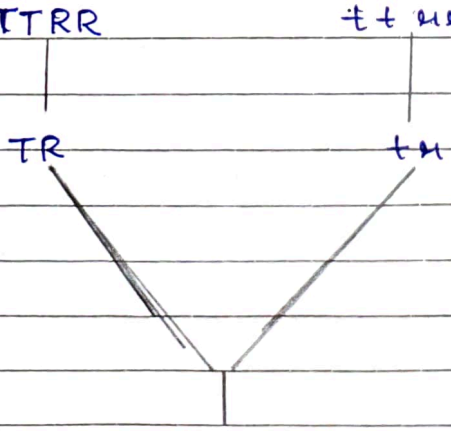
Different aspects of development like cognitive, social, emotional and physical work together and support each other. where one area enhances the growth and progress in another, creating a well rounded individual.

[OR]

The testes are the male reproductive organs that are located outside the abdominal cavity, within a Pouch called Scrotum.
Functions of testes: Produce Sperm Produce a hormone called Testosterone, which brings about secondary Sexual characters in boys.
Provides nutritional media for the movement of Sperm cells by its Secretion.

XV

37. Parent Generation TTRR × tt rr



First generation. Tt Rr

Second Generation (F_2)

Gamete	TR	Tr	tR	tr
TR	TTRR	TTRr	TtRR	TtRr
Tr	TTRr	TTrr	TtRr	Ttrr
tR	TtRR	TtRr	ttRR	ttRr
tr	TtRr	Ttrr	ttRr	ttrr

Phenotypic Ratio : 9 : 3 : 3 : 1

XVI

38.

a] • Even touch / thigmatropism, when the tendrils of creeper plants come in contact with a support, the plant circles around it and grows faster.

• when tendrils gets attached to a support then, tips of the plant by their auxin harmone at higher concentration and stimulate the elongation of cells, then the plants show directional movement / growth towards light.

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b]. Thyroxine hormone regulates the Carbohydrate Protein and fat metabolism in the body so as to provide the best growth blance. Adrenaline hormone is known as the Emergency Hormone.

Adrenaline increase the heart beat and breathing rate which results in the supply of more oxygen to muscles. Hence the rate of metabolism increases.