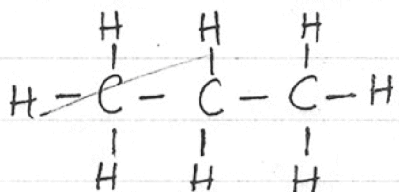


CBSE TOPPER'S SHEET with Suggestions

1. Write the number of covalent bonds in the molecule of propane, C_3H_8 .

Ans.



No. of covalent bonds = 10

Correct number of covalent bonds are given

2. Where is DNA found in a cell?

Ans.

The DNA is found in the nucleus of a cell.

To the point answer has been provided

3. The first trophic level in a food chain is always a green plant. Why?

Ans.

Green plants are considered to be producers of food. They convert simple inorganic raw materials to complex organic substances (sugar & starch) in the presence of sunlight and chlorophyll. Hence, the green plants (capable of synthesizing their own food) are placed in the first trophic level.

To the point answer has been explained properly

4. The absolute refractive indices of glass and water are $4/3$ and $3/2$ respectively. If the speed of light in glass is 2×10^8 m/s, calculate the speed of light in (i) vacuum (ii) water.

Ans.

$$n_g = \frac{4}{3} = \frac{\text{Spd of light in vacuum}}{\text{Spd of light in glass}}$$

$$\frac{4}{3} \times 2 \times 10^8 = \text{Spd of light in vacuum}$$

Formula used and computation done are correct

i) $2.67 \times 10^8 = \text{speed of light in vacuum}$

ii) $n_w = \frac{3}{2} = \frac{\text{Spd of light in vacuum}}{\text{Spd of light in water}}$

$$\frac{\text{Spd of light in vacuum} \times 2}{3} = \text{Spd of light in water}$$

$$\frac{8 \times 10^8}{3} \times \frac{2}{3} = \text{Spd of light in water.}$$

$$\therefore \text{Spd of light in water} = 1.78 \times 10^8 \text{ m/s.}$$

$$\begin{array}{r}
 2.66 \\
 3 \overline{) 8} \\
 \underline{-6} \\
 20 \\
 \underline{-18} \\
 20 \\
 \underline{-18} \\
 20 \\
 \underline{-18} \\
 20
 \end{array}$$

$$\begin{array}{r}
 1.77 \\
 9 \overline{) 16} \\
 \underline{-9} \\
 70 \\
 \underline{-63} \\
 70 \\
 \underline{-63} \\
 63
 \end{array}$$

5. We often observe domestic waste decomposing in the bylanes of our homes. List four ways to make the residents aware that the improper disposal of wastes is harmful to the environment and also for their own health.

Ans.

- Encourage the use of composting (or) vermi-composting.
- Spreading awareness about the diseases spread due to improper disposal of wastes and ~~the~~ breeding of mosquitoes.
- Holding staged shows to demonstrate safer ways of disposal and discussing about the health problems (malaria, dengue, jaundice) etc which may arise if harmful pathogens enter our body.
- Organizing clubs and campaigns to clean the neighbourhood every week.
- Encourage the Rs - Recycle, Reuse, Reduce to protect the environment.
- Segregating bio-degradable & non-biodegradable wastes.

Correct ways for awareness are listed and explained

Bio-degradable wastes can be disposed by composting & incinerating.

Non-bio-degradable wastes can be recycled, reused.

- Proper Sewage Treatment.

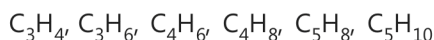
6. List any two advantages associated with water stored in the ground.

Ans.

- To Water doesn't evaporate.
- To recharge ground water level & nearby-wells
- To provide moisture for the vegetation cover.
- There is no breeding of mosquitoes unlike stagnant water collected in ponds (or) lakes.
- Water is protected from contamination by the humans.

Correct answer has been provided

7. What is meant by homologous series of carbon compounds? Classify the following carbon compounds into two homologous series and name them.



Ans.

A series of compounds in which the same functional group substitutes for hydrogen in a carbon-chain is called a homologous series of carbon compounds.

	Alkynes C_nH_{2n-2}	Alkenes C_nH_{2n}
Propyne	C_3H_4	C_3H_6 Propene
Butyne	C_4H_6	C_4H_8 Butene
Pentyne	C_5H_8	C_5H_{10} Pentene

To the point answer has been given

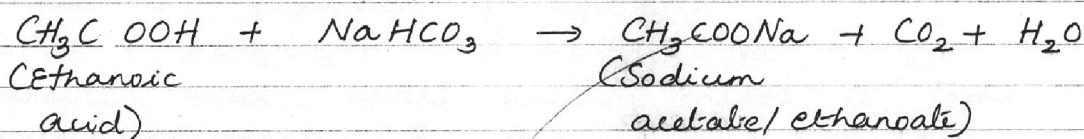
8. List two tests for experimentally distinguishing between an alcohol and a carboxylic acid and describe how these tests are performed.

Ans.

Reaction with carbonates / hydrogencarbonates:
Alcohol (Ethanol) doesn't react with carbonates / hydrogencarbonates.



Ethanoic acid (carboxylic acid) reacts with carbonates / hydrogencarbonates to form a ~~Sodium salt~~ (Sodium ethanoate / acetate), CO_2 and H_2O .

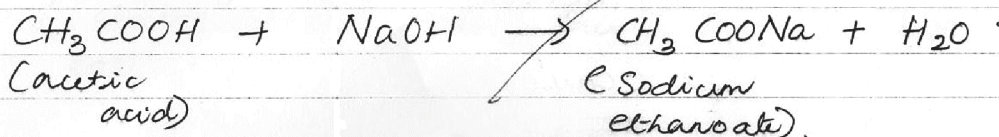


The CO_2 gas evolved is passed through lime water & it turns lime water milky. This shows it is carbon-di-oxide.

II) Reaction with an alkali:

Ethanol (alcohol) doesn't react with a base.
(Ethanol) $C_2H_5OH + NaOH \rightarrow \text{No reaction}$
(Ethanol)

Ethanoic acid (carboxylic acid) reacts with a base (NaOH - Sodium hydroxide) to form salt and water.



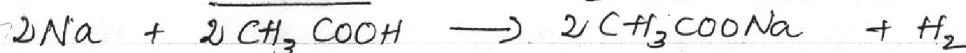
Correct tests are described to experimentally distinguish an alcohol and carboxylic acid

III Reaction with metal.

Ethanol reacts with metal (Na) to form sodium ethoxide & evolution of hydrogen.



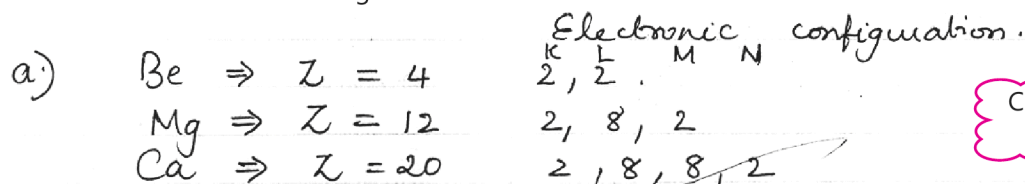
Ethanoic acid reacts with metal to form sodium ethanoate & H_2 .



9. The elements ${}_4\text{Be}$, ${}_{12}\text{Mg}$ and ${}_{20}\text{Ca}$, each having two valence electrons in their valence shells, are in periods 2, 3 and 4 respectively of the modern periodic table. Answer the following questions associated with these elements, giving reason in each case:

- In which group should they be?
- Which one of them is least reactive?
- Which one of them has the largest atomic size?

Ans.



Correct reasons are provided

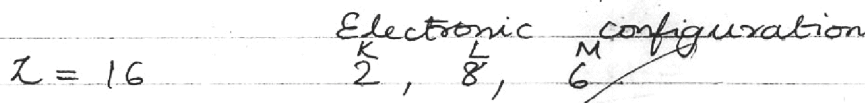
They should be in the IInd group because they have 2 electrons each in their valence shell.

b) Beryllium is the least reactive because as you go down the group the metallic property increases (electropositive) and they tend to lose electrons easily.

c) Calcium has the largest atomic size because it has 4 shells (K, L, M, N) and the atomic size increases as you go down a group due to addition of new shells.

10. Taking the example of an element of atomic number 16, explain how the electronic configuration of the atom of an element relates to its position in the modern periodic table and how valency of an element is calculated on the basis of its atomic number.

Ans.



The element is ~~Silicon~~ Sulphur

Correct explanation and method of calculating valency has been given

→ It lies in the third period because it has 3 shells (K, L, M). [Each occupied shell marks a new period].
the start of

→ It lies in the 16th group (10 + 6). The no. of valence electrons helps us find its group. There are 6 valence electrons, so it belongs to 10 + 6 = 16th group.

The valence electrons are 6. So, in order to attain noble gas configuration, it must gain 2 electrons. So the valency of Sulphur is 2.
(8 - 6) = 2 ⇒ Valency.

It is a non-metal because it must gain electrons to attain noble gas configuration.

When the no. of valence electrons are 5 and above, to find out the valency subtract the no. of valence electrons from 8.
8 - (no. of valence electrons)

11. List three distinguishing features between sexual and asexual types of reproduction, in tabular form.

Ans.

	Asexual Reproduction.	Sexual Reproduction
1)	It doesn't involve gamete formation.	It involves gamete formation.
2)	It involves only one parent.	It involves two parents.
3)	The offspring is ^{almost} identical to the parent. Less variations.	The offspring resembles both parents (50% each) More variations.
4)	Mitosis - type of cell division	Meiosis - (Gametes) Mitosis - (Somatic cells).
5)	Less chances of evolution.	More chances of evolution.

Important differences have been given

12. List four points of significance of reproductive health in a society. Name any two areas related to reproductive health which have improved over the past 50 years in our country.

Ans.

- To avoid the transmission of STDs (sexually transmitted diseases) like AIDS, syphilis, warts etc.
- To avoid unnecessary pregnancies.
- To control the population of the society.
- Controlled population size leads to equitable distribution of resources.
- Increase in standard of living.
- ⇒ Incentives for small family norms have led to control in the population explosion.
- ⇒ The sex ratio has become more balanced in our country because prenatal sex determination has been prohibited & illegal sex-selective abortion has been banned.
- ⇒ Spread of awareness about STDs & usage of contraceptives (Barriers - condoms) have prevented many unwanted pregnancies & has lowered the ~~rate~~ spread of STDs (AIDS, syphilis etc). This was possible mainly due to sex-education.

Main points have been highlighted

13. What are chromosomes? Explain how in sexually reproducing organisms the number of chromosomes in the progeny is maintained.

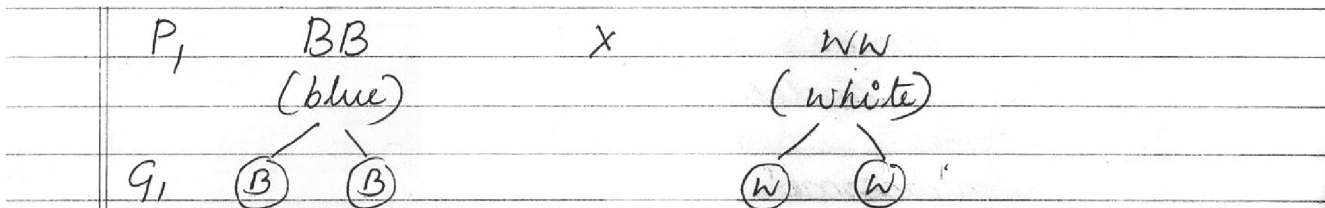
Ans.

Each gene set is present not as a single long thread of DNA but as separate independent pieces, called chromosomes. Each cell has 2 pairs of chromosomes for each characteristic / gene - one from male & other from female parents. During gamete formation only one chromosome enters the gamete (either of maternal (or) paternal origin).

- ⇒ The 'no' of chromosomes are halved by meiosis. (the amount of DNA)
- ⇒ The Gametes which are haploid in nature combine during fertilisation to form the zygote (diploid in nature). Thus, the no. of chromosomes & DNA material are restored in the organism ensuring the stability of DNA in the species.

14. A pea plant with blue colour flower denoted by BB is cross-bred with a pea plant with white flower denoted by ww.
- (a) What is the expected colour of the flowers in their F₁ progeny?
- (b) What will be the percentage of plants bearing white flower in F₂ generation, when the flowers of F₁ plants were selfed?
- (c) State the expected ratio of the genotype BB and Bw in the F₂ progeny.

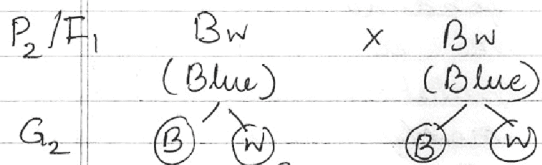
Ans.



F ₁	B	W	W
	B	BW	BW
	B	BW	BW

Phenotype: ~~Blue white~~
Bw (Blue)

- (a) All F₁ plants will have blue flowers. (Blue-dominant trait, white-recessive trait)
- Law of Dominance



F ₂	B	B	w
	B	BB (Blue)	Bw (Blue)
	w	Bw (Blue)	ww (white)

Phenotypic ratio: Blue : white = 3 : 1.

Genotypic ratio: BB : Bw : ww = 1 : 2 : 1.

- (b) Percentage of white flowers = 25%.

- (c) Phenotype ratio: Blue : white = 3 : 1
Genotype ratio: BB : Bw = 1 : 2

15. Explain the following:

- (a) Speciation
- (b) Natural Selection

Ans.

a.) Speciation is the process of formation of new ~~spare~~ species from pre-existing species.

It depends on → Natural Selection

→ Geographic isolation

→ Genetic Drift

→ Onset of reproductive isolation

Correct explanation with suitable examples have been given

~~When~~ The beetles feeding on the bushes are spread over a mountain range. There are many sub-populations in the neighbourhood & they mostly reproduce within these sub-populations. They are isolated by a large river.

→ The Genetic drift & natural selection operate on these isolated groups separately.

→ Eventually they become incapable of reproducing with each other even if (incapable) they happen to meet. 2 New species are formed.

b.) Natural selection: For example: ~~The~~ A group of red beetles are living in a mountain range among green bushes. There is a variation, a green beetle is born which passes on the green colour to its progeny. Green beetles are not spotted by crows easily & mostly red beetles are eaten.

→ Natural selection changes the frequency of a certain gene in a population.

→ It enables the organism to adapt better to its environment.

→ It directs evolution. Organisms which are fitter survive better.

16. What is meant by scattering of light? Use this phenomenon to explain why the clear sky appears blue or the sun appears reddish at sunrise.

Ans.

The particles in the environment scatter (colloidal) light and the path of the beam is visible. Colloidal particles are large enough to scatter light. This phenomenon is called Tyndall effect.

The sky appears blue

The atmosphere contains small particles like dust, smoke, mist and molecules of air that are smaller than the wavelength of visible light. Hence, they scatter light of shorter wavelengths at blue end. This scattered blue light enters our eye & the sky appears blue.

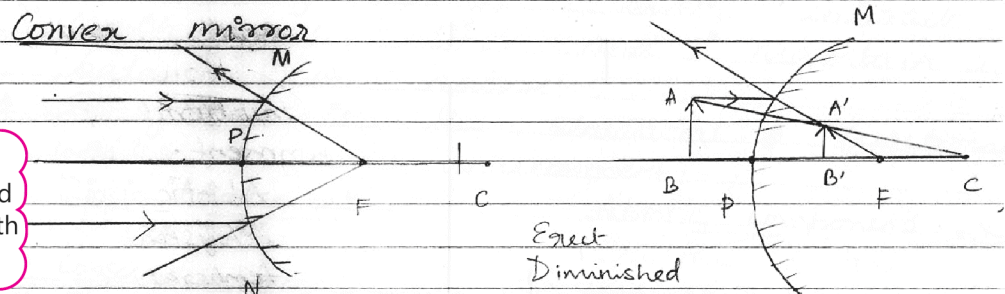
Reddish appearance of Sun at sunrise

When the Sun is at the horizon, the sunlight has to pass through thick layers of atmosphere & large distances to reach the surface of Earth. Meanwhile, the smaller particles in the atmosphere scatter away lights of shorter wavelength (blue & violet). Hence, only the lights of longer wavelength (red) reaches our eyes. (The blue light is scattered & eliminated away).

Precise and correct reasons are provided

17. If the image formed by a mirror for all positions of the object placed in front of it is always erect and diminished, what type of mirror is it? Draw a ray diagram to justify your answer. Where and why do we generally use this type of mirror?

Ans.



The type of mirror identified is correct and justification is given with correct ray diagram.

We use it generally in rear-view^N mirrors of cars to enable the driver to see the traffic behind him/her and to facilitate safe driving. A convex mirror is used because it always gives → erect
→ virtual
→ diminished images.

It gives a wider field of view so that a larger area can be viewed. This is because the convex mirror is curved outwards.

18. What is an ecosystem? List its two main components. We do not clean natural ponds or lakes but an aquarium needs to be cleaned regularly. Why is it so? Explain.

Ans.

→ An eco-system ~~const~~ consists of humans, plants, animals, micro-organisms and non-living things that interact with each other and maintain a balance in nature.

→ Eco-system is the structural & functional unit of an environment.

Biotic components

→ Producers

→ Consumers

→ Decomposers.

Abiotic components

Physical factors

→ temperature, rainfall, soil, minerals, wind.

Natural eco-systems (ponds / lakes) have self-sustainability. They have decomposers in them unlike aquariums which are artificial eco-systems.

Decomposers they convert organic substances into inorganic materials which are taken (simple) up by plants once again.

They feed on dead remains & waste

products of plants and animals. Eg:
Bacteria, Fungi, Saprophytes.

Answer is correct and to the point.

19. What are fossils? How are they formed? Describe in brief two methods of determining the age of fossils. State any one role of fossils in the study of the process of evolution.

Ans.

Fossils are preserved traces of living organisms. Eg: If a dead insect gets trapped in hot mud, it doesn't decompose easily. Eventually the mud will harden and retain the impressions of the body parts of the insect. Thus, the insect is fossilised into rocks.

Excavating This is a relative method. As we dig into the soil, the fossils we find closer to the surface are more recent than the fossils we find in the deeper layers.

Radio-Carbon Dating The ratio of different isotopes of the same element present in the fossil can tell us how old the fossil is.

(~ - detecting)

Fossils give the paleontological evidence for evolution. For eg: Dinosaur fossils reveal that they had feathers millions of years ago; to protect them from cold. These feathers have now been adapted by birds for flight. This suggests that dinosaurs and birds were closely related. Fossils thus help us in tracing evolutionary relationships and origins.

20. (a) Name the human male reproductive organ that produces sperms and also secretes a hormone. Write the functions of the secreted hormone.
- (b) Name the parts of the human female reproductive system where
- fertilisation takes place,
 - implantation of the fertilised egg occurs.

Explain how the embryo gets nourishment inside the mother's body.

Ans.

a) Testis / testosterone (hormone)

→ It regulates the formation of sperms

→ It controls the appearance of the boys seen at the time of puberty.

Correct identification of the organs and explanation is given

- b) i) Oviduct (fallopian tube)
 ii) Uterine wall.

The embryo gets its nourishment from its mother through the placenta. Placenta is a disc-like structure that is embedded in the uterine wall.

The ~~mother's~~ ^{embryo's} side of the placenta has villi-like structures.

The mother's side of the placenta has blood-spaces which surround the villi. The villi like structures increase the surface area for ~~absorption~~ ^{exchange} of materials like glucose & (exchange) oxygen from the mother's blood to the embryo.

The embryo also generates wastes which are transported to the mother's blood via the placenta.

21. What is meant by power of a lens? Define its S.I. unit.

You have two lenses A and B of focal lengths +10 cm and -10 cm respectively. State the nature and power of each lens. Which of the two lenses will form a virtual and magnified image of an object placed 8 cm from the lens? Draw a ray diagram to justify your answer.

Ans.

The degree of convergence (or) divergence achieved by a lens is called the power of a lens. SI unit - Dioptre
 1 Dioptre is the power of a lens whose focal length is 1 metre.
 $1 D = 1 m^{-1}$.

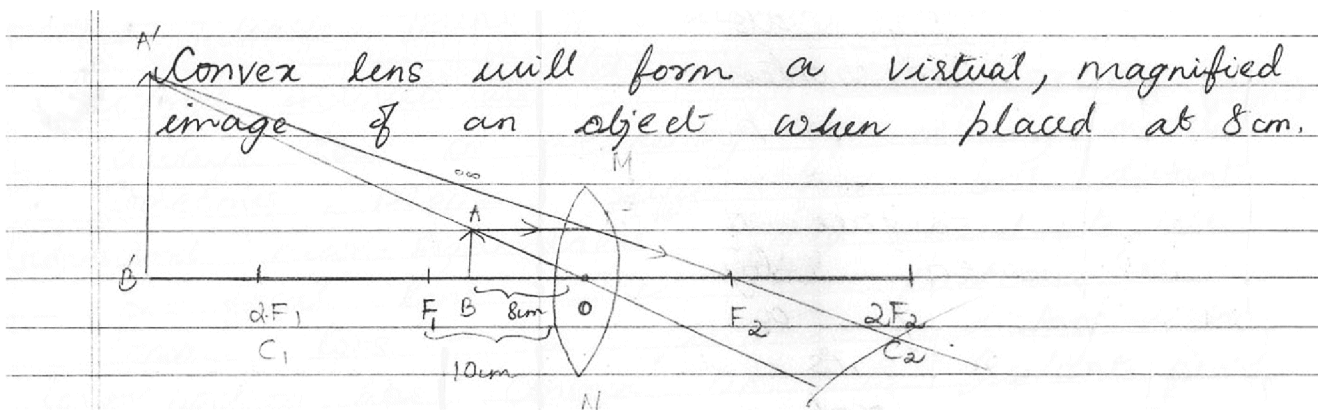
A. $f = +10 \text{ cm}$ Convex lens.

$$P = \frac{100 \text{ cm}}{f \text{ cm}} = \frac{100}{10} = +10 D$$

B. $f = -10 \text{ cm}$ Concave lens.

$$P = \frac{100}{f \text{ cm}} = \frac{100}{-10} = -10 D.$$

Formula used and computation done are correct. Correct justification has been given with ray diagram.



22. Write the importance of ciliary muscles in the human eye. Name the defect of vision that arises due to gradual weakening of the ciliary muscles in old age. What type of lenses are required by the persons suffering from this defect to see the objects clearly?

Akshay, sitting in the last row in his class, could not see clearly the words written on the blackboard. When the teacher noticed it, he announced if any student sitting in the front row could volunteer to exchange his seat with Akshay. Salman immediately agreed to exchange his seat with Akshay. He could now see the words written on the blackboard clearly. The teacher thought it fit to send the message to Akshay's parents advising them to get his eyesight checked.

In the context of the above event, answer the following questions:

- Which defect of vision is Akshay suffering from? Which type of lens is used to correct this defect?
- State the values displayed by the teacher and Salman.
- In your opinion, in what way can Akshay express his gratitude towards the teacher and Salman?

Ans.

Ciliary muscles control the thickness of the lens. If the muscles are relaxed, the lens becomes thin & the focal length increases to help seeing distant objects.

If the muscles contract, the lens become thick & the focal length decreases to help seeing nearby objects.

Presbyopia, Convex lens.

The least point of vision which is 25cm in normal individuals (distinct) gradually recedes away due to weakening of ciliary muscles. Sometimes, people suffer from both distant sightedness and near-sightedness. They need to use bi-focal lens. The upper portion has concave lens - to facilitate - distant vision. Lower portion has convex lens - to facilitate near vision.

Correct explanation is provided

a) Myopia, Concave lens.

b.) Teacher and Salman :-

kind, thoughtful, helpful.
Teacher wants Akshay to learn properly.
and Salman wants his classmate to
read comfortably.

The teacher called in Akshay's parents. This
shows the concern of the teacher.

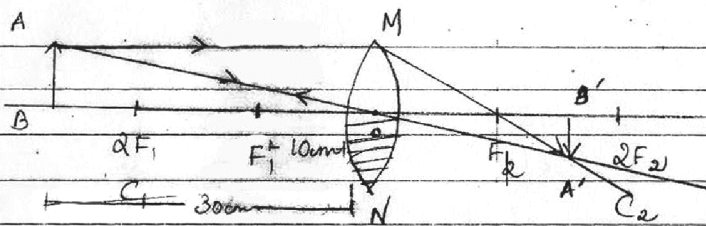
c.) Akshay can study properly, be obedient
in class and gratify his teacher.
He can help Salman in his studies
(or) other problems which he may face.

23. One half of a convex lens of focal length 10 cm is covered with a black paper. Can such a lens produce an image of a complete object placed at a distance of 30 cm from the lens? Draw a ray diagram to justify your answer. A 4 cm tall object is placed perpendicular to the principal axis of a convex lens of focal length 20 cm. The distance of the object from the lens is 15 cm. Find the nature, position and size of the image.

Ans.

Yes, the lens can produce an image because the light can still pass through the optical centre.

Correct reasons and justification with correct ray diagram is given



Convex Lens.

$$h = 4 \text{ cm} \quad f = 20 \text{ cm} \quad u = -15 \text{ cm}$$

$$\frac{1}{f} = \frac{1}{v} - \frac{1}{u} \quad \frac{1}{20} = \frac{1}{v} - \frac{1}{-15} \quad \frac{1}{20} - \frac{1}{15} = \frac{1}{v}$$

$$\frac{3-4}{60} = \frac{1}{v} \quad -\frac{1}{60} = \frac{1}{v} \quad -60 = v$$

Image is formed ~~at~~ 60 cm on the LHS of the lens.

$$\frac{h'}{h} = \frac{v}{u} \quad \frac{h'}{4} = \frac{-60}{-15}$$

$$h' = \frac{60}{15} \times 4 = 16 \text{ cm}$$

$$h' = 16 \text{ cm}$$

$$m = \frac{v}{u} = \frac{+60}{+15} = +4$$

Virtual, Erect, Magnified

Correct identification of nature, position and size of image

24. Both soap and detergent are some type of salts. What is the difference between them? Describe in brief the cleansing action of soap. Why do soaps not form lather in hard water? List two problems that arise due to the use of detergents instead of soaps.

Ans.

Soap:- Sodium ~~&~~ (or) Potassium salts of long chain carboxylic acids.

Detergents:- Ammonium (or) Sulphonate salts of long chain carboxylic acids.

The soap v have two ends with differing (molecules) properties.

Hydrophilic - dissolves in water.

Hydrophobic - dissolves in hydrocarbons

Correct and good explanation covering answers to all the parts of the question.

Dirt is oily in nature and doesn't dissolve in water. In water, the

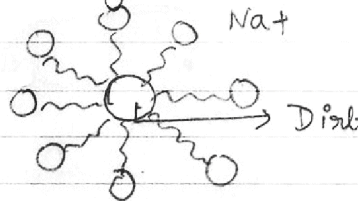
(clusters of molecules)
Soap molecules form special ~~structures~~ called micelles that keep the hydrocarbon portion out of water. The ionic end which is soluble in water faces the surface of the cluster. The hydrocarbon portion faces the interior of the cluster towards the oil droplet. Soap in the form of a micelle is able to clean, since the oily dirt is collected in the centre of the micelle. Micelles stay in a solution as a colloid & do not come together because of ion-ion repulsion. Thus, the dirt is easily cleansed away.

→ Soaps reacts with magnesium (or) calcium ions in hard water to form Scum (an insoluble substance). So it doesn't form lather.

→ Detergents are made from synthetic materials which may be harmful to our skin and even clothes. They prove to

be harsh on our skin
Ionic end ← () → Hydrophobic end.

→ They are non-biodegradable unlike soaps which are mostly made of glycerol.



25. Given below is the list of vegetables available in the market. Select from these the two vegetables having homologous structures:

Potato, sweet potato, ginger, radish, tomato, carrot, okra (Lady's finger)

(a) Potato and sweet potato

(b) Radish and carrot

(c) Okra and sweet potato

(d) Potato and tomato

Ans.

B) Radish, Carrot

26. A student was asked to observe and identify the various parts of an embryo of a red kidney bean seed. He identified the parts and listed them as under:

I. Tegmen

II. Testa

III. Cotyledon

IV. Radicle

V. Plumule

The correct identified parts among these are

(a) I, II and III

(b) II, III and IV

(c) III, IV and V

(d) I, III, IV and V

Ans.

c) III, IV & V.

27. A student traces the path of a ray of light through a triangular glass prism for different values of angle of incidence. On analysing the ray diagrams, which one of the following conclusions is he likely to draw?
- The emergent ray is parallel to the incident ray.
 - The emergent ray bends at an angle to the direction of the incident ray.
 - The emergent ray and the refracted ray are at right angles to each other.
 - The emergent ray is perpendicular to the incident ray.

Ans.

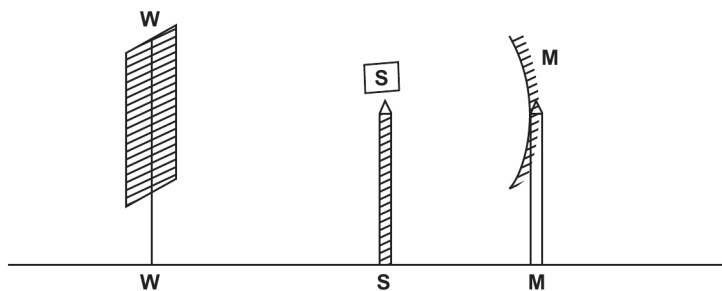
B)

28. A student traces the path of a ray of light through a rectangular glass slab for the different values of angle of incidence. He observes all possible precautions at each step of the experiment. At the end of the experiment, on analysing the measurements, which of the following conclusions is he likely to draw?
- $\angle i = \angle e < \angle r$
 - $\angle i < \angle e < \angle r$
 - $\angle i > \angle e > \angle r$
 - $\angle i = \angle e > \angle r$

Ans.

D) $\angle i = \angle e > \angle r$

29. A student obtains a sharp image of the distant window (W) of the school laboratory on the screen (S) using the given concave mirror (M) to determine its focal length. Which of the following distances should he measure to get the focal length of the mirror?

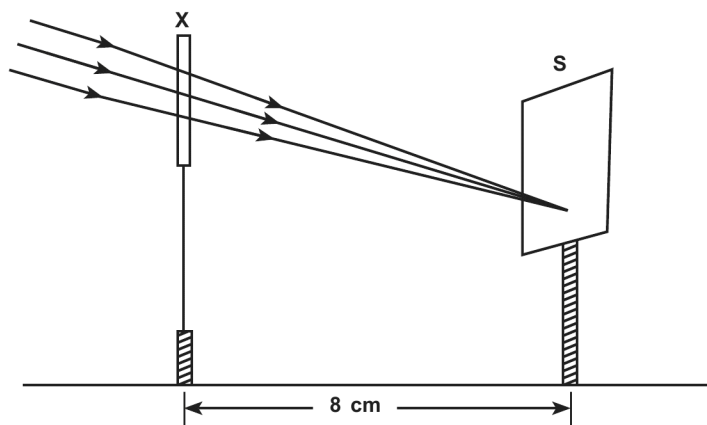


- MW
- MS
- SW
- MW - MS

Ans.

B) MS.

30. A student used a device (X) to obtain/focus the image of a well illuminated distant building on a screen (S) as shown below in the diagram. Select the correct statement about the device (X).



- (a) This device is a concave lens of focal length 8 cm.
- (b) This device is a convex mirror of focal length 8 cm.
- (c) This device is a convex lens of focal length 4 cm.
- (d) This device is a convex lens of focal length 8 cm.

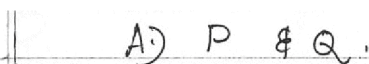
Ans.



31. A student takes about 4 mL of distilled water in four test tubes marked P, Q, R and S. He then dissolves in each test tube an equal amount of one salt in one test tube, namely sodium sulphate in P, potassium sulphate in Q, calcium sulphate in R and magnesium sulphate in S. After that he adds an equal amount of soap solution in each test tube. One shaking each of these test tubes well, he observes a good amount of lather (foam) in the test tubes marked

- (a) P and Q
- (b) Q and R
- (c) P, Q and S
- (d) P, R and S

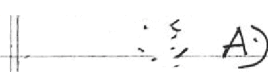
Ans.



32. What do we observe on pouring acetic acid on red and blue litmus papers?

- (a) Red litmus remains red and blue litmus turns red.
- (b) Red litmus turns blue and blue litmus remains blue.
- (c) Red litmus turns blue and blue litmus turns red.
- (d) Red litmus becomes colourless and blue litmus remains blue.

Ans.



33. While preparing soap a small quantity of common salt is generally added to the reaction mixture of vegetable oil and sodium hydroxide. Which one of the following may be the purpose of adding common salt?

- (a) To reduce the basic nature of the soap
- (b) To make the soap neutral
- (c) To enhance the cleansing power of the soap
- (d) To favour the precipitation of the soap

Ans.



34. A 4 cm tall object is placed on the principal axis of a convex lens. The distance of the object from the optical centre of the lens is 12 cm and its sharp image is formed at a distance of 24 cm from it on a screen on the other side of the lens. If the object is now moved a little away from the lens, in which way (towards the lens or away from the lens) will he have to move the screen to get a sharp image of the object on it again? How will the magnification of the image be affected?

Ans.

$h = 4 \text{ cm}$ $u = -12$ Convex lens.
 $v = 24$

$$\frac{1}{f} = \frac{1}{v} - \frac{1}{u} = \frac{1}{24} - \frac{1}{-12} = \frac{1}{24} + \frac{1}{12}$$

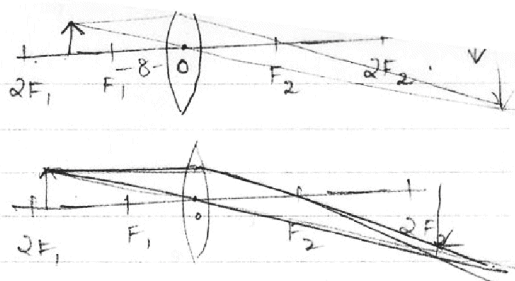
$$= \frac{1+2}{24} = \frac{3}{24}$$

Formula used and computation done are correct

$$f = \frac{24}{3} = 8 \text{ cm.}$$

Move the screen towards the lens.

Magnification: reduces.



35. When you add sodium hydrogen carbonate to acetic acid in a test tube, a gas liberates immediately with a brisk effervescence. Name this gas. Describe the method of testing this gas.

To the point answer is given

Ans.

CO_2 (carbon di-oxide) \rightarrow Pass the gas through lime water \rightarrow lime water turns milky. $(\text{Ca}(\text{OH})_2)$.

36. Students were asked to observe the permanent slides showing different stages of budding in yeast under high power of a microscope.

(a) Which adjustment screw (coarse/fine) were you asked to move to focus the slides?

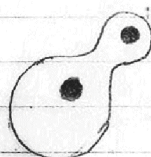
(b) Draw three diagrams in correct sequence showing budding in yeast.

Ans.

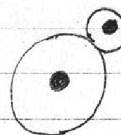
a) Fine adjustment screw
b)



I



II



III

Correct identification and diagram is given