



5. The image formed by a concave lens is

- a) Real
- b) virtual & erect
- c) Real & inverted
- d) erect & magnified

Ans b) virtual and erect

6. Long-sightedness can be corrected by using

- a) Concave lens
- b) convex lens
- c) Both a) & b)
- d) none of these

Ans-b) convex lens

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7. Ice is formed by the process of

- a) Condensation
- b) solidification
- c) Sublimation
- d) evaporation

Ans-b) solidification

8. The S.I. unit of pressure is

- a) Dyne
- b) Newton
- c) Joule
- d) Pascal

Ans-d) pascal

9. Which of the following elements is preserved in kerosene?

- a) Mercury
- b) sodium
- c) Magnesium
- d) sulphur

Ans- b) sodium.

10. Electric charge can flow through

- a) Insulators
- b) conductors



Ans A semiconductor is an element whose ability to conduct electricity lies between those of conductors and non-conductors.e.g. Silicon/germanium.

4. What is surface tension? Define element.

Ans The property of a liquid to behave like a stretched membrane in order to acquire minimum surface area is known as surface tension. Element is the simplest form of matter that cannot be divided further into simpler substances by chemical methods.

**D. Short answer type questions (any 5)**

(3 x 5 = 15)

1. How is coal formed? What are the three types of coal?

Ans Coal is formed by decomposition under high temperature and high pressure remains of plants which were buried under the earth.

Three types of coal-Lignite,bituminous,anthracite.

2. Explain the occurrence of lightning and thunder.

Ans When two oppositely charged clouds come close to each other a large amount of charge flows from One cloud to the other within a very short time.This massive flow of electricity between two oppositely Charged clouds is seen as a bright spark in the sky.

The rapid expansion and subsequent contraction of the air results in a loud sound that is heard as thunder.

3. How are lizards able to move on the wall without falling?

Ans Lizards curl and uncurl their toes , thus creating a suction pressure which enables them to walk On the wall.This is due to atmospheric pressure.

4. Name any three factors that hasten corrosion.

Ans The three factors are- presence of moisture ,presence of air ,presence of salts.

5. What are exothermic reactions? Give one example.

Ans A reaction in which heat is evolved is called an exothermic reaction.e.g formation of water.

6. What are the factors on which the strength of a solenoid depends?

Ans The strength of a solenoid is directly proportional to-

1.number of turns of the coil ,2. Diameter of the coil ,3.magnitude of the current flowing.

7. A liquid forms droplets. Why?

Ans Surface tension causes the molecules on the surface of a liquid to have maximum energy compared to the other molecules.During droplet formation it try to reduce the number of surface molecules so that sphere has a minimum surface area for a given volume.

### SECTION-C

E. Long answer type questions (any eight)

(5 x 8 = 40)

1. Explain the laws of refraction of light (with diagram). Find the absolute refractive index of a medium in which the speed of light is  $2.25 \times 10^8$  m/s. Assume  $c = 3 \times 10^8$  m/s.

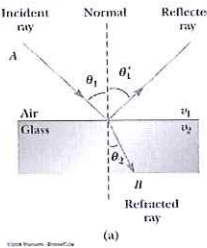
Ans 1.The incident ray,refracted ray,and normal all lie in same plane.

2.The ratio of the sine of angle of incidence to the sine of angle of refraction is a constant.

**Refraction – Snell's Law**

- The incident ray, the refracted ray, and the normal all lie on the same plane
- The angle of refraction is related to the angle of incidence as
 
$$\frac{\sin \theta_2}{\sin \theta_1} = \frac{v_2}{v_1}$$

–  $v_1$  is the speed of the light in the first medium and  $v_2$  is its speed in the second



Since  $v_1 = \frac{c}{n_1}$  and  $v_2 = \frac{c}{n_2}$ , we get  $\frac{\sin \theta_2}{\sin \theta_1} = \frac{v_2}{v_1} = \frac{c/n_2}{c/n_1} = \frac{n_1}{n_2}$ , or  $n_2 \sin \theta_2 = n_1 \sin \theta_1$   
 Index of refraction Snell's Law

Refractive index = speed of light in air /speed of light in medium =  $3/2.25 = 1.33$

2. Explain how burning of fossil fuels causes air pollution.

Ans Burning of fossil fuels releases harmful gases like-

1. carbon dioxide – formation of carbon dioxide absorbs infrared radiations coming from sunlight resulting in greenhouse effect. this leads to global warming.

2. carbon monoxide – burning fossil fuels in an insufficient supply of oxygen releases carbon monoxide which makes haemoglobin incapable of oxygen.

3. Lead – it is highly poisonous obtained from petrol and diesel.

4. suspended particulate matter – the fly ash and unburnt carbon compound are called SPM. It

Leads to bronchitis and lung cancer.

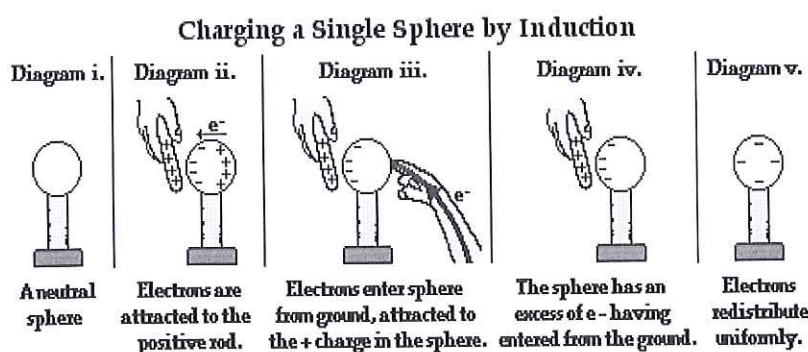
5. Oxides of sulphur and nitrogen. – these oxides during rain dissolve in rain water and cause acid rain.

2. Why is hydrogen considered a clean fuel? Write a note on the oxyhydrogen flame.

Ans The product of the reaction is water which does not pollute the environment. Hence it is a clean fuel.

The two gases – oxygen and hydrogen is allowed to mix at a high temperature, 2800°C flame called oxyhydrogen. It is used in welding of metals.

3. How can you charge a gold-leaf electroscope by induction? (with diagram)



Ans – We first rub an ebonite rod with a fur and make it negatively charged. Bring this charged rod near disc electroscope. The electrons get repelled leaving the disc

positively charged. As a result leaves develop

Negative charge and leaves diverge. We touch with finger on the disc the free electrons from the leaves escape to earth and leaves collapse. Positive charge remains on the disc. Keep the rod in place of finger. The electroscope is now positively charged by induction.

4. List 5 uses of an electromagnet.

Ans Uses -1. Electrical appliances like telephone, electric bell, motors.

2. cranes lift heavy loads of scrap iron.

3. bullet train. 4. separation of iron ores. 5. audio video tapes.

*Con. Page*

5. Explain the types of transformers and their uses.

Ans Types – 1. Step up transformer – If number of turns in secondary coil more than that in primary.

Use – in big power stations to transfer electricity to cities at high voltage.

2. Step down transformer – If number of turns in the secondary coil is less than primary coil.

Use – gadgets like radios, televisions work with step down transformers.

6. What are the advantages of high specific heat capacity of water?

Ans 1. It is utilised to run trains or machines. 2. Steam pipes are used for heating buildings

3. crops are protected from wilting .

8. Explain 3 examples of recycling of metals. What are the benefits of recycling (any 2)?

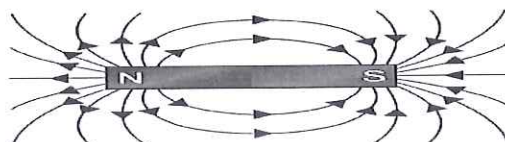
3 Examples-1. Scrap iron used for smelting. 2. Aluminium also refined by same process.

3. Bottle stoppers used for electrolytic refining.

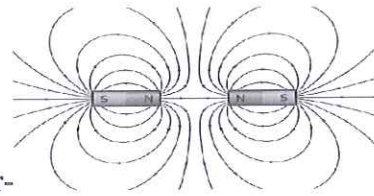
Benefits -1. the amount of ore that would have been otherwise used is reduced.

2. the cost of production of metal is lowered. 3. it prevents pollution.

9. Draw the magnetic lines of force of –

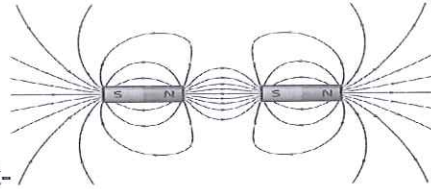


Single bar magnet –



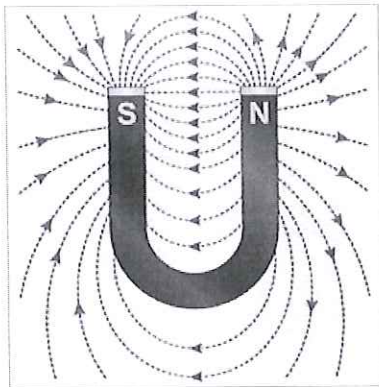
Two bar magnets with their like poles facing each other-

Two bar magnets with unlike poles facing each other-

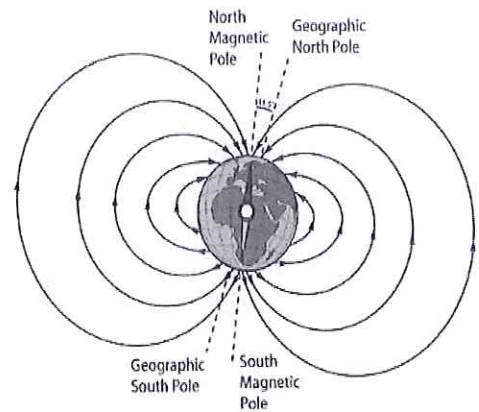


A horse shoe magnet-

Earth's magnetic field-



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10. Write 5 properties of magnetic lines of force.

Ans 1. Each line of force is a closed continuous curve. 2. direction of the force indicates direction of magnetic field at that point. 3. these lines never intersect. 4. these lines originate from the north pole and end at its south pole. 5. Magnetic field are strongest near the poles so these lines are maximum near the poles.

