

Mock - 3
GENERAL SCIENCE AND ABILITY

Good

Write complete logic and steps in math portion

Increase length for theory portion

Add headings

Paper presentation is fine

Q no 6

a) Data

Final value of machine = 8748

Rate of depreciation = 10% every year

No of year = 3

Initial price 3 years ago = ?

Solution

Let the initial price of machine be x

Final price = Initial price $(1 + r)^n$

$$8748 = x \left(1 + \frac{10}{100}\right)^3$$

$$8748 = x \left(\frac{9}{10}\right)^3 \text{ OR } x \times \frac{9}{10} \times \frac{9}{10} \times \frac{9}{10}$$

$$8748 \times \frac{10}{9} \times \frac{10}{9} \times \frac{10}{9} = x$$

$$\frac{8748000}{729} = x \quad \boxed{x = 12000}$$

b)

Solution

Let the daughter's age be x so father will be $4x$

$$4x + 5 = 3(x + 5)$$

$$4x + 5 = 3x + 15$$

$$4x - 3x = 15 - 5$$

$x = 10$ years current age of daughter.

Father age = $4 \times 10 = 40$

Further after 5 years = $5 + 5 = 10$

daughter's age will be $10 + 10 = 20$

father's age will be $10 + 40 = 50$

$\frac{50}{20} = 2.5$ times father would be of his daughter.

20

c)

Data

Radius of football = 12 m

Volume of foot ball = ?

Solution

$$\text{Volume} = \frac{4}{3} \pi r^3$$

$$= \frac{4}{3} \times 3.14 \times 6^3$$

$$= \frac{4}{3} \times 3.14 \times 6 \times 6 \times 6$$

$$= 4 \times 3.14 \times 72 = 904.50 \text{ volume of foot ball}$$

Working

$$r = \frac{d}{2} = \frac{12}{2} = 6$$

d)

Data

length of side = 81 m

Perimeter of Pentagon = No of sides \times

Solution

Perimeter of Pentagon = 5 \times length of side

$$5 \times 81$$

$$= 405 \text{ m.}$$

Qno 7

Ans

a) Solution

let the smallest value be x

$$x + x+1 + x+2 + x+3 + x+4 + x+5 + x+6 = 20$$

$$7x + 21 = 20$$

7

$$7x + 21 = 7 \times 20$$

$$7x = 140 - 21$$

$$x = \frac{119}{7} = 17$$

7

$$x = 17$$

largest value will be

$$x + 6$$

$$17 + 6 = 23$$

b) The relationship of D, E, F is Sister and brother

c) $7, 12, 19, 28, 39, 52$
 $\underbrace{\quad\quad\quad}_4 \quad \underbrace{\quad\quad\quad}_6 \quad \underbrace{\quad\quad\quad}_{10} \quad \underbrace{\quad\quad\quad}_{12}$

d) Solution

Let the share of A, B, C, D $A:5x, B:2x, C:4x, D:3x$
 then

$$4x - 3x = 1000$$

$$x = 1000$$

$$\begin{aligned} \text{B's share} &= 2 \times x \\ &= 2 \times 1000 = 2000 \end{aligned}$$

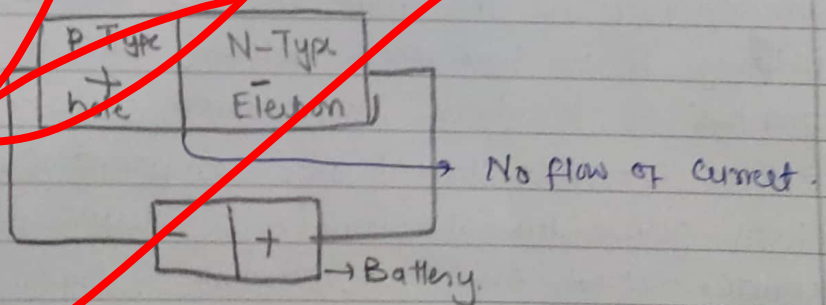
SECTION A

Qnos

b) LED (Light Emitting Diode)

LED is

Noonaday led is one of most energy efficient and rapidly developing lightening technology. Bulbs of LED are long long lasting, more durable, and provide better quality of light than others. It consumes at least 75% less energy.



led consists of semiconducting diode chip which form p-n junction.

9)

CERAMICS

Ceramic is an inorganic solid made up of clay that can be shaped and hardened by heating to high temperature. Ceramics are found all around us. It is material includes things like tile, bricks, plate, glass and toilets. It is categorized in 2 types crystalline and Non-crystalline.

Crystalline Ceramics: These are not amenable to a great range of processing.

Non-crystalline ceramics: It is being glass, tend to be formed from melts.

Characteristic of Ceramics

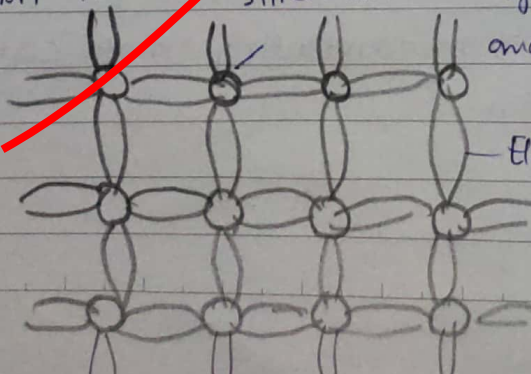
- These are extremely hard, ^{showing} considerable stiffen under compression and bending.
- These are wear resistant and durable.
- Corrosion resistant.
- do not react with most liquid, gases, alkalis and acids.
- These are non-magnetic but contains iron oxide (Fe_2O_3)

SEMI-CONDUCTORS

Semi-conductors are used in electronic circuits. Semiconductor is the material which conducts current partially. It is somewhere between, half of conductor and half of insulator. The common semi-conductors

includes chemical element and compound such as silicon, germanium, selenium, zinc selenide and lead telluride. electron are in silicon atom organized in the layer in figure.

is valence



and outermost shell

Electron in Covalent bond.

In the shell electrons are forming bonds with neighbour atoms. Semiconductor have four electrons in their valence shell. These type of Semiconductors are made out of such crystals usually silicon crystals.

Sttoms silicon crystal can transform into one of two distinct types of conductors. N-type and P-type semiconductors.

- 1) N-type Semiconductors: created when the dopant is an element that has 5 electrons in its valence shell. Phosphorus is commonly used for this purpose.
- 2) P-type Semiconductors: created when the dopant (such as boron) has 3 electrons in its valence shell. P-type semiconductors, hole are continuously moving around the crystals as electron tries to fill them up.

d) NOTE ON POLIO

The word poliomyelitis derives from Greek word related to inflammation (itis) of the gray (polios) matter of the spinal cord (myelom). It is infectious viral disease that some times results in paralysis. This infection mostly affect the children and young adults and is caused by 3 given viruses.

Type 1 → Bulbospinal

Type 2 → Lansing

Type 3 → Leon.

Since 1988 cases of polio has been decreased by 80% till 2015. In last 5 years various countries got free from polio except Pakistan and Afghanistan.

It is diagnosed by isolating the virus from an infected person using throat cultures stool samples, fluid samples of brain and spinal cord. ~~If treatment is a~~

There is no cure for polio, no drug or medication can help the poliovirus destruction in the body.

but few or several medical treatments can reduce the severity of the disease. Mild cases of polio do not require specific treatment. Some time physical therapy is used to prevent the disease.

4) USES OF ELECTROMAGNETIC RADIATIONS

Electromagnetic radiations are used in every day life.

- 1) To heat the food microwaves are used to in microwave oven.
- 2) Radar waves are used to guide the plane.
- 3) Infra-red waves are used in heater to provide heat.
- 4) Ultra violet waves are used to in Hubble space telescope to view the distant object.
- 5) X-rays are used to identify the problem in bones of human body.

QNO 4:

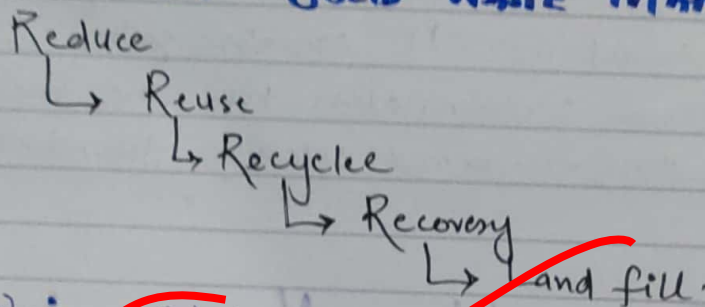
Ans(c) Common causes of Water Pollution

There are various causes of water pollution, such as.

- 1) Industrial wastewater and domestic waste water. These deplete the oxygen from water as it decomposes and suffocate aquatic life.
- 2) Domestic sewage. It contains faeces of cows and other domestic animal. It spreads infectious diseases through contaminated drinking water supplies which leads to water borne disease like diarrhoea.
- 3) Waste from agricultural lands and urban areas. It over stimulates growth of algae which decomposes and deplete the oxygen.

- 4) Industry and mining sites: It persists in fresh water environment for long periods. It accumulates in the tissues of fish and shellfish.
- 5) Fragmentation of rivers by dams: It changes in oxygen level and decomposition rate of organic matter in the water.

b) METHODS OF SOLID WASTE MANAGEMENT



Disposal of solid waste can be done through above methods.

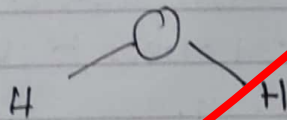
- 1) Reduce: It is most favoured option and it is also known as prevention option. It means reducing the waste at source. It can be done through reducing packaging of any product, redesigning products and reducing toxicity.
- 2) Reuse: We can manage the waste and save the environment by reusing strategy such as reusing the shopping bags, disposable bottle bottle to store cool water. Old clothes to be used make cushions in textile industry.
- 3) Recycle: It is a series activity that includes collecting used, reused, or unliked material and through sorting and processing the recyclable material products into raw material. It also includes composting of food scraps, yard trimmings and other organic material to form compost.

Recovery Recovery of energy from the waste is the conversion of non-recyclable waste material into useable heat, electricity or fuel through a variety of process including combustion, gasification, pyrolyzation, anaerobic digestion and landfill gas recovery.

Landfill. It is a least favored option. It is carefully designed structure built into or on top of ground in which trash is separated from area around it. It contains garbage, and serve to prevent contamination b/w the waste and the surrounding environment specially ground water.

d) COVALENT BOND IN WATER MOLECULE AND ITS STRUCTURE

Covalent bond in water A water molecule consists of two hydrogen and one oxygen atom. The three atoms makes bond angle $H-O-H$, angle between these atoms approximately 104.5 degrees. The center of each hydrogen atom is approximately 0.0957 nm from the center of the oxygen atom



4) Goals Of COP26, COP27 @ 2021 and 2020

COP26

Performance of COP21 ~~was~~ ~~needed~~ was evaluated to analyze carbon emitters of the world.

In COP21, targets were decided by the countries and multinational companies.

COP27 ~~(20)~~ The main goal of COP27 was to reduce the world temperature by 1.5°C , and the carbon cut targets of 2030 must be met till 2050.

