

DATE: ___/___/___

DAY: ___/___/___

SECTION - B

Question 6

PART A

Let the first number be x and
the second number be y .

40% of the first number = $\frac{2}{3}$ of the second number

$$40\% \cdot x = \frac{2}{3} y$$

$$0.40x = \frac{2}{3} y$$

~~multiply both side with 10~~

~~$$10(0.40x) = \left(\frac{2}{3} y\right) \times 10$$~~

~~$$4x = \frac{20}{3} y$$~~

~~multiply both side with 3~~

~~$$3 \times (4x) = \left(\frac{20}{3} y\right) \times 3$$~~

~~$$12x = 20y$$~~

multiply both side with 10

$$10(0.40x) = \frac{2}{3} y \times 10$$

$$4x = \frac{20}{3} y$$

$$12x = 20y$$

$$3x = 5y$$

DATE: ___/___/___

DAY: ___/___/___

$$3x = 5y$$

$$\frac{x}{y} = \frac{5}{3}$$

So, the ratio of first number to second number
is 5:3

PART-B

let the cost price of ball be = C

$$\text{Cost of 17 ball} = 17C$$

$$\text{loss of } \frac{1}{4} \text{ cost of 5 ball} = 5C$$

$$\text{selling price 17 balls} = \text{Rs } 720$$

$$17C - 5C = 12C$$

$$12C = 720$$

$$C = 720/12$$

$$C = 60$$

So, the cost price of one ball is Rs 60

PART-C

let the son's present age be x years

let the man's present age be y $\neq x + 24$

After 2 years

DATE: ___/___/___

DAY: ___/___/___

$$\text{Son's age} = x + 2$$

$$\begin{aligned}\text{Mam's age} &= x + 24 + 2 \\ &= x + 26\end{aligned}$$

then

$$x + 26 = 2(x + 2)$$

$$x + 26 = 2x + 4$$

$$26 - 4 = 2x - x$$

$$22 = x$$

So, the present age of the son is 22 years.

Part-D

Rashid takes 6 hours for 32 pages

Kamran takes 5 hours for 40 pages

$$\text{Rashid's per hour rate} = 32/6 = 5.3 \text{ pages/hour}$$

$$\text{Kamran's per hour rate} = 40/5 = 8 \text{ pages/hour}$$

Two different computers, then add speed

$$5.3 + 8 = 13.3 \text{ hours}$$

So, they will take 13 hours and 30 minutes to complete the assignment.

DATE: ___/___/___

DAY: ___/___/___

Question 7

PART - A

The only daughter of Ahsan's brother is Ahsan's niece

That niece is the granddaughter of ~~the~~ ^{the} woman Ahsan is pointing out.

So, the woman should be grand daughter of Ahsan's brother's daughter

Then, the woman is the mother of Ahsan

PART - B

Speed = 12 km/hour

One Round = 8 minutes

1 km = 1000 metres

So, 12 km = 12000 metres

1 hour = 60 minutes

$$12 \text{ km/hr} = \frac{12000 \text{ metres}}{60 \text{ minutes}} = 200 \text{ m/min}$$

DATE: ___/___/___

DAY: ___/___/___

So, the man covers 200 metres in 1 minute

Distance covered in 8 minutes

$$D = \text{speed} \times \text{time}$$

$$= 200 \times 8$$

$$= 1600 \text{ metres}$$

The perimeter of rect is 1600 metres

Ratio of length: breadth

$$3:2$$

$$\text{This mean} = 3k = \text{length}$$

$$2k = \text{breadth}$$

Perimeter of Rectangle

$$2(\text{length} + \text{breadth})$$

$$2(3k + 2k) = 1600$$

$$2(5k) = 1600$$

$$10k = 1600$$

$$k = \frac{1600}{10}$$

$$k = 160$$

Actual length and breadth is:

$$\text{length } 3k \times 160 = 480 \text{ metres}$$

$$\text{Breadth } 2k \times 160 = 320 \text{ metres}$$

So, the Area of the park is

$$480 \times 320 = 1536$$

Hence, the Area of park is 1536

PART-D

Ratio is 2:3

So, it can be $2n$ & $3n$

LCM of $2n$ and $3n$

$$= 2 \times 3 \times n = 6n$$

$$= 6n = 48$$

$$n = 8$$

Sum of two number is $2n + 3n = 5n$

Substituting the value of $5n$

$$5n$$

$$= 5(8)$$

$$= 40$$

The sum of number is 40

PART-C

let the ten's digit be x

the ten's digit by 2; then it
would be $n+2$

Two digits are

$$10n + (n+2) = 11n + 2$$

Sum of digits is

$$n + (n+2) = 2n+2$$

$$(11n+2)(2n+2) = 144$$

$$11n(2n+2) + 2(2n+2) = 144$$

$$22n^2 + 44n + 4n + 4 = 144$$

$$22n^2 + 48n + 4 = 144$$

$$22n^2 + 48n - 140 = 0$$

$$11n^2 + 17n - 70 = 0$$

Factorizing

$$(n-2)(11n+35) = 0$$

$$n-2 = 0 \quad \text{or} \quad 11n+35 = 0$$

$$n = 2 \quad \text{or} \quad 11n = -35$$

$$n = -35/11$$

SECTION A

Question 3

PART A.

Introduction

Global warming is the increase in the Earth's temperature. This increase is ~~of~~ because of human activities. There are several ~~ress~~ causes and consequences of ~~the~~ global warming. However, when sustained policies are adopted, it can also be redressed.

Global Warming

Global warming means the longterm increase in the average temperature of the Earth's atmosphere and ocean, mainly because of human activities burning coal, oil, gas, deforestation. that increase greenhouse gases (CO_2).

Causes of Global Warming

- Burning of fossil fuels
- Deforestation
- Agriculture and livestock

Consequences of Global Warming

* Extreme weather and Disasters

* Threat to human life and biodiversity
- city loss

* Rising Sea levels

How can Global Warming be ~~Reversed~~ ^{Reversed?}

A. Taking Mitigation Measures

- i. Shifting from non-renewable energy to renewable energy
- ii. Protecting and restoring forest through afforestation and reforestation and stopping illegal logging
- iii. Adopting climate-friendly measures like less waste, effective irrigation and sustainable approaches.
- iv. Better farming practices to store more carbon in soil.

B. Adaptive Measure

Building flood defense system like Dam
having better drainage systems

cultivating heat-resistant crops

Early warning system for heatwaves, flood

Conclusion:

Global warming can not be ~~reversed~~ ^{reversed} overnight, but it can be limited and gradually reduced by shifting to clean energy, protecting forests, improving agricultural practice, removing carbon from the atmosphere and along with strong adaptive measures.

PART-3B

Ceramics are inorganic, non-metallic materials made by shaping and then heating raw materials like clay, alumina etc. at high temperature to make them hard strong and heat resistant.

Properties of Ceramics

1. High melting point
2. Very hard and strong in compression
3. Poor thermal conductor
4. Brittle
5. Lower density
6. Excellent heat resistance
7. High chemical stability

Applications of Ceramics

1. Used in construction industry, roof tiles, glass, floor
2. Used in electronic circuits

3. Used in crockery; plates, cups,
4. Decorative items; vases
5. Used in medical purpose, dental crowns,

Ceramics are inorganic materials. They are very hard and strong in compression. They are used in building materials.

PART-3C OPTIC FIBERS

Defining Optical Fibre

It is a very thin, flexible glass or plastic wire that carries light instead of electricity.

Basic Structure

Core: Inner glass part where light travels

Cladding: Outer glass layer with lower refractive index

Coating: Plastic protective layer

Total Internal Reflection

- light is sent into the core at a suitable angle.
- Because the core has higher refractive index than the cladding, light keeps bouncing inside instead of escaping.
- This repeated bouncing is called Total Internal Reflection.

How it works?

Signal is converted into light pulses using LED. These light pulses enter the core of the fibre. As they travel, they reflect again and again inside the core.

At the end, a photo-detector converts the light pulses back into the electrical signal then to sound.

Uses

Internet Cable

Telephone Communication

Medical endoscopes

Cable TV

Mobile Phone

A mobile phone is a small radio transmitter and receiver that communicates with nearby mobile towers using radio waves.

How Mobile Phone works

1. Dial a number and press call

2. Phone sends signal to the nearest tower

3. From tower to network

4. Network connected to the other phone

5. Other phone convert signal back to sound

PART-3D

1. Food Additives

Substances added to food on purpose to improve taste, colour, texture or shelf life

Examples

- Colours
- Flavour Enhancers
- Sweeteners
- Stabilizers

2. Food Preservative

A type of food additive specially used to stop or slow down spoilage caused by bacteria, fungi so that food lasts longer

Examples

- Salt and Sugar
- Vinegar
- Sodium Benzoate
- Sorbic Acid

3. Food Adulteration

Adding cheap, harmful, or low quality substance to food to cheat consumers and increase profit.

Examples

- Adding water to milk
- Mixing brick powder in Chilli
- Cheap oils to Ghee
- Stones in grains

4. Food Contamination

When food gets ~~contaminated~~ unintentionally polluted by micro-organisms during growing or cooking. It can make food unsafe.

Examples

- Biological Contamination; Bacteria
- Chemical Contamination; Pesticides
- Physical Contamination; Hair, Plastic

Question 5

PART-SA

Disaster Risk Management

Disaster Risk Management (DRM) is systematic process of using policies, institutions, plans and capacities to reduce disaster risk and support recovery so that hazards cause least loss of life, property and livelihoods.

Importance of Risk Assessment in DRM

Risk assessment means identifying hazards, who and what is exposed and how vulnerable they are and estimating impacts.

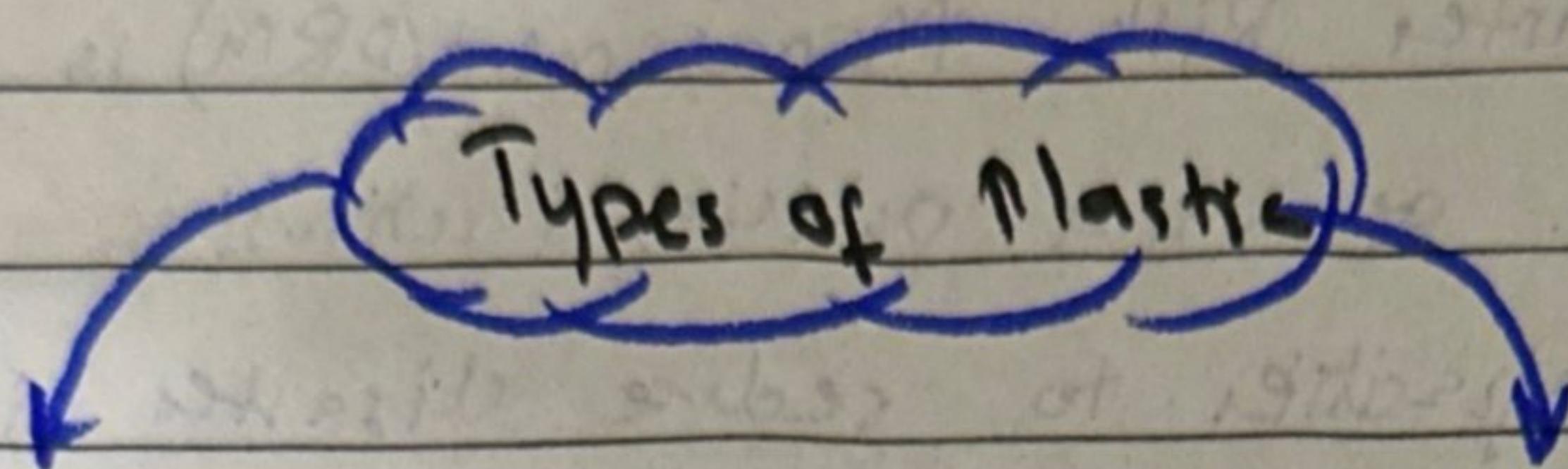
How/Why it matters?

- ✓ Finds high-risk areas and people
- ✓ Prioritizing resources
- ✓ Improves preparedness plan
- ✓ Guide, land-use planning
- ✓ Strengthening early warning systems
- ✓ Reduce losses by shifting from to prevention and mitigation.
- ✓ Expected and relief work

PART-SD

Plastic

Plastics are synthetic or semi-synthetic polymers mainly derived from petroleum and natural gas that can be molded into shapes when heated and processed.



Thermoplastics

- Can be remelted
(PE, PP, PVC, PET)

Thermosets

- Cannot be remelted
epoxy, bakelite

Properties of Plastics

Light weight

Durable and strong

Water-resistant

Good insulators

Low cost and mass-producible

Easily molded and colored

Applications

Packaging

Irrigation pipes

Household items

Wire coating

Medical springs

Environmental Risks

Microplastic

Toxic additives

Harm to wildlife

Burning plastic

Drain blockage

High carbon footprint