Dos and Don'ts for the General Science & Ability Paper

Hi there — you've prepared well! Remember, knowing the content is one thing, but presenting it in the paper exactly as required is another. Here are a few key points to keep in mind:

1. For a 5-mark part, aim to write at least 2 and at most 3 sides of the answer sheet. Often, a question has two or three parts, and the marks are divided accordingly — so address each part fairly.
2. Manage your time wisely — you have about 35 minutes per full question, which comes down to around 8 minutes for each 5-mark part. Stick to this to avoid rushing later.
3. Make your answers look scientific, not just theoretical. Use flowcharts and diagrams wherever they add clarity.
4. Neatness matters — keep your handwriting clean, avoid cutting or overwriting.
5. Mind your spelling and grammar — while GSA doesn't deduct marks for these, your expression leaves an impression.
6. In the ability portion, explain analytical ability questions in words. For a 5-mark part, show all steps and provide clear explanations.

Good luck for CSS 2026 — you're going to ace it, in sha Allah! 🌟

Date:

Day:

1. Reduction of Greenhouse Gas Emissions:

- Shift from fossil fuels to renewable energy (solar, wind, hydro).
- Improve energy efficiency in industries and buildings.
- Promote electric vehicles and public transport.

2. Carbon Sequestration:

- Afforestation and reforestation to absorb CO_2.
- protection of forests, wetlands, and mangroves.
- Use of Carbon Capture and Storage (CCS) technology.

3. Sustainable Agriculture:

- Climate-smart farming practices.
- Reduced use of chemical fertilizers.

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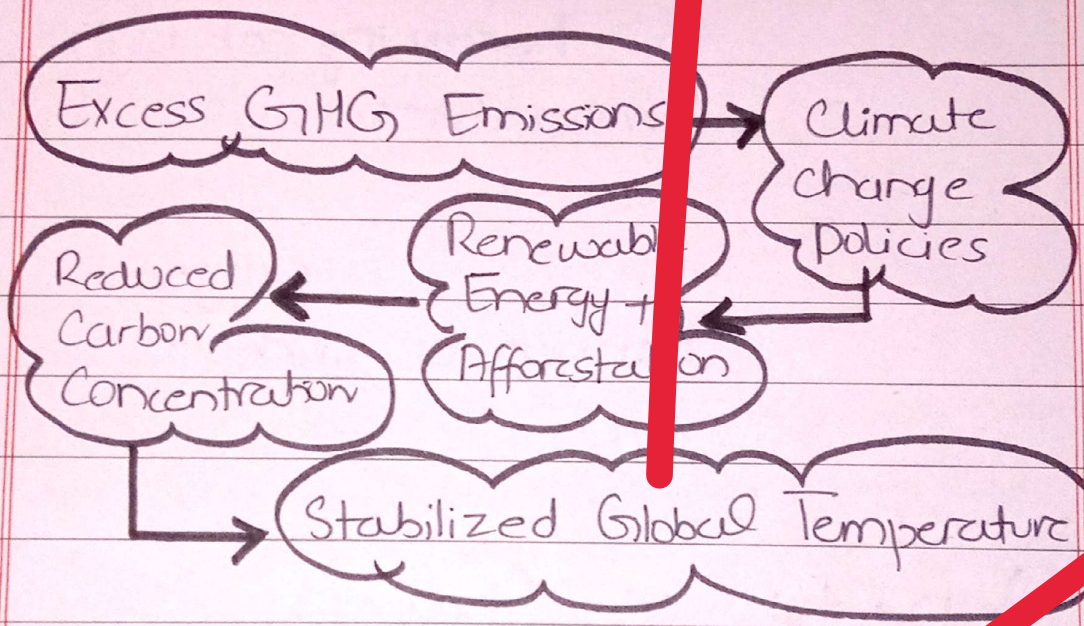
- Promotion of organic and regenerative agriculture.

4. Policy and Global Cooperation:

- Implementation of **Paris Climate Agreement** targets.
- Carbon pricing and environmental regulations.
- Climate finance for developing countries.



CONCLUSION:

Although complete reversal is **challenging**, consistent global action, carbon

Day: Date:

reduction and ecological restoration can significantly slow down and gradually reverse global warming.

(b)

CERAMICS :-

Definition: Ceramics are **in-organic, non-metallic materials** made by shaping and then **hardening at high temperatures.** usually consisting of compounds of metal with **oxygen, nitrogen, or carbon** (oxides, carbides, nitrites)

Properties of Ceramics:

↳ Mechanical Properties
↳ Thermal "
↳ Electrical "
↳ Chemical "

Day: Date:

1. Mechanical properties:

- Very hard and **wear-resistant**
- High compressive strength
- **Brittle in nature (low tensile strength)**

2. Thermal properties:

- High melting point
- Excellent **heat resistance**
- Low Thermal conductivity (good thermal insulators)

3. Electrical properties:

- Good **electrical insulators**
- Some ceramics show **piezoelectric** and **superconducting** behavior.

4. Chemical properties:

- Highly **corrosion-resistant**
- Chemically inert in harsh environments

Day: Date:

Application of Ceramics:

1. Structural Applications:

- Bricks, tiles, cement, and pottery
- Refractory lining in furnaces and kilns

2. Electrical and Electronic Applications:

- Insulator in **power transmission**
- Capacitors, sensors, and Semiconductors

3. Medical Applications:

- Dental implants and bone replacements
- Bio-ceramics for **prosthetics**

4. Advanced and Industrial uses:

- Cutting tools and abrasives
- Heat shields in aerospace industry

Day: Date:

CONCLUSION:

Due to their hardness, thermal stability, and chemical resistance, ceramics play a vital role in **construction, electronics, medicine, and advanced engineering.**

(c)

Working of Optical Fiber :-

1. **Definition:**
An optical fiber is a **thin, flexible glass** or plastic cable used to transmit data in the form of **light signals.**

2. **Working:**

2.1 **Principle:**

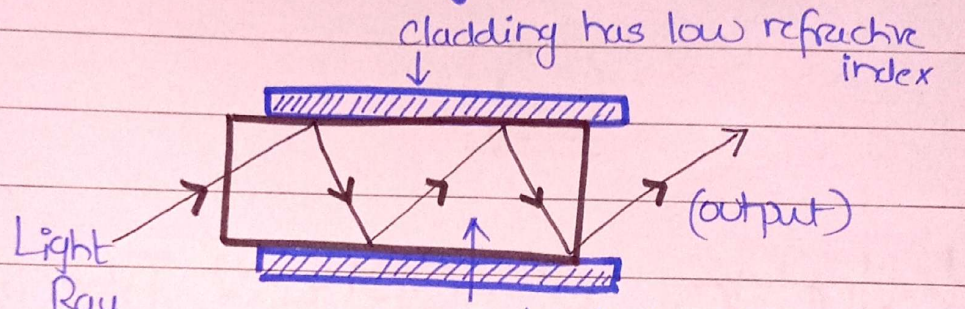
Day: Date:

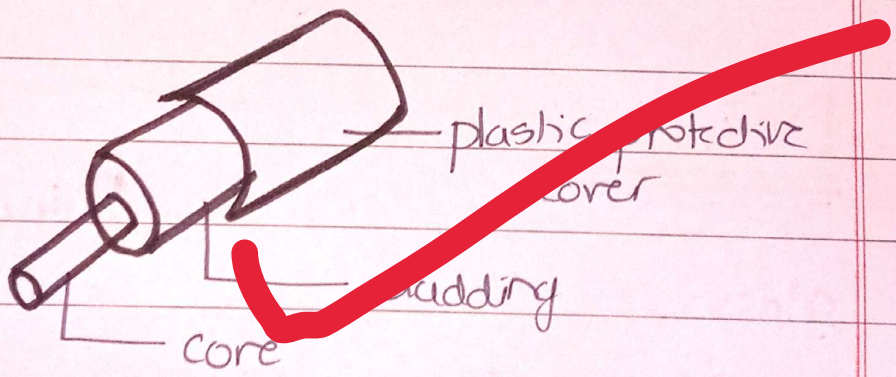
optical fiber works on the principle of **Total Internal Reflection (TIR)** of light.

2.2 Construction:

An optical fiber consists of:

- **Core** (high refractive index)
- **Cladding** (low refractive index)
- **protective coating**





2.3 Working:

- Electrical signals are converted into **light pulses** by a laser or LED.
- Light travels through the core by

repeated **total internal reflection.**

- At the receiving end, light signals are converted back into **electrical signals.**

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2. Working of a Mobile Phone:

2.1 Principle:

A mobile phone works on wireless communication using **electromagnetic (radio) waves.**

2.2 Working:

↳ The microphone converts sound waves into **electrical signals.**

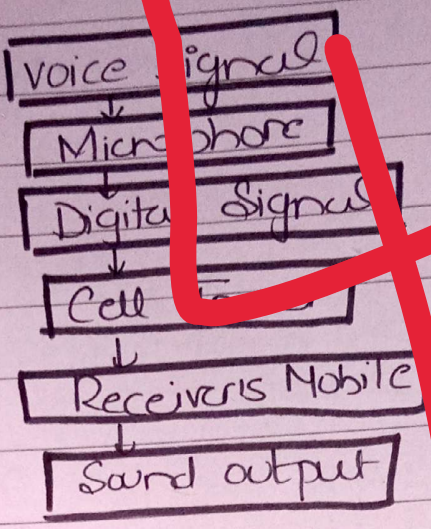
↳ Signals are digitized and transmitted as **radiowaves** to the nearest **cell tower.**

↳ Cell towers route the signal through the network to the **receiver.**

↳ The receiver's speakers converts **electrical signals back into**

Day: Date:

Sound.



CONCLUSION:

Optical fibers enable high-speed, low-loss data transmission, while mobile phones allow instant **wireless communication**, forming the backbone of modern telecommunication systems.

(d)

1. **Food Additives:**

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Food additives are substances **intentionally added** to improve its **taste, color, texture,** or shelf life.

Examples:

- Monosodium glutamate (MSG) – flavor enhancer
- Food colors (tartrazine)
- Emulsifiers (lecithin)

2. Food Preservatives:

Definition:

Food preservatives are **chemical or natural substances** added to prevent **spoilage** caused by microorganisms.

Examples:

- Sodium benzoate in juices
- Potassium sorbate in cheese
- Salt and sugar (natural preservatives)

3. **Food Adulteration:**

Food Adulteration is the **intentional mixing** of inferior or harmful substances with food to increase **profit**.

Examples:

- Water added to milk
- Brick powder in chili powder
- Urea in milk

4. **Food Contamination:**

Food contamination is the unintentional **presence of harmful substances** (biological, chemical, or physical) in food.

Examples:

- Bacteria (Salmonella) in meat
- Pesticide residues on vegetables

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- Dust or meat particles in food.

CONCLUSION:

While additives and preservatives are used for food quality and safety, **adulteration** and contamination pose serious risks to public health.

QUESTION NO:-5

(a)

Disaster Risk Management (DRM)

Disaster Risk Management refers to the **systemic process of identifying, analyzing, reducing, and managing disaster risks** to minimize loss of life, property, and livelihoods caused by

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natural or man-induced hazards. It includes **prevention, mitigation, preparedness, response, and recovery.**

Importance of Risk Assessment in DRM :

Risk assesment is the backbone of effective DRM as it identifies **who and what** is at risk and why.

1. Identification of Hazards:

- Helps identify **potential hazards** (earthquakes, floods, droughts)
- Enables authorities to anticipate disasters in advance.

2. Vulnerability Analysis:

- Assesses exposed populations, infrastructure and weak sectors.
- Highlights **high-risk areas** and communities.

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3. Efficient Resource Allocation:

- Ensures proper use of **limited resources.**
- Prioritizes high-risk zones for **mitigation** and preparedness.

4. Disaster preparedness and planning:

- Aids in **early warning systems** and evacuation planning.
- Improves emergency response capacity.

5. Reduction of Losses:

- Minimizes human, economic, and environmental losses.
- Strengthens **resilience and sustainable development.**

CONCLUSION:

Effective risk assessment enhances Disaster Risk Management by enabling **informed decision making**, preparedness,

Day: Date:

and resiliance against disasters.

(b)

Definition of Biofuels:

Biofuels are **renewable fuels** produced from **biological materials (biomass)** such as plants, animal waste, and organic residues, used as **alternatives** to fossil fuels.

Production of Biodiesel:

Raw Materials:

- Vegetable oils (Soybean, palm, jatropha)
- Animal fats
- Used cooking oil

Process (Transesterification):

5

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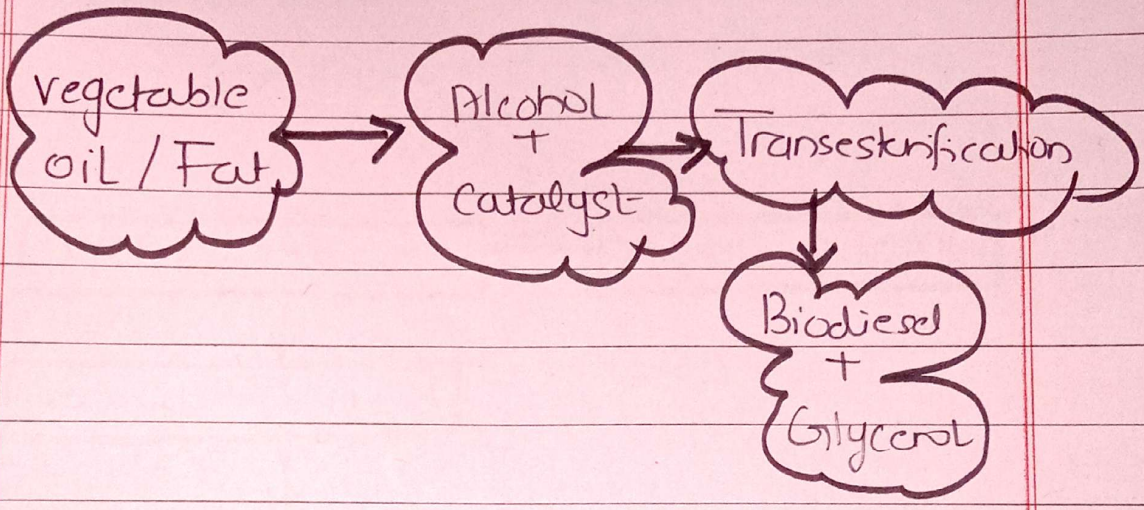
- Oil or fats reacts with **alcohol** (methanol/ethanol) in the presence of a **catalyst** (NaOH/KOH). This reaction converts **triglycerides** into **biodiesel** (fatty acid methyl esters) and glycerol as a by-product.



Production of Biogas:

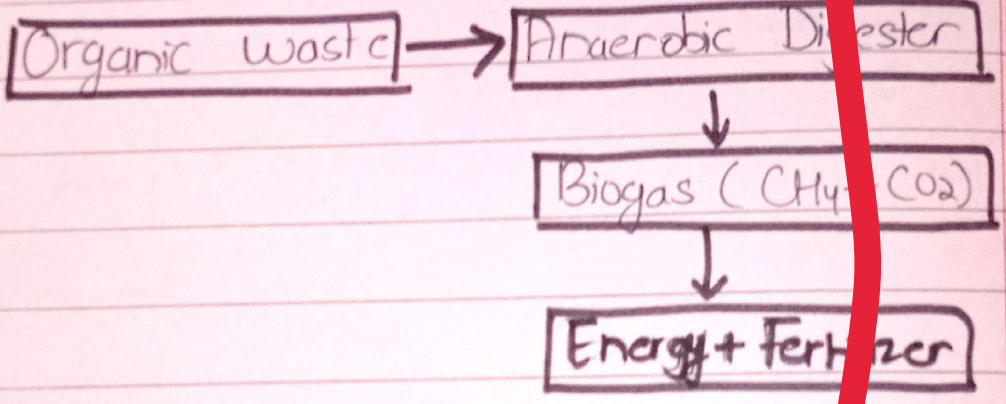
Raw Materials:

- Animal dung
- Agricultural waste
- Food and sewage wa

Process (Anaerobic Digestion):

Organic matter is decomposed by **anaerobic bacteria** in the absence of oxygen. The process occurs in a **biogas digester** producing:

- **Biogas** (mainly methane CH_4 and CO_2)
- **Slurry** (used as organic fertilizer)



CONCLUSION:

Biofuels like biodiesel and biogas provide **clean, renewable, and sustainable energy** > reducing dependence on fossil fuels.

Day: Date:

(c)

Digestive System:

The digestive system is a group of organs that **ingest food.** break it down into simple nutrients, absorb them into blood, and eliminate waste from the body. It includes: mouth, oesophagus, stomach, small intestine, large intestine, liver, pancreas, and salivary glands which work together to promote digestion.

ROLE OF STOMACH:

The Stomach performs several important functions:

1. **Temporary Storage:**

Day: Date:

Holds food after its swallowed, allowing **slow release** into small intestine.

2. Mechanical Digestion:

Churns food through muscular contractions to mix it with **gastric juices**, forming a semi-liquid substance called **chyme**.

3. Chemical Digestion:

Secretes **gastric juice** containing **hydrochloric acid (HCl)** and **pepsin enzyme**. HCl kills harmful microbes and provides an acidic environment for **protein digestion**. Pepsin breaks proteins into smaller peptides.

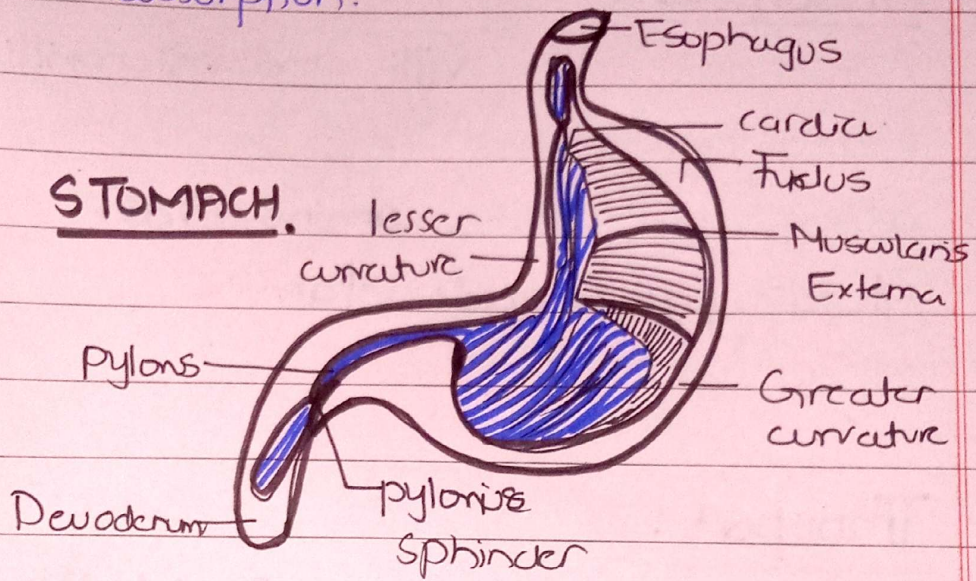
4. Protection:

Acidic environment destroys **bacteria** and pathogens ingested with food.

Day: _____ Date: _____

5. Regulation:

Gradually releases **chyme** into the small intestine for further digestion and absorption.



ROLE OF SMALL INTESTINE:

The small intestine is the main site for digestion and absorption performing the following roles:

1. Chemical Digestion:

Receives bile from liver (emulsifies fats)

Day: Date:

and **pancreatic enzymes**. It also completes digestion of **carbohydrates, proteins, and fats** into simpler molecules.

2. **Absorption:**
Its lined with **villi and microvilli**, increasing surface area for nutrient absorption. Absorbs **amino acids, glucose, fatty acids, vitamins** and minerals into blood and lymph.

3. **Transport:**
Moves chyme along by **peristaltic movements** to the large intestine.

4. **Protection and Immunity:**
Contains **lymphoid tissue (Peyer's patches)** to detect and fight pathogens.

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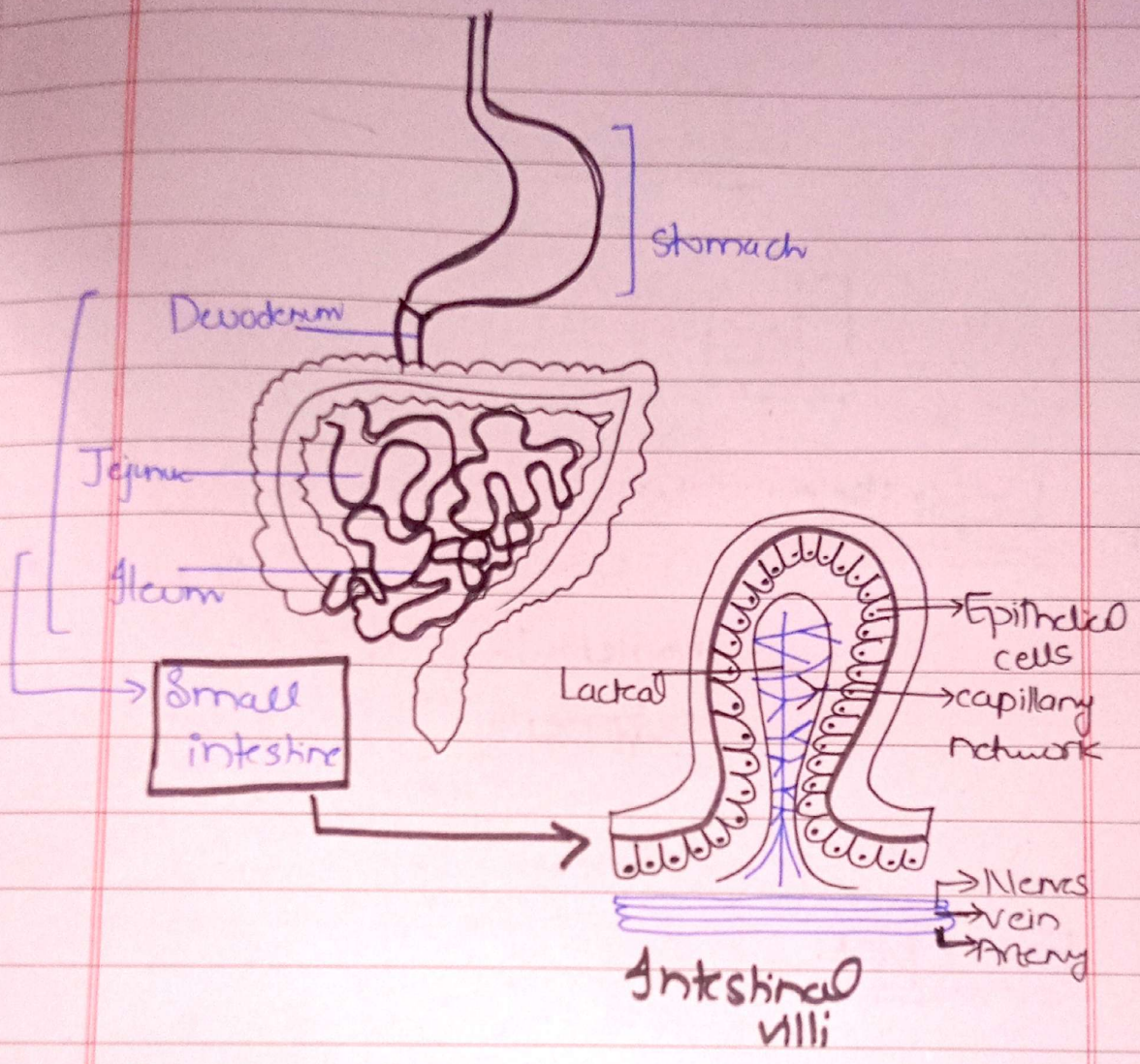


CONCLUSION:

The Stomach initiates digestion by breaking down food mechanically and chemically, while the small intestine completes digestion, absorbs nutrients, and protects the body, making both organs vital for efficient digestion and nutrition.

Day: Date:

(d)

Plastics

1. **Definition:** Plastics are synthetic or semi-synthetic **organic materials** made from **polymers** that can be moved into various shapes when heated.

Examples:

Polyethylene (PE), Polyvinyl chloride (PVC), Polystyrene (PS), polypropylene (PP)

2. **Properties of Plastics:**

1. **Lightweight:** Easy to transport and handle.
2. **Durable:** Resistant to corrosions,

chemicals, and water.

3. **Malleable and Flexible:**
   Can be molded into various shapes.
4. **Insulating:**
   Poor conductors of heat and electricity.
5. **Non-biodegradable:**
   Resistant to natural decomposition (also an environmental concern)
6. **Transparent or opaque:**
   Depending on type (e.g: PET is transparent)

3. Application of Plastics:

1. **Packaging:** Bottles, wrappers, containers
2. **Construction:** pipes, insulation materials, windows, doors
3. **Electronics and Electrical:** Casings, insulation, gadgets
4. **Healthcare:** Syringes, prosthetics, medical devices

Day: Date:

5. **Automobile and Aerospace:** Interior parts, fuel tanks, lightweight components.

4. Environmental Risks of Plastics:

1. **Non-biodegradibility:**
Accumulates in landfills and oceans.

2. **Marine pollution:**
Harmful to marine animals through ingestion or entanglement.

3. **Toxic chemicals:**
Release of harmful substances (like BPA) into soil and water.

4. **Greenhouse Gas Emissions:**
Burning plastics emit CO_2 and other toxins.

5. **Microplastics:**
Tiny particles enter food chains, affecting humans and wildlife.

Day: _____ Date: _____

CONCLUSION:

Plastics are versatile and widely used, but their **environmental hazards** require proper recycling, reduction, and alternative materials to ensure sustainable use.

SECTION - B

QUESTION NO:- 7

(a)

Soln:

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

Let :

Day: _____ Date: _____

First number = x

Second number = y

So,

$$\frac{2}{5}\frac{40}{100}x = \frac{2}{3}y$$

$$\frac{2}{5}x = \frac{2}{3}y$$

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

So,

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

Thus,

Ratio of first number to second number is $\boxed{5:3}$

(B)

7 Day: Date:

Given:

Selling price of 17 balls = Rs. 720

Loss = Cost price of 5 balls

To find;

Cost price (CP) of one ball = ?

Let the CP of one ball is = x

- CP of 17 balls = $17x$
- Loss = CP of 5 balls = $5x$

Loss = CP - SP

$5x = 17x - 720$

$720 = 17x - 5x$

$720 = 12x$

$x = \frac{720}{12}^{60}$

$x = 60$

So,

Cost price of one ball = **Rs 60**

(C)

Day: Date:

Father's age = Son age + 24

In 2 years: Father's age = 2 × son's age

Let,

present age of Son = x years

present age of father = $x + 24$ years

In 2 years:

Father's age = $x + 24 + 2 = x + 26$

Son's age = $x + 2$

So,

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

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

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

$$x = 22$$

Present age of Son = 22 years

Father's age = 22 + 24 = 46 years

Day: Date:

(D)

Given,

Rashid: 32 pages in 6 hours,

Speed = $\frac{32 \text{ pages}}{6 \text{ hours}}$

Kamran: speed = $\frac{40 \text{ pages}}{5 \text{ hour}}$

Total assignment = 110 pages, both work together on 2 computers,

Rashid = $\frac{32}{6} = \frac{16}{3} \frac{\text{pages}}{\text{hour}}$

Kamran = $\frac{40}{5} = \frac{8 \text{ pages}}{\text{hour}}$

by combining both;

Rashid + kamran = 5.33 + 8

= 13.33 pages/hour

Time to complete 110 pages

Time = $\frac{\text{Total pages}}{\text{combined speed}}$

Day: Date:

$= \frac{110}{13.33}$

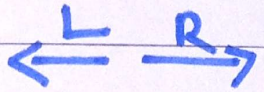
$= 8.25$ hours

$= 8$ hrs and 15 minutes

Time taken together: 8 hours 15 minutes

QUESTION NO:-8

(A)



Given,

- A is to the right of B : B → A
- E is to the left of C and right of A : A → E → C
- B is to the right of D : D --- B

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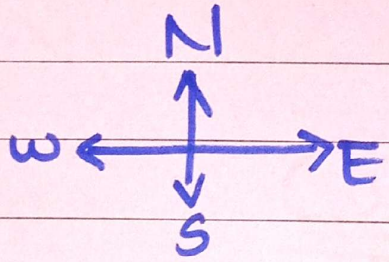
By combining the clues:

... [A] --- E ... C

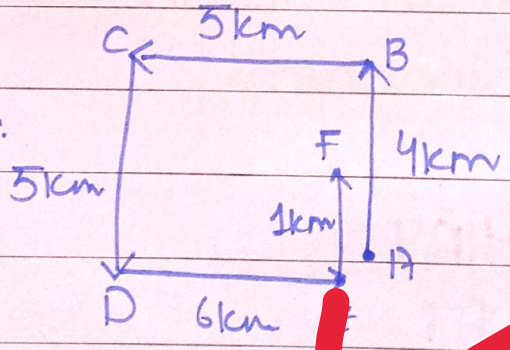
So,

The house in the middle is "A"

Part (B)



Lets make a diagram from information given in the question:



1. How many km are you from the place you started:

4.47km

Day: Date:

2. In which direction will you be running while finishing?
EAST

3. After taking second turn in which direction'll you be running?
SOUTH

4. Direction to reach start from finishing point?
NORTH EAST

(C)

Find odd man out in the following anagrams:

(a) THRSI = SHIRT
(b) AOTC = COAT
(c) EOUBSL = BLOUSE
(d) ICTRIS = SKIRT
(e) RE TAEWS = SWEATER

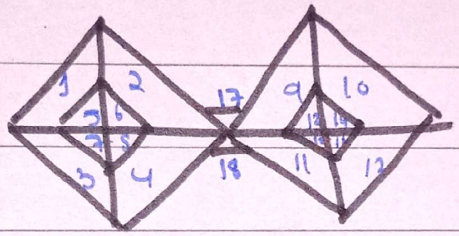
Day: _____ Date: _____

To identify the odd one:

- All except Skirt are upper body clothing

Odd man out = SKIRT (KTRIS)

(D)



I can find 18 Triangles in the picture.