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SECTION-B

Q 6 A

The woman is mother
of Ansan.

Q 6 B

Area of Rectangular Park

Given:

$$\text{Length} : \text{Breadth} = 3 : 2$$

$$\text{Speed} = 12 \text{ km/hr}$$

$$\text{Time} = 8 \text{ minutes}$$

∴

$$12 \text{ km/hr} = \frac{12 \times 1000 \text{ m}}{60}$$

$$= 200 \text{ m/min}$$

$$\text{Perimeter} = 200 \times 8$$

$$= 1600 \text{ m}$$

$$\text{Let } l = 3x$$

$$w = 2x$$

$$P = 2(l + w)$$

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

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$$1600 = 10x$$

$$x = 160$$

$$\text{So, length} = 3 \times 160 = 480 \text{ m}$$

$$\text{Breadth} = 2 \times 160 = 320 \text{ m}$$

$$\text{Area} = l \times b$$

$$= 480 \times 320$$

$$= 153,600 \text{ sq. m}$$

Q No 6(c)

Given:

i) Unit digit exceeded
by 2

ii) Product of a number
and sum of digits = 144

Solution

Let tens digit = x

Unit digit = $x + 2$

$$\text{Number} = 10x + (x + 2)$$

$$= 11x + 2$$

$$\text{Sum of digits} = x + (x + 2)$$

$$= 2x + 2$$

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

$$(11x+2)(x+1) = 72$$

$$\Rightarrow \text{Let } x = 2$$

$$(22+2)(3) = 24 \times 3 = 72$$

Numbers are:

$$\text{Tens digit} = 2$$

$$\text{Unit digit} = 4$$

$$= 24$$

Q No 6D

Given:

$$\text{LCM} = 48$$

$$\text{Ratio} = 2:3$$

Let numbers be $2x$ and

$3x$

$$\text{LCM of } 2x \text{ and } 3x = 6x$$

$$6x = 48$$

$$x = 8$$

$$2x = 16$$

$$3x = 24$$

$$16 + 24 = 40$$

$$= 40$$

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Q NO 7 (A)

Given

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

Let first number = x

Second number = y

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

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

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

$$3x = 5y$$

Ratio = 5:3
(1st to 2nd)

Q NO 7 (B)

Given

Selling price of 17

ball = 720 Rs

Loss = cost price of 5 balls

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Let cost price of one ball = x

Total CP of 17 balls = $17x$

Loss = CP of 5 balls = $5x$

$$SP = CP - \text{Loss}$$

$$720 = 17x - 5x$$

$$720 = 12x$$

$$x = 60$$

Q NO 7C

Given

i) Man is 24 years older than his son

ii) After 2 years, man's age = twice the son's age

Let son's age = $S = x$

Father's age = $F = x + 24$

In 2 years, their ages will be ;

$$F = x + 24 + 2 = x + 26$$

$$S = x + 2$$

$$= x + 2$$

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Now,

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

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

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

$$x = 22$$

$$\text{Son's age} = 22$$

Q NO 70

Rashid:

32 pages in 6 hours

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

Kamran:

40 pages in 5 hours

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

Combined speed

$$\frac{16}{3} + 8 = \frac{16}{3} + \frac{24}{3} = \frac{40}{3}$$

$$\text{Time} = \frac{110}{\frac{40}{3}} = \frac{110 \times 3}{40}$$

$$= \frac{330}{40} = 8.25 \text{ hours}$$

Time required = 8 hrs 15 mins

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Q NO 3 (a)

How Global Warming
can be reversed

Global warming is the phenomenon of gradual increase in Earth's average temperature. It is caused by release of greenhouse gases in atmosphere.

It can be reversed by following way:

i) Reduction of
GHG Emission

Global warming can be reduced by reducing the emission of greenhouse gases such as CO_2 and methane. This can be achieved by stopping use of fossil fuels.

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b) Renewable Energy

It can be also reduced by using renewable energy such as wind, solar, hydel and geothermal energy etc. Renewable energy is a clean energy and doesn't contribute to greenhouse gases' emission into atmosphere.

c) Afforestation & Deforestation

Planting more trees and protecting existing forests play a crucial role in absorbing CO_2 from air. Forests act as a natural carbon sink and help maintain ecological balance.

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Q No 3 (b)

Ceramics

Ceramics are inorganic, non-metallic materials made by heating and shaping compounds of metal and non-metal such as oxides, carbides and nitrides, at high temperatures.

Properties of Ceramics

- i) Ceramics have high hardness and strength.
- ii) They have high melting points.
- iii) They are non-corrosive and have strong resistance to heat.
- iv) Ceramics have poor electrical and thermal

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conductivity

v) They are brittle in nature.

Applications of Ceramics

Ceramics have wide applications:

- i) They are used in making porcelain, crockery, floor tiles and sanitary-ware.
- ii) They are used as electrical insulators and used in spark plug.
- iii) As they are heat-resistant, they are used in furnace and brick kiln.
- iv) They are used in medical equipments: surgical tools. Also used in dental implants.

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V) Ceramics are also used as cutting tools and abrasives.

QNO 3 (c)

Working of Optical
fibres and Mobile
Phone

Working of Optical
Fibres

Optical fibres function on the principle of total internal reflection.

They consist of a central core surrounded by cladding having a lower refractive index. When light enters the fibre at a specific angle, it is continuously reflected within a core and travels over long

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distances with minimal loss. Optical fibres are widely used in:

- i) Telecommunications
 - ii) Internet transmission
 - iii) Medical equipment
- due to their high speed and efficiency.

Working of Mobile Phone

A mobile phone operates using radio-wave communication. When a person speaks into a mobile phone, the sound waves are converted into electrical signals and then into digital signals. These signals are transmitted as radio waves to the nearest cell tower, which connects the call to the intended receiver through a network. The receiving mobile phone

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Convert the radio waves
back into sound, allowing
communication over long
distances.

Q NO 3(d)

Food Additives

Definition:

"Food additives
are substances
added to improve
taste, color, texture
or shelf life of
food."

Examples:

i) Food coloring in
sweets

ii) Flavouring enhancers
in snacks

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Food Adulteration

Definition:

" Food adulteration
is the deliberate
mixing of inferior
or harmful substance
in food items."

Examples,

- i) Mixing water in milk
- ii) Adding chalk powder to flour.

Food Preservatives

Definition

" Food Preservatives
are chemicals
used to prevent
spoilage caused

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by microorganism."

Examples:

i) Sodium benzoate in juices

ii) Salt in pickles

Food Contamination

Definition

" Food Contamination occurs when food becomes unsafe due to the presence of harmful microorganisms, chemicals or foreign substances."

Examples:

Bacterial Contamination of food due to improper storage.

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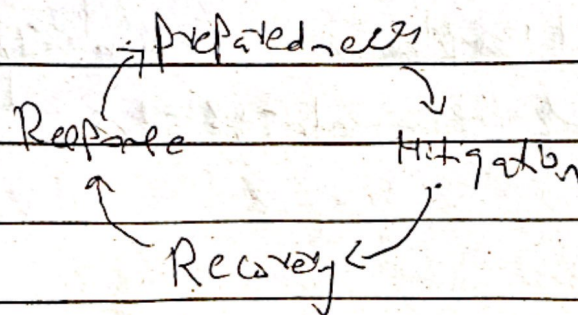
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Q NO 5 (a)

Disaster Risk Management

DRM refers to the systematic process of identifying, analyzing and reducing the risk of caused by natural or man-made disasters. Such as floods, earthquakes, cyclones and industrial accidents.

The main objective of DRM is to minimize the loss of life, property damage and environmental degradation through preparedness, mitigation, response and recovery measures.



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Importance of Risk Assessment in DRM

Risk assessment is the crucial component of DRM. It involves identifying potential hazards, assessing vulnerabilities and evaluating the possible impacts of disasters. Through risk assessment, authorities can prioritise high-risk areas and populations, plan effective mitigation strategies and allocate resources efficiently. It helps in early warning systems, disaster preparedness and reducing economic losses. Proper risk assessment enables informed decision-making and strengthens community resilience against disasters.

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Q NO 5(h)

Definition of Biofuels

"Biofuels are renewable fuels derived from biological sources such as plants, agricultural waste, animal fats and organic matter.

They are considered environment-friendly alternatives to fossil fuels because they reduce greenhouse gas emissions.

Production of Bio-diesel

Biodiesel is produced from vegetable oil or animal fats or dregs through a chemical process called transesterification. In this

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Procell, oil reacts with alcohol (usually methanol) in the presence of a catalyst to produce bio-diesel and glycerol as by-product. Bio-diesel can be used in diesel engines either alone or blended with petroleum diesel.

Production of Biogas

Biogas is produced by the anaerobic decomposition of organic waste such as animal dung, kitchen waste, and agricultural residues. Microorganisms break down the waste in the absence of oxygen, producing a mixture of gases mainly consisting of methane and CO_2 . Biogas is commonly used for cooking, heating

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and electricity generation

Q No 5 (c)

Digestive System

The digestive system is a group of organs that work together to break down food into simple substances that can be absorbed and used by the body for energy, growth and repair.

Role of Stomach

Stomach is a muscular organ that stores food temporarily and mixes it with gastric juices containing hydrochloric acid (HCl) and enzymes. These substances help in digestion of proteins.

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and kill harmful micro-organisms. The stomach churns food into a semi-liquid form called chyme.

Role of Small Intestine

The small intestine is the main site of digestion and absorption. Digestive enzymes from the pancreas and bile from the liver act here to complete the digestion of carbohydrates, proteins and fats. The digested nutrients are absorbed through intestinal walls into bloodstream.

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Q NO 56)

Plastics

Definition

"Plastics are synthetic or semi-synthetic materials made from polymers derived mainly from petroleum."

They are moulded into various shapes and various are widely used in daily life.

Properties of Plastic

Following are the properties of plastic;

- i) They are lightweight.
- ii) They are durable and long-lasting.

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iii) Plastics are corrosion resistant.

iv) They are flexible and can be moulded into different forms and shapes.

v) They are good insulators of heat and electricity.

Applications of Plastics

Following are the applications of Plastics:

i) They are used in packaging and household items.

ii) Plastics are used in electrical insulation.

iii) They are used in many medical and surgical equipments.

iv) They are used in construction materials.

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v) They are also used in automobile parts.

Environmental Risks associated with Plastic

Plastics are non-biodegradable and accumulate in the environment, causing pollution. They harm wildlife when ingested and contribute to soil and water contamination.

Burning plastics release toxic gases that pose serious health and environmental hazards.