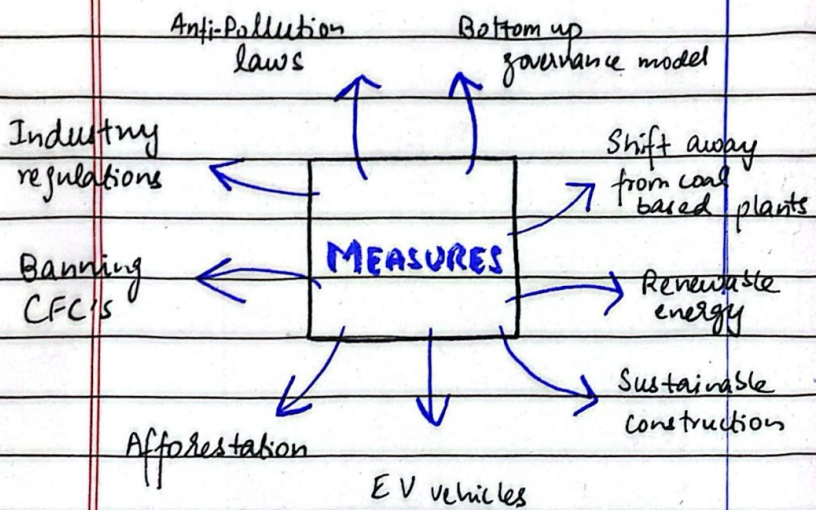


Q103:

(a) Global Warming

Global warming refers to the phenomenon of the warming of the Earth. It entails a rise in temperature of the Earth's surface.

II MEANS TO INDUCE REVERSAL

Regulatory measures in the form of laws and regulations will help reduce the onset of polluting industries.

Governance measures in the

form of bottom-up governance ensures accountability and transparency within resource management.

Alternative energy measures using a shift from non-renewable towards renewable sources like solar, wind, hydel energy.

Legal measures using stringent laws to ban pollution and punish the unsustainable and damaging practices.

Sustainable practices measures within construction and other development sectors to efficiently use resources.

Greening measures involving reforestation and afforestation enables a reduction in greenhouse gases thereby allowing for reduction in global warming.

(b) Ceramics

Ceramics are an inorganic non-metallic substance made out of minerals.

It usually involves molding of one substance like clay into different shapes under high temperature, resulting in its formation once cooled.

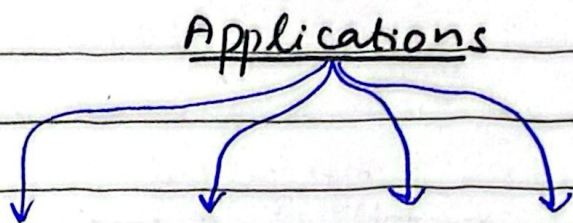
(ii) Properties of Ceramics

- Hard and Brittle
- Heat resistant
- Corrosion resistant
- Electrical properties - insulators
- Inorganic non-metals

The general properties of ceramics remain the same. They are extremely resistant to heat and strong materials but also brittle. Modern ceramics also conduct

electricity to a decent extent.

(iii) Applications of Ceramics



Household Construction Electronics Automobiles

The applications are wide ranging. Within households, used in sanitary ware and tiles. Within construction, used as bricks mostly. In electronics, appears in the form of Insulators, optical fibers etc. Within auto mobile sector, used as Catalytic Converters and Brake Pads.

The applications remain wide given its properties of insulation and tough resistance to heat.

(C) Optic Fibers

Optic fibers essentially refers to a thin wire that acts as a means of transmission of information. Its durability and material allows for quick communication.

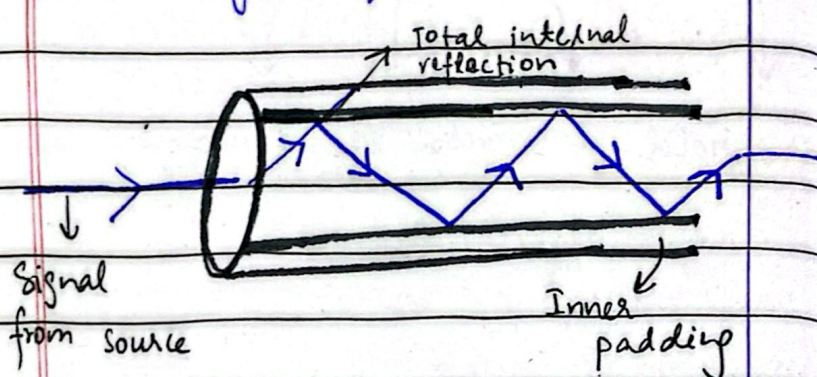


Fig: Working of fiber optic

- (i) The signal from source enters the cable.
- (ii) It undergoes total internal reflection, which is when angle of incidence goes beyond 90° .
- (iii) It keeps on bouncing within the fiber until it reaches receiver.
- (iv) Much faster mode of travel compared to normal copper wire.

Date: _____

Mobile Phone

The mobile phone essentially refers to a device used for the purpose of communication and other tasks. It contains several systems that enable it to run and help connect with other devices.

COMPONENTS AND WORKING

(i) Internal Operating system

refers to the software within the phone that allows it to run. Could be an android or Ios system generally.

(ii) Receiver allows for

capturing and sending signals for communication. Sends signals to satellites which is rerouted to receiver.

(iii) Bluetooth helps connect with other devices and enables sharing of information

(iv) Memory is the component that helps retain working information and data

(d)

(i) Food Additives

Food additives are substances added to food in small quantities for different purposes. This includes sweeteners, colouring agents and flavouring agents.

Examples: Citric Acid, MSG, Pectin.

Such regulate some property of the food, including acidity, flavour etc.

(ii) Food Preservatives

Preservatives are substances added to prolong the life of an edible material. It increases the span by preventing organic decomposition of food by a foreign agent.

Examples:

- (i) Natural - Salt, sugar, vinegar
- (ii) Synthetic - Benzoates (for acidic food), Nitrates (to maintain color), Sorbates (Dairy products)

(iii) Food Adulteration

This refers to the deliberate addition of harmful or inferior substances to food. It generally reduces the overall quality of the edible material.

Examples:

- (i) Milk
- (ii) Spices:
- (iii) Honey:
- (iv) Edible oils:

(iv) Food Contamination

Contamination is the process of quality of food due to harmful substances. Food is contaminated either naturally by environmental factors or by addition of some agents that impede the quality of food. It is unintentional.

Examples:

- (i) Physical: Pest, dust
- (ii) Chemical: Pesticide, heavy metals
- (iii) Biological: Pathogens, Bacteria

Q05:

(a) DRM

Disaster Risk management basically refers to processes involved to manage and reduce the risks posed by hazardous events. The process helps map out the vulnerabilities and helps to identify mitigation and adaptation steps that need to be taken.

I. Components of DRM

(i) Prevention

Actions taken to stop development of disasters.

(ii) Mitigation

Reducing the impacts of risk present

(iii) Preparedness

Planning and training for when disasters occur

(iv) Response

Actions taken during the onset of hazardous event

(v) Recovery

Post disaster rehabilitation mechanisms

II. Importance of Risk Assessment

Risk assessment involves understanding the exact risks posed by potential hazards and the impacts it would have on society and environment. It is important for several reasons:

(i) Efficient Planning and mitigation

It allows for efficient strategies and targeted approach to manage disaster.

(ii) Stronger Preparedness

Better prepared amid event.

(iii) Early response enabled

Can respond quickly and efficiently.

(iv) Financial protection provided

Financial side of DRM helps provide safety net.

(v) Community engagement

Local communities are involved in decision making.

Q06: A)

Woman[⊖]Son[⊕] = Ahsan[⊕]Daughter[⊖]

The woman is Ahsan's
"Mother".

B) Given:

Ratio between length and breadth = 3:2

Speed = 12 km/hr

Time of one round = 8 minutes

Need: Area of park in sq.m

Total distance travelled = Speed × Time

$$= 12 \times \frac{8}{60}$$

$$= \frac{8}{5} \text{ km}$$

$$\begin{aligned} \text{Converting into meter} &= \frac{8}{5} \times 1000 \\ &= 1600 \text{ m} \end{aligned}$$

$$\text{Length of park} = \frac{3}{5} \times 1600$$

$$= 960 \text{ m}$$

Date: _____

$$\text{Breadth of Park} = \frac{2}{5} \times 1600$$

$$= 640 \text{ m}$$

Using the ratio, we found the length and breadth to the corresponding park.

Now, to find the area:

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

$$= 640 \times 960$$

$$= \boxed{614400} \text{ m}^2$$

C) Given:

Unit digit exceeds ten's by 2

$$\text{Product} = 144$$

Need: two digit number

$$\text{Let ten's digit} = n$$

$$\text{Unit's digit} = n+2$$

$$\text{Given number} = n(n+2)$$

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