

## PART II

### SECTION I

#### Question No. 1

##### Part A

##### Data is new oil

Indeed, data is new oil because controlling data is influencing the perception of people. It helps in timely execution of decision - increased precision.

##### Examples

###### ① Pak-India Conflict:

Pakistan responded with precision due to information; and India suffered huge loss in the conflict.

###### ② US restricted access to Journalists

The US has imposed restriction on the journalists. The restriction is aimed at protection of military and defense sites.

###### ③ US Gaza peace Plan and Manufactured Truth:

Due to limited access to the data, the plan is shown as peace

while Israel achieve its goal. This manifests how data flows and how media shapes perception.

- Indo-Pak Conflict
- US restriction on Journalists
- Gaza peace Plan

### Conclusion.

Data is new oil; that's why states compete in the digital realm to control its flow so people back their policies.

## Part b

### Expansion of Universe

It is true. The evidence of universe expansion is red shift rays. It shows that universe is expanding like balloon.

### Diagram



Rapid expansion  
of universe

## Resemblance with balloon

The expansion resembles balloon because the the centre of gravity pulls it back. However, the greater wavelength of red shift pushes it away.

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## Part C

### Balanced diet

Balanced diet refers to intake of required and standard quantities of vitamins and minerals - micro and macro-nutrients.

### Macro Nutrients

- ① Carbohydrates
- ② Proteins
- ③ Lipids
- ④ water

### Micro Nutrients

- ① Fat-soluble vitamins.
  - vitamin A, D, E, K
- ② Water soluble vitamins
  - Vitamin B - complex
  - Vitamin C

# Deficiency of Vitamin A, E, D

## ① Deficiency of Vitamin A:

- ① Night vision issues
- ② Color blindness

## ② Deficiency of Vitamin E:

- ① Skin rashes; ageing
- ② Hair fall

## ③ Deficiency of Vitamin D:

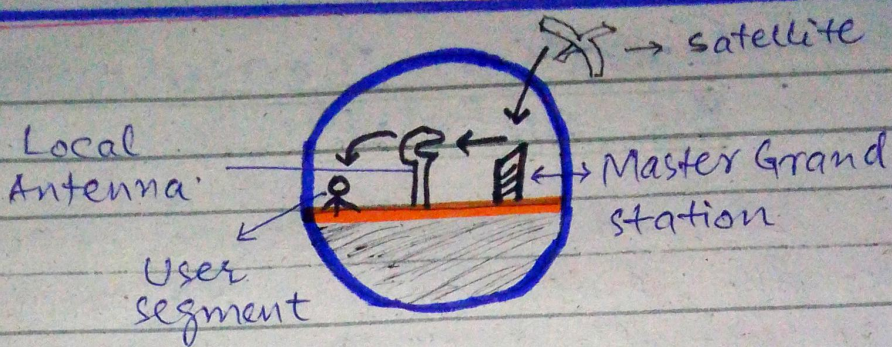
- ① In child: Rickets
- ② In Adults: Osteoarthritis

## Part D

### Working of GPS

Global positioning system works on the basis of orbital satellite.

- ① Satellite transmits signal
- ② Antennas receives signals
- ③ Master ground station on earth monitor and maintain its function.
- ④ User receives these signals from locally stationed antennas.

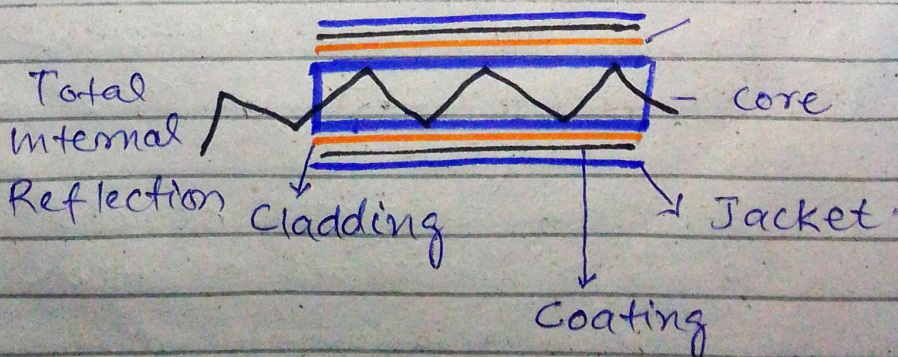


## FIBER OPTICS

Fiber optics is a medium of light through which data flow in the form of light using the principle of Total Internal Reflection.

### Components of Fiber Optics

- ① Core
- ② Cladding
- ③ Coating
- ④ Jacket



# Location Measurement By satellite

2D and 3D images are carried to the Antennas in the form of signals. Satellite only captures the images and users can distinguish easily between 2D and 3D images; however, the sensors can give the clue about the macro-patterns of earth.

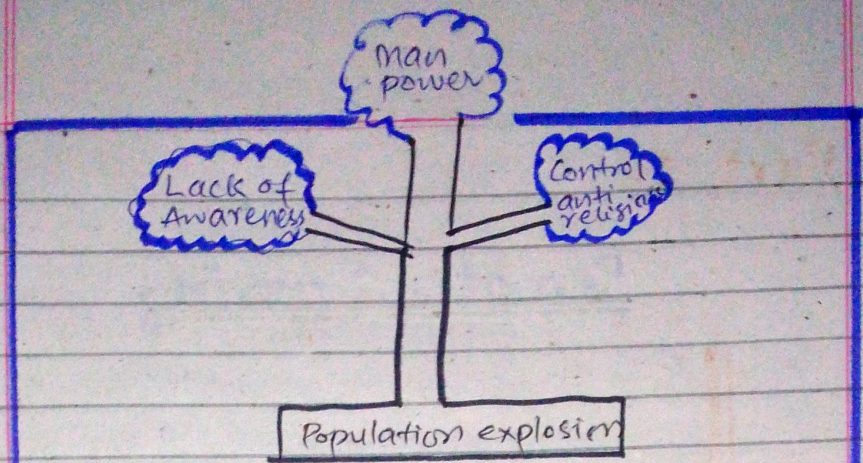
## Question No 5

### Population Explosion

Population explosion is a term used to represent a situation where the average growth rate exceeds the available resources.

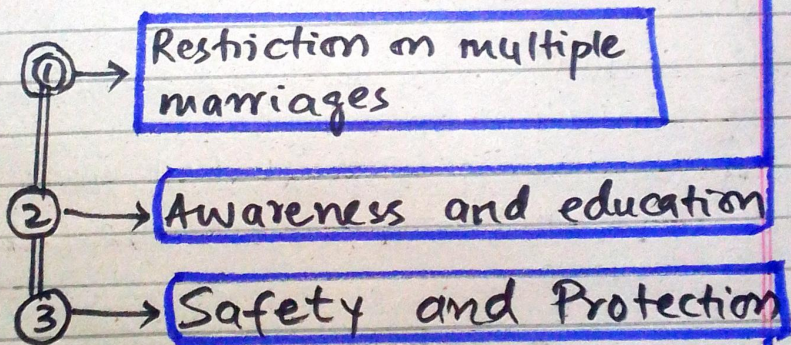
### Causes:

- ① Lack of Awareness
- ② Desire to raise man-power
- ③ Population-control is considered anti-religious
- ④ Depleting resources depicts growing number of people



## Measures to Control Population

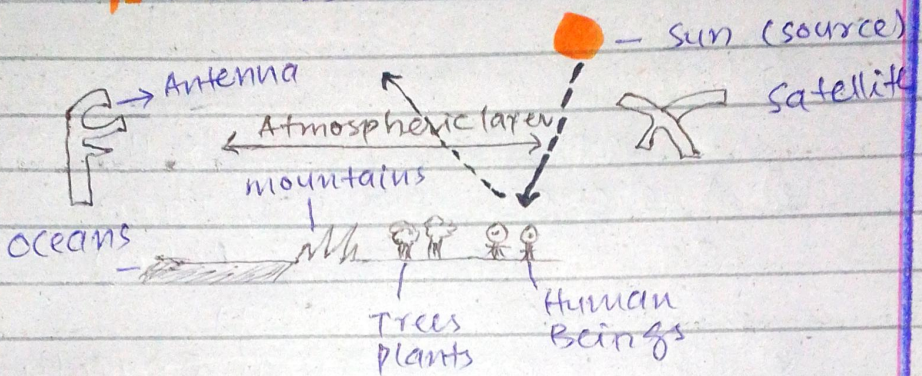
- ① Using Malthusian theory, restriction on multiple marriages.
- ② Awareness and education about resource depletion and over-population
- ③ Using protection and safety measures in general conditions



## Part B

# Remote Sensing

Remote sensing is process of identification of the geographic locations using sensors.



## Components

- ① Sun (Source of illumination)
- ② Satellite (active and passive sensors)
- ③ Radiation to target
- ④ Monitoring of reflected rays
- ⑤ Interpretation and analysis
- ⑥ Images

## Role of GIS in Environmental Sciences

- ① Identification of Geography  
GIS is used to identify

- geographic location during hazards.
- ✓ Pre-Destruction and
  - ✓ Post-destruction

## Town Planning and Urban City

GIS is used in town planning and urban city management.

## Used for Inaccessible Areas Identification

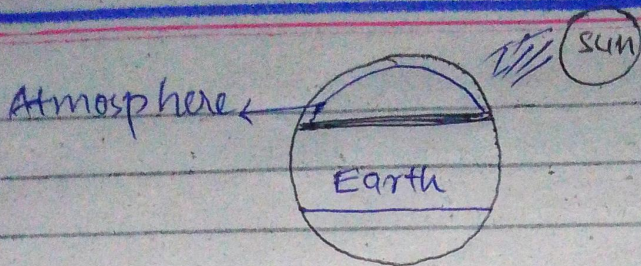
GIS is used to identify those location which are inaccessible or costly to be accessed. Forest and wildfire are best examples.

## Part C

### Atmosphere is blanket of the Earth

Atmosphere is blanket or protection cover of earth because it protects the life on earth from the harmful impacts of Sun.

- ① Protection against UV rays
- ② Support life on earth
- ③ Maintain balance between heat and cold



- ① Filter Sun rays
  - ② Trap harmful gases.
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## Part D

### Hydrometer

An instrument used to measure the level of water.

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### Epicenter

A point at earth surface that arises from earthquake above the deep focus point.



### Eye wall of Cyclone

Eye wall of cyclone is a point from where the cyclone spres emerge and spread due to rotating winds.

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## Deep Focus

The point from where the seismic energy is released and sometimes shake the earth, causing earthquake.

## Light Year

Light year is Astronomical unit of length. Its value is  $9.46 \times 10^{17}$  m. It is used to measure distance between galaxies and other heavy bodies.

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## Question No. 6

Given

**Part d:**

① STSTAICTS = STATISTICS

② LGEBMAR = GAMBLER

**Part B**

Given

Sale price = \$200

Discount = 25%

Tax = 6%

Cost Price = ?

Formula

$$sp = cp \left( \frac{100 - \text{discount}}{100} \right)$$

$$200 = cp \left( \frac{75}{100} \right)$$

$$\frac{200 \times 100}{75} = cp$$

$$cp = 266.66 \approx 267$$

Addition of tax

$$6\% \text{ tax} \Rightarrow \frac{6}{100} \Rightarrow 0.06$$

$$\Rightarrow 266.6 \Rightarrow \text{Total cost}$$

## Part C:

Given

$$\text{Distance} = 36 \text{ km}$$

$$\text{Speed} = 18 \text{ km/h}$$

$$\text{Time} = ?$$

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}}$$

$$\Rightarrow \frac{36}{18} \Rightarrow 2$$

At 1 pm started so will reach  
on 3 pm

## Part A

Apple, Berry, cherry, Dates.

3 : 6 : 2 : 5

$$\text{Sum of all ratio} = \frac{\text{Total}}{\text{No. of ratio}} \times \text{share}$$

$$16 = \frac{35}{4} \times \text{Apple}$$

$$\frac{16 \times 4}{35} = \text{Apple} \Rightarrow \frac{64}{35} = 1.828$$

$$\text{Apple} \Rightarrow 1.828 \times 3 \Rightarrow 5.48$$

$$\text{Berry} \Rightarrow 1.828 \times 6 \Rightarrow 10.97 \approx 11$$

$$\text{Cherry} \Rightarrow 1.828 \times 2 \Rightarrow 3.65$$

$$\text{Dates} \Rightarrow 1.828 \times 5 \Rightarrow 9.14$$

## Question No. 7

### Part C

(ii)  $3, 5, 7, 11, 13, 17$

(i)  $2, 6, 18, 54, 162, 486$

↳ • All Fit because each preceding number is multiplied by 3

$$2 \times 3 = 6 ; 6 \times 3 = 18$$

$$18 \times 3 = 54 ; 54 \times 3 = 162$$

$$162 \times 3 = 486$$

### Part B

Total savings = 25000

Ratio = 1:2:3:4:5

Smallest ratio = ?

Sum of all ratios = 15

No. of all ratios = 5

Sum of all ratio =  $\frac{\text{Total amount}}{\text{No. of ratios}} \times \text{share}$

$$\textcircled{1} = 15 \times \frac{25000}{15} = 25000 \times 1 = 333.33$$

$$\textcircled{2} = 15 \times \frac{25000}{15} \times 2 = 666.66$$

$$\textcircled{3} = 333.33 \times 3 = 21000$$

$$\textcircled{4} = 333.33 \times 4 = 1333.32$$

$$5 \Rightarrow 333.33 \times 5 = 1666.65$$

Ratio of 1 is 333.33 which is smallest