

# Unit - V

## CHAPTER 7

## HUMAN POPULATION AND ENVIRONMENT

### 5.1 Objectives

- To get a knowledge on human population and human rights.
- To educate the students on value education.
- To equip the students towards the modern technology with respect to environment and human health.

#### 5.1.1 Population density

Number of individuals of the population per unit area or per unit volume.

#### 5.1.2 Parameters affecting population size

- ✓ Birth rate
- ✓ Death rate or Mortality
- ✓ Immigration
- ✓ Emigration.

#### 5.1.3 Population Growth

The rapid growth of the global population for the past 100 years from the difference between the rate of birth and death.

**Table.5.1 Population statistics in India as on 2010**

Rank	State or union territory	Population	%	Rural Pop.	Urban Pop.	Area km <sup>2</sup>	Density (per km <sup>2</sup> )	Area mi <sup>2</sup>	Density (per mi <sup>2</sup> )	Sex ratio
1	Uttar Pradesh	193,977,661	16.16%	131,658,339	34,539,582	240,928	690	93,022.8	1,787	898
2	Maharashtra	110,878,627	9.42%	55,777,647	41,100,980	307,713	315	118,808.7	815	922
3	Bihar	102,998,509	8.07%	74,316,709	8,681,800	94,163	881	36,356.5	2,283	921
4	West Bengal	90,176,197	7.79%	57,748,946	22,427,251	88,752	903	34,267.3	2,340	934
5	Andhra Pradesh	82,210,007	7.41%	55,401,067	20,808,940	275,045	277	106,195.5	718	978
<b>6</b>	<b>Tamil Nadu</b>	<b>62,405,679</b>	<b>6.07%</b>	<b>34,921,681</b>	<b>27,483,998</b>	<b>130,058</b>	<b>480</b>	<b>50,215.7</b>	<b>1,243</b>	<b>987</b>
7	Madhya Pradesh	60,348,023	5.87%	44,380,878	15,967,145	308,245	196	119,014.1	507	919
8	Rajasthan	56,507,188	5.49%	43,292,813	13,214,375	342,239	165	132,139.2	428	921
9	Karnataka	52,850,562	5.14%	34,889,033	17,961,529	191,791	276	74,050.9	714	965
10	Gujarat	50,671,017	4.93%	31,740,767	18,930,250	196,024	258	75,685.3	669	920
11	Orissa	36,804,660	3.58%	31,287,422	5,517,238	155,707	236	60,118.8	612	972
12	Kerala	31,841,374	3.10%	23,574,449	8,266,925	38,863	819	15,005.1	2,122	1,058
13	Jharkhand	26,945,829	2.62%	20,952,088	5,993,741	79,714	338	30,777.7	875	941
14	Assam	26,655,528	2.59%	23,216,288	3,439,240	78,438	340	30,285.1	880	935
15	Punjab	24,358,999	2.37%	16,096,488	8,262,511	50,362	484	19,444.9	1,253	876
16	Haryana	21,144,564	2.06%	15,029,260	6,115,304	44,212	478	17,070.3	1,239	861

17	Chhattisgarh	20,833,803	2.03%	16,648,056	4,185,747	135,191	154	52,197.5	399	989
18	Jammu and Kashmir	10,143,700	0.99%	7,627,062	2,516,638	222,236	46	85,805.8	118	892
19	Uttarakhand	8,489,349	0.83%	6,310,275	2,179,074	53,483	159	20,649.9	411	962
20	Himachal Pradesh	6,077,900	0.59%	5,482,319	595,581	55,673	109	21,495.5	283	968
21	Tripura	3,199,203	0.31%	2,653,453	545,750	10,486	305	4,048.7	790	948
22	Meghalaya	2,318,822	0.23%	1,864,711	454,111	22,429	103	8,659.9	268	972
23	Manipur	2,166,788	0.21%	1,590,820	575,968	22,327	97	8,620.5	251	974
24	Nagaland	1,990,036	0.19%	1,647,249	342,787	16,579	120	6,401.2	311	900
25	Goa	1,347,668	0.13%	677,091	670,577	3,702	364	1,429.4	943	961
26	Arunachal Pradesh	1,097,968	0.11%	870,087	227,881	83,743	13	32,333.4	34	893
27	Mizoram	888,573	0.09%	447,567	441,006	21,081	42	8,139.4	109	935
28	Sikkim	540,851	0.05%	480,981	59,870	7,096	76	2,739.8	197	875
UT1	Delhi	13,850,507	1.35%	944,727	12,905,780	1,483	9,340	572.6	24,189	821
UT2	Puducherry	974,345	0.09%	325,726	648,619	479	2,034	184.9	5,268	1,001
UT3	Chandigarh	900,635	0.09%	92,120	808,515	114	7,900	44.0	20,462	777
UT4	Andaman and Nicobar Islands	356,152	0.03%	239,954	116,198	8,249	43	3,185.0	112	846
UT5	Dadra and Nagar Haveli	220,490	0.02%	170,027	50,463	491	449	189.6	1,163	812
UT6	Daman and Diu	158,204	0.02%	100,856	57,348	112	1,413	43.2	3,658	710
UT7	Lakshadweep	60,650	0.01%	33,683	26,967	32	1,895	12.4	4,909	948
<b>Total</b>	<b>India</b>	<b>1,206,610,32</b>	<b>100.00</b>	<b>742,490,639</b>	<b>286,119,68</b>	<b>3,287,24</b>	<b>313</b>	<b>1,269,21</b>	<b>810</b>	<b>933</b>

### 5.1.4 Causes of rapid population growth

- ❖ The rapid population growth is due to decrease in death rate and increase in birth rate.
- ❖ Availability of antibiotics, immunization, increased food production, clean water and air decreases the famine-related deaths.
- ❖ In agricultural based countries, children are required to help parents in the field that is why population increases in the developing countries.

### 5.15 Characteristics of population growth

- Exponential growth
- Doubling time
- Infant mortality rate
- Total fertility rate
- Replacement level
- Male/female ratio
- Demographic transition.

### 5.1.6 Variation of population based on age structure

1. Pyramid shaped – India, Bangladesh, and Ethiopia.

2. Bell shaped – France, USA, and UK.

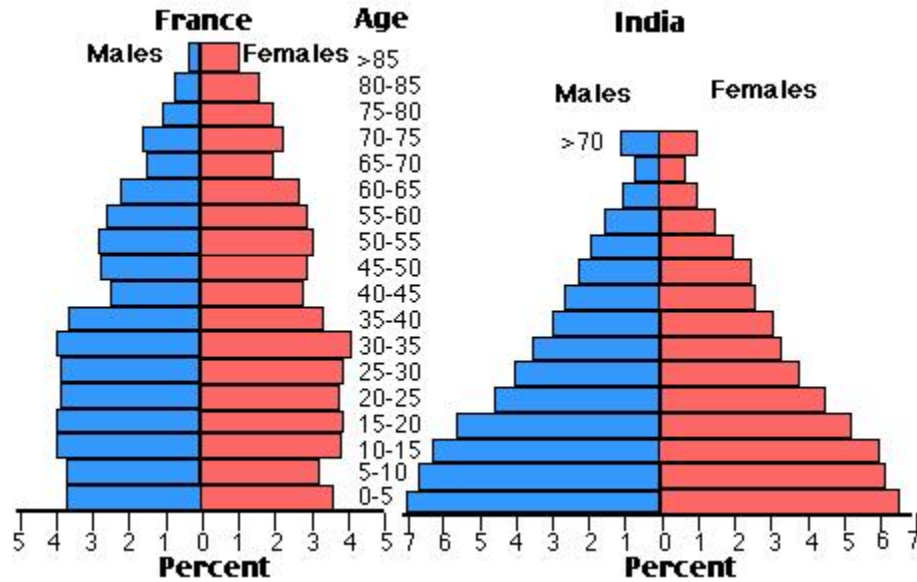


Fig. 5.1 Bell and Pyramid shaped Population structure

3. Urn shaped - Germany, Italy, and Japan.

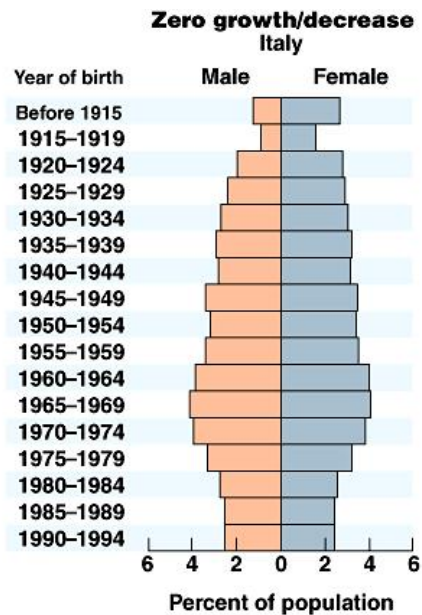


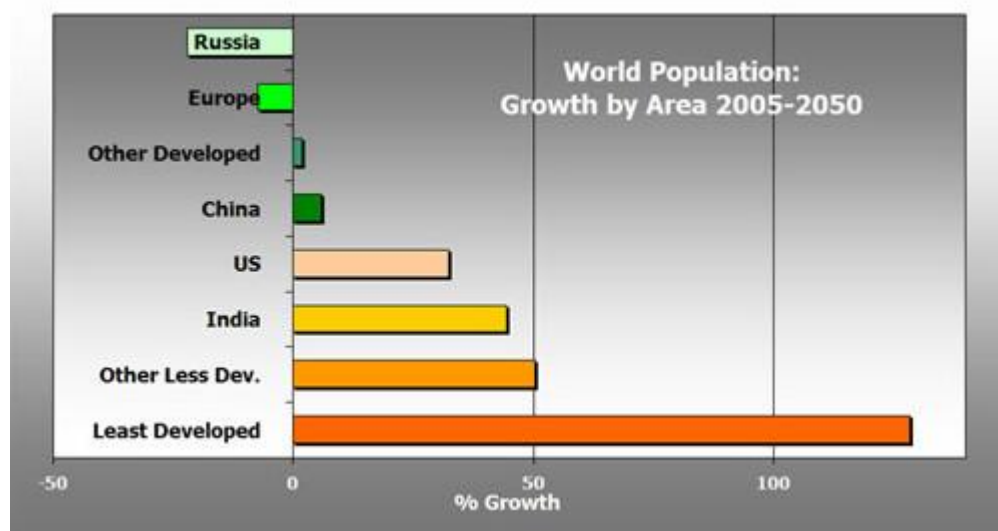
Fig. 5.2 Urn shaped Population structure

### 5.1.7 Population Explosion

The enormous increase in population due to low death rate and high birth rate.

### 5.1.8 Causes

Modern medical facilities, life expectancy, illiteracy.



**Fig. 5.3 World Population Growth**

### 5.1.9 Effects

Poverty, Environmental degradation, over-exploitation of natural resources, threat, communal war.

### 5.1.10 Remedy

Through birth control programmes.

## 5.2 FAMILY WELFARE PROGRAMME

### 5.2.1 Objectives

- Slowing down the population explosion
- Over exploitation of natural resources

## 5.3 FAMILY PLANNING PROGRAMME

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### 5.3.1 Objectives

- Reduce infant mortality rate.
- Encourage late marriages.
- Improve women's health.
- Control of communal diseases.

### 5.4 ENVIRONMENT AND HUMAN HEALTH

1. Physical Hazards – Radioactive and UV radiations, Global warming, Chlorofluoro carbons, Noise etc.
2. Chemical Hazards – Combustion of Fossil fuels, industrial effluence, pesticides, heavy metals.
3. Biological Hazards- Bacteria, Viruses, Parasites.

### 5.5 HUMAN RIGHTS

- ❖ Human right to freedom
- ❖ Human right to property
- ❖ Human right to freedom of religion
- ❖ Human right to culture and education
- ❖ Human right to constitutional remedies
- ❖ Human right to equality
- ❖ Human right against exploitation
- ❖ Human right to food and environment
- ❖ Human right to good health.
- ❖ To promote interdependence among Asian countries in all areas of cooperation by identifying Asia's common strengths and opportunities which will help reduce poverty and improve the quality of life for Asian people whilst developing a knowledge-based society within Asia and enhancing community and people empowerment;
- ❖ To expand the trade and financial market within Asia and increase the bargaining power of Asian countries in lieu of competition and, in turn, enhance Asia's economic competitiveness in the global market;
- ❖ To serve as the missing link in Asian cooperation by building upon Asia's potentials and strengths through supplementing and complementing existing cooperative frameworks so as to become a viable partner for other regions;
- ❖ To ultimately transform the Asian continent into an Asian Community, capable of interacting with the rest of the world on a more equal footing and contributing more positively towards mutual peace and prosperity.

### 5.6 VALUE EDUCATION

#### Education

It is nothing but learning about the particular thing through knowledge. We can identify our values and ourselves with the help of knowledge and experience.

#### 5.6.1 Types

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1. Formal education-Self related learning process.
2. Value education – Analyze based on instruments.
3. Value-based environment education- Based on environment.

### 5.6.2 Objectives

- ✓ To improve the integral growth of human beings.
- ✓ To create attitudes and improvement towards sustainable lifestyle.
- ✓ To increase awareness about our national history our cultural heritage, constitutional rights, national integration, community development and environment.
- ✓ To create and develop awareness about the values and their significance and role.
- ✓ To know about various living and non- living organisms and their interaction with environment.

### 5.6.3 Types of values

- ❖ Universal values-Importance of the human conditions.
- ❖ Cultural values-Right, wrong, good and bad.
- ❖ Individual values-Individual personality and experiences.
- ❖ Global values-Human civilization.
- ❖ Spiritual values-Self-restraint, discipline.

## 5.7 HIV /AIDS

AIDS is the abbreviated form for **Acquired Immuno Deficiency Syndrome** caused by a virus called HIV (**Human Immune deficiency Virus**).

### 5.7.1 Origin of HIV/AIDS

1. Through African Monkey  
African monkey or Chimpanzees To human.
2. Through Vaccine Programme
  - (a) Polio, small pox vaccine from monkey's kidney-Africa.
  - (b) Hepatitis-B viral vaccine-Los Angeles and New York.

### 5.7.2 Factors influencing modes of Transmission of HIV

1. Unprotected sex with infected person.
  2. Using needles or syringes from HIV positive person.
  3. During pregnancy, breast feeding HIV transmits from mother to infant babies.
  4. Blood transfusion during accident and pregnancy.
  5. Biologically the male to female transmission is 2 to 4 time more efficient than female to male transmission.
  6. Women's cervical tissue is more vulnerable to HIV than men.
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The most common methods of transmission of HIV are:



Unprotected sex with an infected partner



Sharing needles with infected person

Almost eliminated as risk factors for HIV transmission are:



Transmission from infected mother to fetus



Infection from blood products

### 5.7.3 Factors not influencing transmission of HIV

1. Tears, food, air, cough, handshake and normal kissing.
2. Mosquito flies and insect bites.
3. Sharing of utensils, clothes, toilets and bathroom.

### 5.7.6 Effects

- Death
- Loss of labor
- Inability to work
- Lack of energy.

### 5.7.4 Functions of HIV in human body

White blood cells (WBC) are responsible for the formation of antibodies called T-helper cells'- helper cells are the key infection fighters in the immune system. Once HIV cells are enter into the boy they destroy the T-cells and cause many infection diseases.

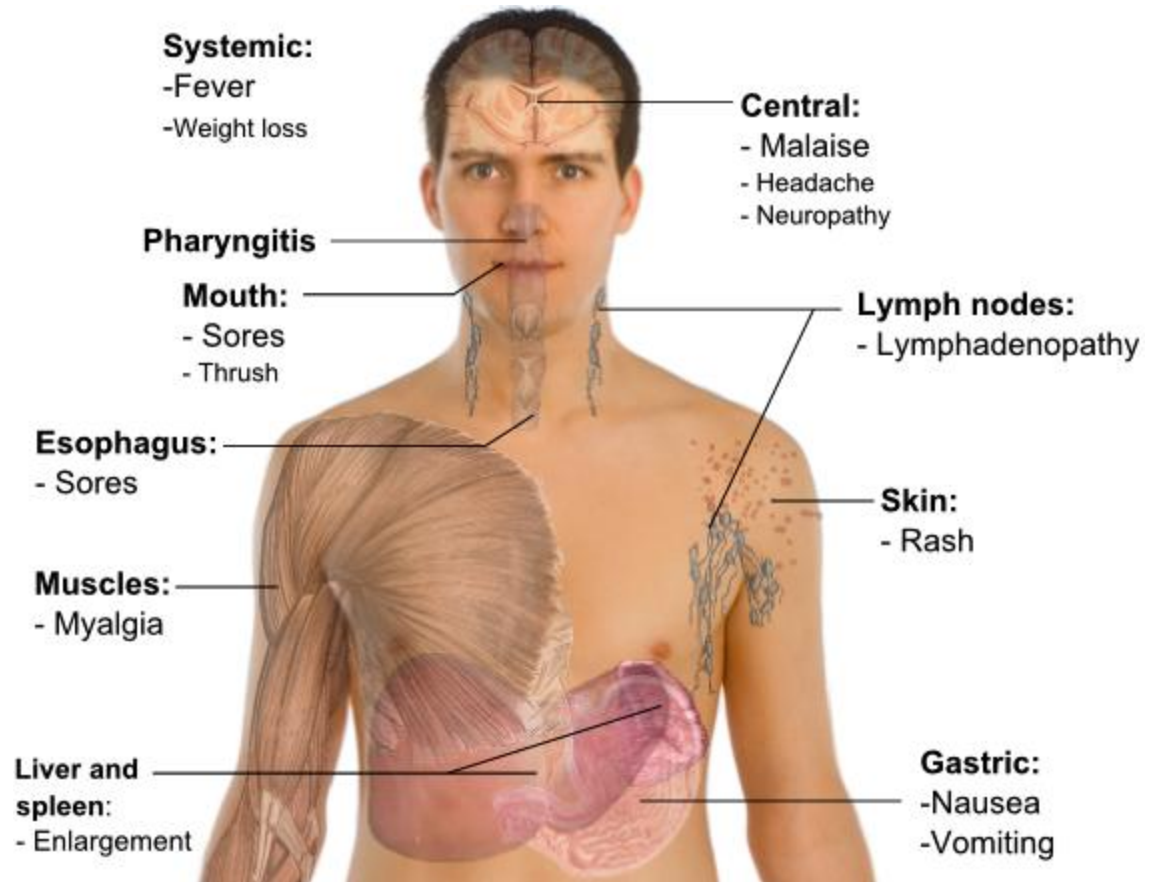
### 5.7.5 Symptoms

#### I. Minor symptoms

- ✓ Persistent cough for more than one month.
- ✓ General skin disease.
- ✓ Viral infection.
- ✓ Fungus infection in mouth and throat.
- ✓ Frequent fever, headache and fatigue.

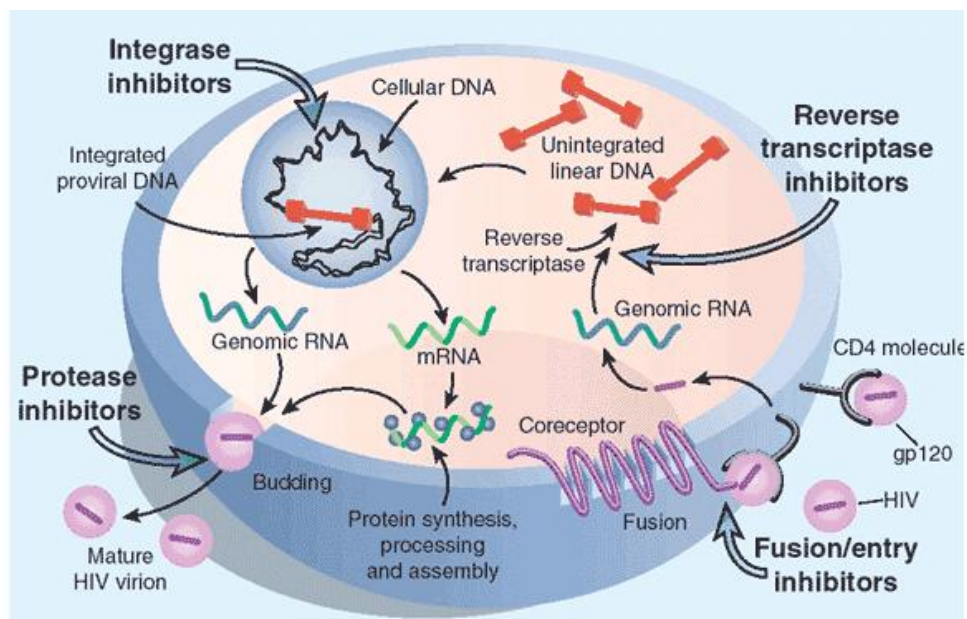
#### II. Major symptoms

- ✓ Diarrhea for more than one month.
  - ✓ TB for more than one month.
  - ✓ Fall of hairs.
  - ✓ 10% of body weight loss within short period.
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**Fig.5.4 Main Symptoms of HIV**

### 5.7.6 Mechanism of Infection



**Fig.5.5 Mechanism of HIV infection**



### 5.7.7 Control and Preventive measures

1. Education.
2. Prevention of Blood borne HIV transmission.
3. Primary health care.
4. Counseling services.
5. Drug treatment.

### 5.7.8 Scenario in India

Large number of cases has been reported in Maharashtra and Tamil Nadu.

### 5.7.9 World Scenario

Nearly 90% of the HIV affected peoples live in developing countries.13% of world's population live in Africa. About 3 million people so far died due to HIV in 2003.In the world AIDS ranking India is in 2<sup>nd</sup> place.

### 5.7.10 HIV symbol and World AIDS day

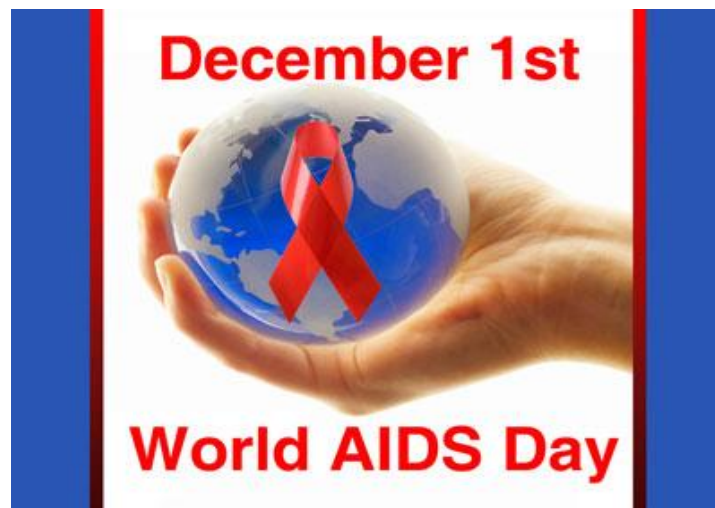
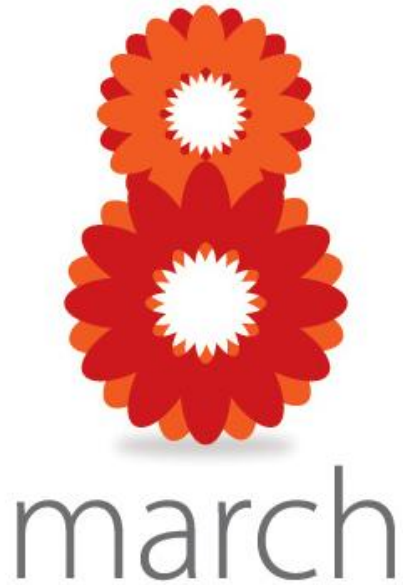


Fig.5.6 Symbol of HIV

## 5.8 WOMANS AND CHILD WELFARE

### 5.8.1 Objectives

- ❖ To provide education
  - ❖ To impart vocational training
  - ❖ To generate awareness
  - ❖ To improve employment opportunities
  - ❖ To restore dignity, equality and respect.
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**Fig.5.7 International women's day**

## **5.9 ROLE OF INFORMATION TECHNOLOGY IN ENVIRONMENT**

### **1. Remote sensing**

Components - A platform, aircraft, a balloon, rocket and satellite.

#### **Functions**

- Origin of electro magnetic energy
- Transmission of energy
- Interaction of energy
- Detection of energy
- Preprocessing of data
- Data analysis and interpretation
- Integration and other applications.



**Fig.5.8 Functions of remote sensing**

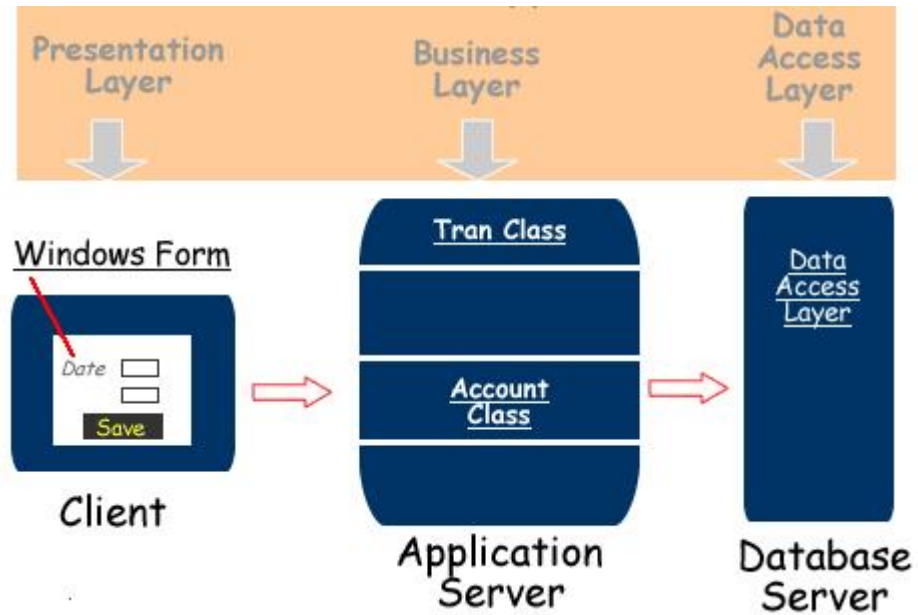
### **Applications**

In agriculture, forestry, land cover, water resources.

**2. Data Base-** Collection of inter related data on various subjects.

### **Applications**

- Ministry of environment and forest
- National management information system
- Environmental information system.



**Fig.5.9 Applications of Database**

### 3. Geographical information system (GIS)

It is a technique of superimposing various thematic maps using digital data on a large number of inter-related aspects.



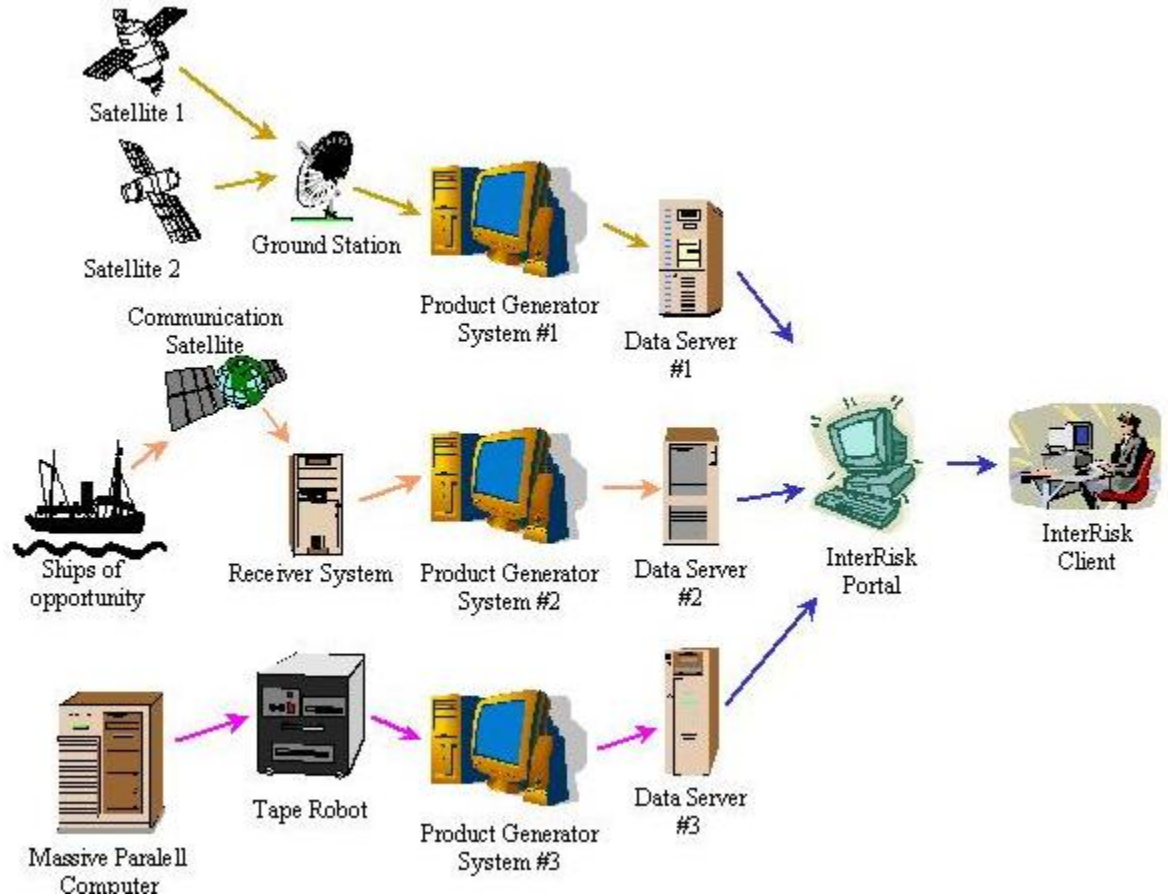
**Fig.5.10 GIS operations**

## Application

- Thematic maps are super imposed using soft wares.
- Interpretation of polluted zones
- To check unplanned growth and related environmental problems.

## 4. Satellite data

- ❖ Helps in providing reliable information and data about forest cover
- ❖ Provide information about forecasting weather
- ❖ Reserves of oil, minerals can be discovered.



**Fig.5.11 Satellite data processing**

## 5. World Wide Web

It provides **Current data**.

### Applications

- Online learning
  - Digital files or photos, animations on environmental studies.
-

## **5.10 ROLE OF INFORMATION TECHNOLOGY IN HUMAN HEALTH**

The health service technology involves three systems

- Finance and accounting
- Pathology
- Patient Administration – clinical system.

### **Applications**

- Data regarding birth and death rates
  - To monitor the health of the people effectively
  - The information regarding the outbreak of epidemic diseases.
  - Online Consultation
  - Drugs and its replacement.
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