

**PANIMALAR ENGINEERING COLLEGE  
MC1101 ENVIRONMENTAL SCIENCE**

**1. Explain the effects (or) impacts of Modern agriculture.**

**I. Fertilizer related problems:**

**i. Micro nutrient imbalance (due to macronutrient (N, P, K):)**

Excess N decreases Zn, Co, Fe. Excess K decreases vitamin C, carotene nutrient in food. Excess fertilizer used in Punjab & Haryana has caused deficiency of Zn in soil, which affect the productivity of soil.

**ii. Nitrate pollution (Blue baby syndrome).**

Excess nitrogen fertilizer used in fields leached into the soil & contaminate water. **When the nitrate concentration exceed 25 mg/l, they cause blue baby syndrome.** It affects infants and leads to death.

**iii. Eutrophication:**

Excess use of N, P in the agricultural fields is washed off along with run off water and reach the **water bodies causing over nourishment of lakes. This process is known as eutrophication.** This leads to algal blooming in lakes. These algae grow fast and complete their life cycle quickly and add dead organic matter. This pollutes water and affects aquatic life.

**II. Pesticides related problems:**

**i. Death of non target species:**

Pesticides not only kill target species but also kill several non- target species useful to us. It kills soil organisms & slow down decomposition of organic matter.

**ii. Produce new pests:**

Some pest species survive even after the pesticide spray, which generate highly resistant generations. They are immune to all type of pesticides & are called **super pests.**

**iii. Biomagnification:**

Many of the pesticides are non- biodegradable and keep on **accumulating in the food chain. This process is called bio magnification.** Human beings in high trophic level are harmful. DDT causes thinning of egg shells in birds.

**iv. In human health:**

Risk of cancer, reduce fertility, immunity, neurological disorder.

**III. Water logging:**

**Surface water logged land is that land where the water is at or near the surface and water stands for most of the year.**

**Causes:**

- ☐ Excess water supply to crop lands
- ☐ Heavy rain
- ☐ Poor drainage

**Effects:**

Pore voids in soil gets filled with water & water table raises

Soil – air gets depleted. Roots of plant do not get air for respiration. Mechanical strength of soil decreases. Crop yield falls.

Water logging from rice fields release methane to the atmosphere results in global warming.

**Prevention:**

- ☐ Prevent excess irrigation
- ☐ Use drip irrigation
- ☐ Use sub-surface drainage technology
- ☐ Bio drainage with trees like eucalyptus

**IV. Salinity problems:**

**Water which is not absorbed by the soil undergoes evaporation, leaving behind a thin layer of dissolved salts in the top soil. This accumulation of salts is called salinity.**

**Causes:**

- ☐ Excess irrigation
- ☐ Irrigation with canal & ground water contain more dissolved salts than in rain water
- ☐ Dry climate where evaporation rate is more

**Effects:**

- ☐ Stunt plant growth
- ☐ Lower crop yield
- ☐ Most crop cannot tolerate high salinity
- ☐ Kills plant & ruins land
- ☐ Soil becomes alkaline

**Remedy:**

- ☐ Salt deposit is removed by flushing them out by applying more good quality water to soil
- ☐ Using sub- surface drainage system, salt water is flushed slowly.

**Prevention:**

- ☐ Reduce irrigation
- ☐ Switch to salt tolerant crop like cotton, sugar beet
- ☐ Recharge soil with fertile ones
- ☐ Not to grow any crop for 2-5 years continuously

## 2. Explain Energy resources.

### Renewable (or) Non-conventional energy Sources:

Renewable energy sources are natural resources which can be regenerated continuously and are inexhaustible. They can be used again and again.

#### SOLAR ENERGY

It is derived from sun. Types of solar energy Solar heat collectors:

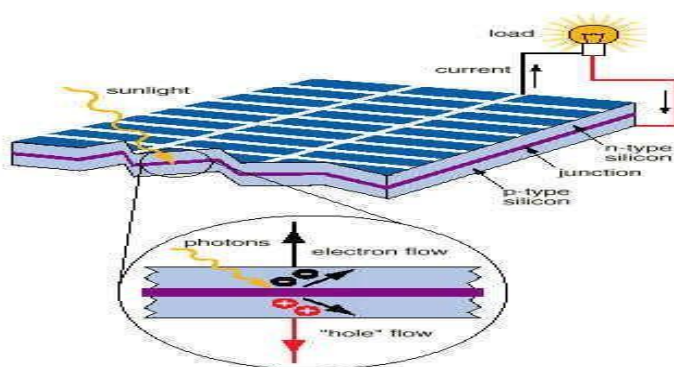
Solar heat collectors made of stones, bricks etc absorb heat during day time and release it at night. This keeps the rooms warmer at night in cold countries.

Solar cells:

They are known as **photo voltaic cells**. They are made of thin wafers or of semi conductor materials. When solar rays falls on them a potential difference is produced, which causes a flow of electrons which produces electricity.

A group of solar cells joined together is called a solar panel(Battery) which can be used to harness large amount of solar energy.

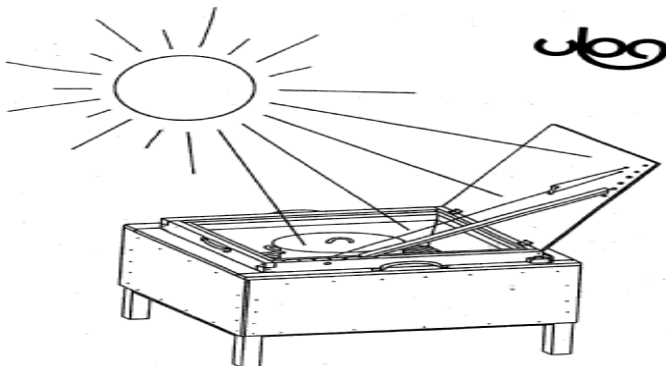
They are used in **calculators, toys, watches, electronic items ...etc....**



Solar cooker:

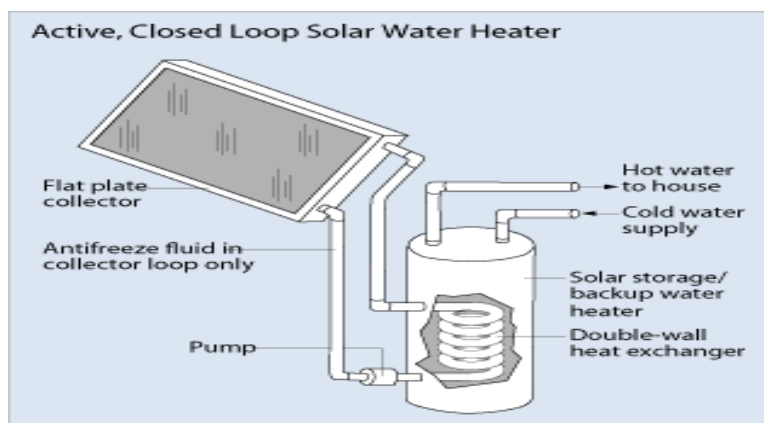
They make use of solar heat by reflecting radiations using a mirror to a glass sheet, which covers the black insulated box consisting of the food to be cooked.

The food cooked using a solar cooker is nutritious but the drawback is that it cannot be used in night and on cloudy days.



Solar water heater:

It is similar to solar cooker it heats the cold water in the black painted copper coil using the solar rays.



**WIND ENERGY** It is derived from high speed winds using wind mills. The blade of the wind mills continues to rotate due to force of striking wind. The rotational motion of blades drives a number of **machines like water pump, flour mills**. When the wind mill is attached to a turbine which turns and generate electricity.

A cluster of wind mills is called as a wind farm. The minimum speed of the wind required is 15 km/hr.

**(Draw diagram) HYDROPOWER:**

The mechanism behind this is water flowing in a river is collected in a dam and the stored water is allowed to fall from a height(10m). The blades of turbine located at bottom of the dam move with the fast moving water which in turn rotates the generator and produces electricity.

**TIDAL ENERGY:**

Ocean tides produced by the sun and moon produce enormous amount of energy. The high tide and low tide refers to rise and fall of water in oceans. It is harnessed by constructing a tidal barrage. During high tide, sea water flows into the reservoir of barrage and turns the turbine, which in turn produces electricity. During low tide the sea water stored in the barrage or reservoir flows out into the sea and turns the turbine and produces electricity.

**OCEAN THERMAL ENERGY**

**The energy available due to different surface temperature of tropical oceans is called ocean thermal energy.** A difference of 20° C is needed between the surface water and the deeper water in order to run the OTEC. The warm surface water of ocean is used to boil a liquid like ammonia. The high pressure vapour of the liquid formed by boiling are then used to turn the turbine of the generator to produce electricity. The colder water is used to condense vapour into liquid. This process continues for 24 hrs a day.

**Merits of Renewable Energy Sources:**

**Unlimited supply**

**Energy security**

**Reliable**

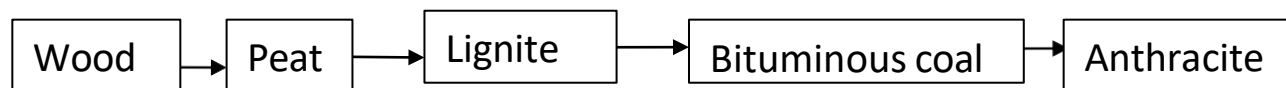
**Decentralized energy production**

**Non renewable (or) Conventional Energy sources**

**COAL:**

**Coal** is a [fossil fuel](#) formed by the decay of vegetable matter under pressure and heat. It is black or brownish-black in colour.

Varieties or Stages of coal:



**Advantages**

Coal is a ready-made fuel.

It is relatively cheap.

Coal supply will last longer than oil or gas.

**Disadvantages**

Pollute air.

**PETROLEUM:**

**Petroleum** or **crude oil** is a naturally occurring liquid found under the ocean beds.

It is formed by the decomposition of dead animals and plants.

It is a complex mixture of [hydrocarbons](#).

The approximate length range is  $C_5H_{12}$  to  $C_{18}H_{38}$ .

It is usually **black or dark brown**. **NATURAL GAS:**

The gas which is found above the oil wells is natural gas. The main composition is methane. Its calorific value is  $12000-14000 \text{ k.cal/m}^3$

☞ When chilled to very cold temperatures, approximately  $-260$  degrees Fahrenheit, natural gas changes into a liquid and can be stored.

☞ If natural gas contains lower hydrocarbons, it is called dry gas.

☞ If natural gas contains higher hydrocarbons, it is called wet gas.

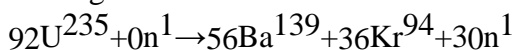
**NUCLEAR ENERGY:**

**Nuclear Fission**

The word fission means to split apart.

**Splitting of heavier nuclei into lighter nuclei.**

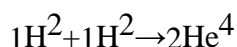
In chain reaction, neutrons released by the splitting of the atom go off and strike other uranium atoms. This energy can be harnessed to generate electricity.



**Nuclear fusion:**

Fusion means joining smaller nuclei to make a larger nucleus.

The sun uses nuclear fusion of hydrogen atoms into helium atoms.



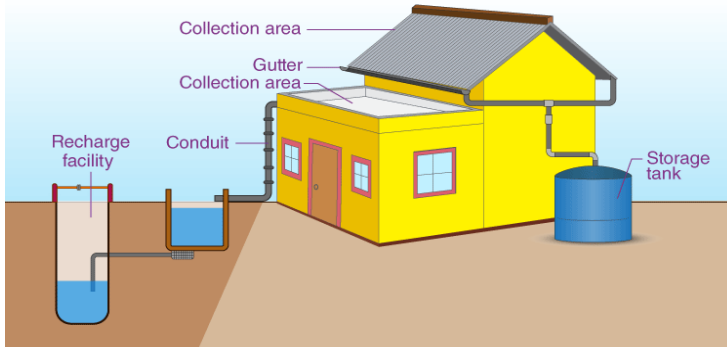
### **3. Explain Rain water harvesting system.**

**Objectives:**

- ☐ To meet the increasing demand for water.
- ☐ To restore supplies from the aquifers depleted due to over exploitation.
- ☐ To improve supplies from aquifers lacking adequate recharge.
- ☐ Reduce urban flooding and flooding of roads during rainy season. (Reduce flood hazard)

- ☐ Improve the (physical & chemical) quality of ground water.
- ☐ Store water and use at subsequent times.
- ☐ Prevent the run off from going into sewer or storm drains, reduce the load on treatment plants.
- ☐ Reduce soil erosion.

#### RAINWATER HARVESTING



#### Components:

##### Catchments:

The catchments of a water harvesting system is the surface which directly receives the rainfall and provides water to the system. It can be a paved area like a terrace or a courtyard of a building or an unpaved area like a lawn or open ground.

##### Coarse mesh:

Kept at the roof to prevent the passage of debris (rubbish).

##### Gutters:

Gutters are channels all around the edge of a sloping roof to collect and transport rainwater to the storage tank.

##### Conduits:

Conduits are pipelines or drains that carry rain water from the catchments or roof top area to the harvesting system. Conduits can be any material like PVC , galvanized iron or materials that are commonly available.

##### First flushing:

A first flush device is a valve that ensures the run off from the first spell of rain is flushed out and does not enter the system. This need to be done since the first spell of rain carries a relatively large amount of pollutants from the air and catchments surface.

##### Filter:

Filter is used to remove suspended pollutants from rain water collected over roof. Filter unit is a chamber filled with filtering media such as fibre, coarse sand, gravel layers to remove debris and dirt from water before it enters the storage tank or recharge structure. Charcoal can be added for additional filtration.

##### Advantages:

Recharge aquifers.

Rise in ground water level.

Reduce soil erosion and flood hazard.

Reduction in the use of current for pumping water.

Increasing the availability of water from well.

#### 4. a.Explain Greenhouse Effect (or) Global warming

Greenhouse gas is defined as “ the progressive heating up of atmosphere as well as earth’s surface due to trapping of IR rays by CO<sub>2</sub> in the atmosphere”.

The sun rays consist of UV, visible, IR rays. When the rays passes through O<sub>3</sub> layer, it absorbs most of the radiation and allows residual UV, visible and IR radiations to pass through towards the earth. The earth absorbs these radiations and gets heated up, some of the heat is re-emitted as IR radiations (short wavelength) into space. Now CO<sub>2</sub> absorbs IR radiation and reflects it back in the form of heat to the earth.

Thus CO<sub>2</sub> in the atmosphere is transparent to the sunlight coming in but it strongly absorbs IR radiations which the earth sends back as heat. The net result is the heating of the earth's surface. This is similar to the glass dome used for the construction of greenhouse. Therefore it is called as greenhouse effect.

Major greenhouse gases:

(i). CO<sub>2</sub> – 60%

Combustion of fossil fuels release 9X10<sup>2</sup> tones of CO<sub>2</sub> every year, deforestation.

(ii). Chloro fluoro carbons – 22%

From refrigerators, A.C, aerosol container.

(iii). Methane -12%

From biological sources (bacteria in wet land and rice field release CH<sub>4</sub>)

(iv). Nitrous oxide – 6%

From fossil fuels, fertilizers.

### **Effects or consequences:**

The earth's mean temperature rises. It will rise between 1.5 to 5.50 C by 2050. The world will go on warming up more and more.

This will melt the glaciers, polar ice caps and result in flooding of many low lying areas.

Rise in sea level. Since 1900 world's average sea level has risen 10-20cm, currently rising at the rate of 2.5cm per decade. This results in coastal erosion.

Drought and flood will become more common. It changes the rainfall pattern.

Increase in temperature, affect the living organisms on earth. (increase respiratory and skin diseases in human beings.)

A slight increase in global temperature, can affect the world food production.(soil moisture decreases and evapo-transpiration will increase)

It has found to affect nesting cycles of birds.

It affects polar bears, fish etc.

Climatic change disrupts water cycle

### **Control Measures:**

Use alternate source of energy (solar, wind, biogas)

Reduction in the use of fossil fuels.

Plant more trees.

Reduction in the use of automobiles and using more efficient automobile engines.

Remove CO<sub>2</sub> from smoke stacks.

Use energy more efficiently.

Stabilize population growth.

### **b. Explain Ozone layer depletion**

Ozone (O<sub>3</sub>) is an important chemical constituent present in stratosphere (20-50 km above the earth). The ozone layer present in the stratosphere acts as a protective shield for living organisms on earth. It absorbs harmful uv radiations from the sun thereby protecting life on earth from skin cancer.

Ozone depleting chemicals:

(i). Man made gases like CFC used in aerosol spray (cleaning solvent) and refrigerator, BFC from fire extinguisher can rise up and destroys the ozone layer gradually. The CFC molecules decompose to release chlorine in the ozone layer and each of the chlorine atom thus liberated attacks several ozone molecules. One molecule of CFC is capable of destroying one lakh ozone molecules in the stratosphere.

$Uv - \text{light}(h\nu) + O_3 \rightarrow O_2 + O.$

$CF_2Cl_2(g) \rightarrow CF_2Cl_2(g) + Cl.$

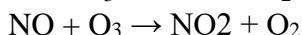
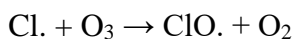
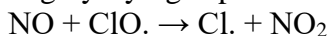
$Cl. + O_3 \rightarrow ClO. + O_2$

$O. + ClO. \rightarrow Cl. + O_2$

$Cl. + O_3 \rightarrow ClO. + O_2$

(ii). NO

Highly flying supersonic jets that fly in stratospheric zone release NO. NO depletes ozone layer.



A large hole in the ozone layer over Antarctica is reported where ozone level dropped by 30%. Overall reduction in the ozone layer is now estimated to be about 8%.

#### **Consequences or Effects:**

- (i). With the depletion of ozone layer, the extent of UV radiation over the earth's atmosphere increases.
- (ii). UV radiations are harmful to man's life. They cause skin cancer, breast cancer, sun burn, eye damage, cataracts, lung diseases, lung cancer, (1% reduction in ozone causes 6% increase in skin cancer) DNA breakage, changes in nucleic acid, DNA, RNA. Melanine producing cells of epidermis will be destroyed resulting in immune suppression.
- (iii). Many micro- phytoplankton would die because of their exposure to UV solar radiations.
- (iv). Every 1% of ozone depletion causes 1% reduction in crop yield.
- (v). Damage to leaves and reduce their photosynthetic rate.
- (vi). Loss on degradation of paints, plastics, other materials.
- (vii) Decrease in population of zooplankton, fish, marine animals.
- (viii) More UV rays will reach the earth's surface and consequently the temperature of the earth's surface will increase.
- (ix). Increase in the amount of H<sub>2</sub>O<sub>2</sub> in the troposphere would ultimately induce acid rain.

#### **Control Measures:**

- (i). Reduction in the use of ozone depletion chemicals.
- (ii). Use a substitute for CFC.
- (iii). Develop technology which can possibly counter Cl atoms in the atmosphere. Injection of certain gases like ethane, propane.
- (iv). Use of gases like methyl bromide (crop fumigant) should be controlled.

### **5.Explain the role of Information Technology (IT) in human health & environment.**

#### **Role of IT in Health:**

1. It helps doctors to monitor the health of people effectively.
2. **On-line help of expert doctors** can be consulted to provide better treatment and services to the patient.
3. Pacemakers are computers that operate within the human body to help it function better.
4. IT finds an opportunity for **exports/imports of health care products** and services.
5. **Telemedicine** practice of using audio, visual data communication for medical consultations, diagnosis, treatment, nursing care, medical education and transfer of medical data together with a broader concept of tele-health. By this it is possible to contact a doctor who may live even abroad, for the diagnosis of a patient and for the prescriptions of the medicine for him.
6. Through IT it is possible to broadcast the **preventive measures to be taken against communicable diseases**.
7. Tiny computers are providing to be valuable diagnostic tools. They can take and transmit photographs of internal problems such as blood clots and tumours.
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8. **Data base** is a collection of inter related data on various subjects. Data base is available for diseases like AIDS, malaria etc.
9. **E-health** is a combined use of electronic communication and IT.
10. IT enabled tools used for testing larger portions of DNA and protein quickly.

#### **11. Health care on line:**

Health care on line contains information about Medicare and Medicaid and various related websites. A number of centres for disease control and prevention and public health service maintain www sites with

information about communicable diseases. WHO maintains websites with information on international health issues.

## **12. Medical images:**

Web browsers are capable of displaying photographic images and video clips. Documentation and display of human anatomy, cross sections of human body are available with the advent of IT.

## **Role of IT in environment:**

### **1. SRST (Satellite Remote Sensing Technology):**

SRST helps in the evolution of its data and its interpretations offer potentially valuable information for assisting human dimensions of global environmental changes.

#### **It gives information regarding**

- (i). fossil fuel consumption
- (ii). biomass consumption
- (iii). Land use and water management
- (iv). Agricultural activities- varieties of seeds, use of fertilizers
- (v). Forest- Forest type, cover, forest fire, diseases, pests
- (vi). Natural resources & environment.

SRST studies the land surface at repetitive intervals, allow mapping and monitoring of changes in land cover of various types, amounts, agreement and rate of change. SRST plays a role in environmental studies of water bodies such as lakes, rivers, estuaries, oceans and coastal areas.

### **2. GIS (Geographical Information System):**

GIS is a technique of superimposing various thematic maps using digital data on a large number of inter-related aspects. Different thematic maps containing digital information on a number of aspects like water resources, soil type, forest land, crop land or grass land are superimposed in a layered form in computer using software.

Interpretations of polluted zones, degraded lands or diseased crop land etc can be made based on GIS.

### **3. Satellite Data:**

It gives information about forest cover, new reserves of oil, minerals, monsoon, ozone layer depletion, smog etc.

### **4. Computers:**

By using computers, *EIA problem* can be analysed. For waste water analysis, Inductive Coupled Plasma Spectrometer (ICPS) is used which is attached with powerful computers to facilitate easy manipulation. AAS performs a complex chemical analysis in computer platform.

Computer is used in every stage of the environment monitoring process. Many computers are directly connected to environmental monitoring sensors. Sensors can automatically measure water, air quality parameters. Computer is used in net work analysis to solve large scale transportation of water for *sewage disposal and treatment*. It is useful to access loss of *biodiversity and hot spots etc*.

### **5. Database:**

Collection of data on environmental related subjects.

Ministry of environment and forest has database of biotic communities

ENVIS- Environment Information System has data base on pollution control, clean technology, biodiversity, environment management.

NMIS- National Management Information System works on R& D projects.

### **6. World wide web:**

More current data is available on www. Important on- line learning centres are

- (i). [www. Mhhe.com/environmental science](http://www.Mhhe.com/environmental%20science)
- (ii). Multimedia Digital Content Manager (DCM) in the form of CD-ROM.

## **Applications:**

These on-line learning centres provide the current and relevant information on principles, problems, queries,



application of environmental science.

It has digital files of photos, power point lecture presentations, animations, web-exercises and quiz. These are useful to both students and teachers of environmental studies.

## **6. Write a note on (i) Human Rights (ii) Value Education (iii) Environment & human health(iv) Child & women welfare programmes**

### **Human rights:**

#### **Right to equality:**

All are equal before law. All are given equal opportunities for employment. Factors like caste, religion, group, race, language and region should not deny equality.

#### **Right to freedom:**

Freedom to speech and expression.

Freedom to assemble peacefully without arms.

Freedom to form associations and unions.

Freedom to settle and reside any part of India.

Freedom to move throughout India.

Freedom to practice any job or any business.

#### **Right against Exploitation:**

Every citizen has the right to fight against exploitation. Right against exploitation protects weaker sections of society including women and children.

#### **Freedom of religion:**

India is a secular country. It provides religious freedom to all citizens of India.

#### **Cultural and Educational rights:**

The constitution recognizes the right of all linguistic minority groups (Christian, Muslims) and allow them to establish and maintain educational institutions of their own.

#### **Human Right to property:**

Human has the right to earn property.

#### **Right to Constitutional Remedies:**

If any of the above mentioned fundamental rights guaranteed by constitution are denied or violated, a citizen can go to court of law and restore his rights.

### **VALUE EDUCATION**

Education is a tool for all round development of an individual and social transformation. Value education should give *over all development of students' personality*. Value education creates good working atmosphere, pollution free society, good thinking, good behaviour.

Value education teaches,

How to live life well?

How to find happiness?

How to make others happy?

How to behave and communicate with others?

How to grow and succeed in the right manner?

#### **Classification of values:**

##### **(I). Personal values:**

Individual achieves his targets without interaction of any person. It includes excellence, honesty, self confidence, self motivation, punctuality, creativity, imagination.

##### **Social values:**

Interaction with others to live. People want love, friendship, family, hospitality, service, freedom, patience, sympathy, tolerance.

##### **Moral values:**

It concerns with

What is right or wrong in handling it.

What is good or bad about the person.

It imparts respecting others. Avoid unnecessary problems with others and avoid cheating, keep promises.

Spiritual values:

This arises from inner depth of man. Spiritual values are meditation, yoga, self discipline, control, purity, devotion of god.

Behavioural values:

Individual behaviour is important to lead successful life. Good character is called good behaviour.

## ENVIRONMENT AND HUMAN HEALTH

According to World Health Organization (WHO) health is “ *a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity* ”. Human health is influenced by many factors like nutritional, biological, chemical or psychological. These factors may cause harmful changes in the body's condition called diseases. The environment is polluted due to man made activities.

The environment and public health issues shall be discussed as

Water borne diseases:

Nearly 80% of the world's diseases, particularly in developing countries are considered to be water borne. About 15 lakhs children die of water-borne diseases like diarrhoea, cholera, amoebiasis in pre-school age group.

Vector-borne diseases:

The vector-borne diseases malaria, filarial, Japanese encephalitis, dengue are mainly due to the unhygienic conditions of environment, which forms the breeding ground for various deadly diseases causing vectors.

Infectious organisms:

Microbes like bacteria causes food poisoning by producing toxins. Infectious organisms can cause respiratory diseases like pneumonia, tuberculosis, influenza and gastrointestinal diseases like diarrhea, dysentery, cholera.

Chemicals:

Chemicals can be hazardous and toxic.

Chemicals can cause cancer (carcinogenic), affect genetic material (DNA) in cells. Many chemicals like DDT accumulates in food-chain. Many chemicals present in waste waters like heavy metals (mercury, cadmium, lead), fluoride and nitrate can affect human health. Metals like steel can contaminate food while cooking in various types of utensils

Diet:

Mal nutrition makes human prone to other diseases. The amount of salt and fat in one's diet induces cardiovascular diseases.

Radiations:

Affects the cells, functions of glands and organs, cause cancer.

Noise:

Painful, irreparable damage to human ear, physical and psychological changes.

Preventive measures:

Wash your hands before eating.

Cut your nails and keep it clean.

Drink clean water.

Wash the vegetables and fruits before using.

Avoid using plastic containers and aluminium vessels to store food.

Eliminate the breeding places of vectors by spraying DDT, BHC, dieldrin.

Destruction of vectors and larvae.

Maintain hygienic condition around the residence.

## WOMEN WELFARE

Aim:

To improve the status of women by providing opportunities in education, employment and economic independence.

Need:

Women suffers with following problems:

- ☺ Suffer gender discrimination and devaluation at home, workplace, matrimony and public life.
- ☺ Cases of dowry deaths, raps, eve-teasing, domestic violence, criminal offences and mental torture.
- ☺ Human rights of women are violated.
- ☺ In policy making and decision making process, women are neglected.

Objectives:

To provide education.

To eliminate violence against women.

To improve economic status of women.

To impart vocational training.

To improve employment opportunity.

To restore the dignity, status, equality and respect for women.

Policies concerning women's development:

(i). National Plan of action for Women (NPA) 1976 (ii).Sharam Shakti 1988.

(iv).National Nutritional Policy(NNP) 1993.

(v).National Plan of Action for the girl child (NPA) 1993.

Programmes (or) schemes for the development of women:

(i). Women litigants have been exempted from the payment of court fees in cases relating to maintenance, property rights, violence and divorce.

(ii).Maharastra state has enacted an act in 1994 in which **30% government jobs have been reserved for women.**

(iii).Under ***Maher Yojana***, destitute women are provided with shelter by the government and ***monthly payment of Rs 250.***

Government has launched the ***Annapoona Yojana*** scheme for providing the nutritious food through Mahila Mandals.

(v).***Kamadhenu Yojana*** is set up to provide jobs for needy women.

(vi).District ***Vigilance Committee*** have been set up in the ninth five year plan to the cases of ***dowry harassment*** and ill treatment.

Under ***Mahila Mandal*** scheme, self employment for rural women is imparted.

T.N government has launched several social welfare schemes in support of destitute and widows for their rehabilitation.

#### CHILD WELFARE

Children are facing various socio-economic problems and insecurity due to poverty and orphanage.Child labour is affecting the children in the age group 8-16 years. Some of them in various hazardous industries like match industry, firework industry, brassware industry and pottery industry. Poverty is the main reason to drive these children into long hours of work.

**UNICEF** involves in immunizing children and prevent blindness by giving vitamin A. National Policy for Children (NPA) was founded in 1974 to ensure equality of opportunity to the poor children. ***International law 1990*** is bound to protect children from exploitation, sexual abuses, ill- treatment and negligence. It gives provision of education, proper parental care, social security to the neglected children and right to leisure and recreation. India has the world's largest ***Integrated Child Development Services*** (ICDS) program which involves supplementary

nutrition, immunization, health care, growth monitoring, pre-school education, health and nutrition education.

According to **Indian constitution** that free and compulsory education for all children would be provided until they complete the age of 14 years.

Prevention Act for child labour:

Government has introduced the **prohibition and regulation Act 1986**, to ban employment of children below 14 years in factories, mines and hazardous employment and to regulate the working conditions of children in other employment.

Schemes for children welfare:

Mid-day meals scheme

**Observation homes** have been set up for abandoned children. (iii).**Non- institutional services** is being offered to the destitute children. (iv)Tamilnadu government enacted an act forbidding the employment of

children in the age group of 7-15 years for any type of labour activities.

Tamilnadu government has set up a **cradle baby scheme** to protect the new born female infants from the cruel act of infanticide.

Various Organisations towards child welfare:

**UN conventions on rights of child or International law:**

To protect and promote the well being of children.

Rights of child:

Right to survival.

Right to participation.

Right to development.

Right to protection.

World summit on children:

It has focused agenda for the well being of children.

(iii).Ministry of Human Resources Development (MHRD):

Concentrates on child's health, education, nutrition, clean and safe drinking water, sanitation and environment.