1)

Course - XVII

SECOND YEAR

4th Semester

ENVIRONMENTAL EDUCATION

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TEACHERS CHOICE PUBLICATIONS,
GUNTUR - 522 002

Course - XVII
Second Year, 4th Semester

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PRICE : Rs. 140/-

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INDEX

1) Swatch Bharath - an Environmental Awakening 4-19

2) Objectives, scope and Nature of Environmental Education 20-29

3) Environmental Management and Protection 30-48

4) Environmental Movements and Developments 49-70

5) Environmental Education in the School Curriculum and Means to sensitize the students 71-80

UNIT - 1
SWATCH BHARATH - AN ENVIRONMENTAL AWAKENING

1. Write the concept of 'Swatch Bharath Abhiyan'

Swachh Bharat = Clean India

Swachh Bharat = Spotless India

Ans. Swachh Bharath Abhiyan in English called as 'Clean India Mission' is abbreviated as SBA or SBM, is a national campaign by the Government of India, covering 40, 41 statutory cities and towns, to clean the streets, roads and infrastructure of the country.

The campaign was officially launched on 2nd October 2014 at Rajghat, New Delhi, by Prime Minister Narendra Modi. It is India's biggest ever cleanliness drive with 3 million Government employees and school and college students of India participating in this event.

2. Write the evolution of the concept Swatch Bharath, objectives its campaign and execution.

Swatch Bharath Abhiyan (Granion)

A. Evolution: With effect from 1st April 1999, the Government of India restructured the comprehensive rural sanitation programme and launched the total sanitation campaign (TSC) which was later (on 1st April 2012) renamed Nirmal Bharat Abhiyan (NBA).

On 2nd October 2014, Prime Minister of India Narendra Modi lauched the Swatch Bharath Mission, which aims to eradicate open defecation by 2019, thus restructuring the Nirmal Bharat Abhiyan.

The government is aiming to achieve an open-Defecation free (ODF) India by 2nd October, 2019, the 150th birth anniversary of Mahatma Gandhi, by constructing 12 million toilets in rural India, at a projected cost of Rs. 1.96 lakh crore.

As of May 2015, 14 companies including Tata consulting services, Mahindra group and Rotary International have pledged

to construct 3,195 new toilets. As of the same month, 71 public sector undertakings in India supported the construction of 86,781 new toilets. Most of these toilets are a type of pit latrine, mostly the twin pit pour flush type.

OBJECTIVES

The main objectives of the SBM(G) are as under:

a) Bring about an improvement in the general quality of life in the rural areas, by promoting cleanliness, hygiene and eliminating open defecation. b) Accelerate sanitation coverage in rural areas to achieve the vision of Swachh Bharat by 2nd October 2019. c) Motivate Communities and Panchayati Raj institutions to adopt sustainable sanitation practices and facilities through awareness creation and health education. d) Encourage cost effective and appropriate technologies for ecologically safe and sustainable sanitation. e) Develop where required, Community managed sanitation systems focusing on scientific solid & Liquid Waste Management systems for overall cleanliness in the rural areas.

STRATEGY

The focus of the strategy is to move towards a 'Swachh Bharat' by providing flexibility to State governments, as sanitation, is a state subject, to decide on their implementation policy and mechanisms, taking into account State specific requirements. This is focused to enable States to develop an Implementation Framework that can utilise the provisions under the Mission effectively and maximize the impact of the interventions. The Government of India's role would be to complement the efforts of the state governments through the focused programme being given the status of a Mission, recognizing its dire need for the country.

It is suggested that implementation framework of each state be prepared with a road map of acitivites covering the 3 important phases necessary for the programme:

(i) Planning Phase (ii) Implementation Phase

(iii) Sustainability Phase

Each of these phases will have activities that need to be specifically catered for with concrete plan of Actions, which shall need specific preparation and planning.

Implementation / Execution: Implementation of SBM (G) is proposed with 'District' as the base unit, with the goal of creating ODF GPs. The District Collectors/Magistrates/CEOs of Zilla Panchayats are expected to lead the Mission themselves, so as to facilitate district wide planning of the Mission optimum untilization of resources. The Baseline Survey data of 2013 collected by states and entered on the IMIS of MDWS by 31.1.2015 will be considered as the base for all states where the survey is still complete. For the states the data entered on completion of the Survey will be taken as the base data.

A project proposal shall be prepared by a District, and scrutinized and consolidated by the State Government into a State Plan. The state plan with district wise details will be shared with the Government of India (Swachh Bharat Mission Ministry of Drinking Water and sanition). This plan shall will include a 5 year plan along with 5 independent annual plans which merge into the 5 year plan. These plans shall be approved by the Ministry each year. On the basis of formative research and consultation rounds, the State shall develop a tailor-made communication strategy, a communication plan, and material and will train community mobilisers to use these tools. The State plans shall provide details of the IEC, BCC, Triggering exercise, Capacity building, implementation, Financial support and monitoring activities planned in each district, consolidated for all Gram Panchayats. The District wise plans will have Gram Panchatat-wise details. The State Project implementation plans currently prepared by States on a perspective basis shall be revised based on the Baseline data and the revised norms of the SBM(G). The States will be allowed to make inter-district changes in allocation of resources to the individual districts within the overall funding of the state as a whole as per the approved Annual Implementation Plan (AIP), in consultation with the Centre.

Funds are to be made available for these preliminary IEC works including for triggering behaviour change. This will endeavor to reach every household in every community and shall disseminate information regarding the need for safe sanitation, and the ill effects of open defecation getting the population oriented

towards satisfying their felt-needs. The feeling of shame and disgust can be introduced in the target population with focused communication at the community level where an entire community can be triggered into positive action towards elimination of open defecation and restore community pride. Individual households will be provided a menu of options for their household latrines, both in terms of technology, design and cost. To bring about the desired sustainable behavioural changes for relevant sanitary practices, intensive IEC and advocacy, based on Inter Personal Communication (IPC) with participation of one or more of the following - Government representatives like Swachhata Doots/ASHAs, ANM workers, Anganwadi workers/ CSOs/NGOs/Panchayati Raj Institutions/resource organizations/ local SHGs with a good track record is envisaged. Thus a mix of Individual and Community led approaches is envisaged to achieve the desired outcomes. The participation of local community oriented organizations has to be obtained to garner belief in the Community and develop their confidence in the programme. Thus the actual approach has to be decided at the District level and the identification and selection such groups and organizations has to be carefully done taking into account their experience and capabilities.

The proliferation of educational facilities in the rural areas provides the opportunity to utilize an approach that should essentially include an element that involves school and college children as potential agents of change in homes. This needs to be leveraged to the maximum extent possible and be included in any plan made to upscale sanitation facilities and use.

The built-in flexibility in the menu of options is to give the poor and the disadvantaged families' opportunity for subsequent up gradation of their toilets depending upon their requirements and financial position. The provision of incentives can be used appropriately as decided by the state governments. A synergistic interaction between the Government agencies and other stakeholders is essential.

The provision of incentives for individual household latrine units to the rural households is available to States which wish to

provide the same. This may also be used to maximize coverage so as to attain community outcomes. States will have flexibility regarding the utilization of the incentive. Incentives, if given, may be to the individual households or where the community model is necessarily adopted to trigger the demand in GPs/Blocks/Districts the community as a whole or as a combination of both. Since the incentive for one IHHL is Rs. 12,000, the state will be eligible to receive the entire amount (shared between the Central and state governments. However the incentive charged on the mission will be used entirely on the sanitation sectors. States will decide on the methodology of the actual construction of toilets to follow triggering of demand under the programme. Fund flow for IEC, Triggering, Capacity building, Monitoring activities can be done through the Gram Panchayats or through other agencies like administrative departments, CSOs, NGOs, SHGs etc. As decided by the state. Ideally the construction activities should be taken up by the individual beneficiaries themselves with support from/or through agencies in the village. States may decide to provide incentives to households in two phases, one at the pre-construction stage and the other on completion of construction and usage. However, the community incentive, if any, can only be released after the village unit is open defecation free for a significant length of time. Both of these outcomes to be measured through a robust follow up monitoring system.

Since National Rural Livelihood Mission (NRLM) is being implemented across India through a huge network of SHGs, Village Organizations (VO) of SHGs in the villages, Block level and District level federations of SHGs for improving quality of life, beside strengthening livelihood options, States may tie up with state project management Unit of NRLM in the respective states for utilizing the huge network of SHGs for effective IEC and BCC, triggering demand and promoting area specific toilet design and specification. The SHGs can also be effectively used as a micro financing unit for sanitation infrastructure. The revolving fund available under the SBM(G) also may be utilized through the NRLM mechanism. Arrangements for this can be made at the State level. SHGs may also be utilized for working as

3)

Rural Sanitary Marts (RSMs) in remote areas where bulk procurement and delivery of quality hardware for toilet construction may be assured through such sysem. Funding for this shall also be permitted under the SBM(G).

The Scheme shall aim to saturate coverage in the first instance the States/ Districts/ GPs in all major river basins of India e.g. Sutlej, Ravi, Beas, Ganga, Yamuna, Godavari, Narmada, Tapathi, Kaveri, Brahmaputra. This will ensure the outcomes required for pollution free rivers, in addition to ODF communities.

A Rapid Action Learning Unit (RALU) should be put in place at the National, State and District levels (if found to be required by States), to evaluate the monitoring exercise, provide advice on corrective acton and upscale good practices. The RAL units will be small, flexible and specialized to meet these needs and to find fast and effective ways forward, developing, sharing and spreading solutions. This will be based on learning's about Action (what is happening in the field) and from Action (by trying out through innovative action). These units will carry out activities including being upto date with field activities under SBM(G), brainstorming and search; field trails of innovative approaches; research and sharing and feedback. Detailed instructions on RALU will be issued by MDWS. The RALU will be funded through the Administration component of the SBM(G), from which Monitoring and Evaluation funds are to be provided.

To accelerate coverage in Gram Panchayats selected under the Sansad Adarsh Gram Yojana, these GPs may be selected on priority for coverage under the SBM(G).

Swatch Bharat Abhiyan (Urban)

According to Census 2011, India's urban population is 377 million or 31% of the total population. These numbers are expected to increase to 600 million by 2031. The Census 2011 also showed that in 4,041 statutory towns, close to eight million households do not have access to toilets and defecate in the open (7.90 million). Weak sanitation has significant health costs and untreated sewage from cities is the single biggest source of water resource pollution in Indian cities and the huge costs incurred from not addressing them.

SBM is being implemented by the Ministry of Urban Development (M/o UD) and by the Ministry of Drinking Water and Sanitation (M/o DWS) for urban and rural areas respectively.

Swachh Bharat Mission (SBM) Urban over view

Mission Objectives

1. Elimination of open defecation 2. Eradication of Manual scavenging 3. Modern and Scientific Municipal Solid Waste Management 4. To effect behavioral change regarding healthy sanitation practices. 5. Generate awareness about sanitation and its linkage with public health 6. Capacity Augmentation for ULB's 7. To create an enabling environment for private sector participation in Capex (capital expenditure) and Opex (operation and maintenance)

Mission components The mission has the following components:

1. Household toilets, including conversion of insanitary latrines into pour-flush latrines. 2. Community toilets 3. Public toilets 4. Solid waste management 5. IEC & Public Awareness 6. Capacity building and Administrative & Office Expenses (A&OE)

By public Toilets, it is implied that these are to be provided for the floating population / general public in places such as markets, train stations, tourist places, near office complexes, or other public areas where there are considerable number of people passing by.

By Community toilets, it is implied that a shared facility provided by and for a group of residents or an entire settlement. Community toilet blocks are used primarily in low-income and/ or informal settlements / slums, where space and/or land are constraints in providing a household toilet. These are for a more or less fixed user group.

Mission Coverage: cities and target population

All statutory towns will be covered under the Mission.

Mission Strategy

1. Comprehensive Sanitation Planning, which includes

(a) City level Sanitation Plans
(b) State Sanitation Concept
(c) State sanitation Strategy
2. Behavioral Change Strategy and IEC
3. Enabling Environment for private sector participation
4. Capacity Building

Mission Management Structure Swachh Bharat Mission (SBM)

Urban will have a three-tier mission management structure as follows:

National level

A National Advisory and Review Committee (NARC) headed by the Secretary, M/o UD, and comprising representatives of relevant line ministries will be notified by the M/o UD. NARC will meet as per the requirements, but will meet at least once in three months. The functions of NARC will be:

i) Overall monitoring and supervision of SBM (Urban) ii) Advise the States / UTs to explore avenues for innovative resource mobilization. iii) Approve installments and release of installment of funds for states / UTs by Central Government under the mission. iv) Develop and modify performance matrix and criteria for the release of performance grants to States / UT s as specified. v) Monitor outcomes and performance of projects sanctioned under SBM (Urban) vi) NARC may delegate, as it considers appropriate, some of the functions within prescribed limits, to the National Mission Director (NMD) of the SBM National Mission Directorate to ensure speedy implementation of the mission vii) Any other issue which may be referred to it by the Government

The SBM National Mission Directorate will be headed by a National Mission Director (NMD) who will not be below the rank of Joint Secretary to the Government of India.

i) The NMD will be the overall in-charge of all activities related to SBM (Urban). NMD will be supported by a suitable team of officers at the National Mission Directorate and will be Member-Secretary of NARC for all matters.

ii) The Mission Directorate shall be supported by a dedicated Project Management Unit (PMU) with 10-12 experts and support

staff mainly on an outsourced basis. The PMU shall cover 4 verticals - Programme management, IEC & Media, Information Technology, and Monitoring & Evaluation.

The SBM National Mission Directorate will formulate a frame work for support structure for the state mission directorates and issue appropriate guidelines / advisories to states from time-to- time.

State level

A High Powered Committee (HPC) under the chairpersonship of the State's Chief Secretary, and with members drawn from concerned departments (including a MoUD representative) shall be responsible for the management of SBM (Urban) at the State / UT level. The functions of the SLMRC will include:

i. Preparation, approval, and online publishing of the State Sanitation Strategy (SSS) for the respective state and City Sanitation Plan (CSP) for all cities covered under SBM (Urban), if not already done.

ii. Finalisation of the Concept Note on the Urban Sanitation Situation before submission to the SBM National Mission Directorate

iii. Empanel consultants of repute and experience for: a. Preparation of DPRs under SBM b. Conducting independent review and monitoring during execution of projects

iv. Empanel reputed Institutes like IITs, NIT's, State Technical Universities etc. for appraisal of DPRs.

v. Sanction projects relating to Solid Waste Management recommended by the ULBs.

vi. Plan for additional resource mobilization

vii. Plan for fund flow in the short, medium and long term

viii. Recommend proposals for release of installments of funds for projects under the mission

ix. Monitor outcome and O&M arrangements of projects sanctioned and completed under the mission

x. Review the progress of Capacity Building, IEC, and Public Awareness activities under the mission and approve their annual action plan.

xi. Address violation of norms and conditions

xii. Ensure convergence of action for sanitation in the state and bring about inter-departmental coordination for this purpose as and when required.

xiii. Ensure timely audits of funds released and review the "Action Taken Reports" on various Audit reports of the mission and other similar reports

xiv. Review legal issues, if any

xv. Take up any other matter relevant for the efficient implementation of the mission, or matters referred to it by the SBM National Mission Directorate

Monitoring & Evaluation (M&E)

States / UTs will be required to send in Monthly Progress Reports (MPRs)/ Quarterly Progress Reports (QPRs) in prescribed formats with regard to targets and achievements. Apart from these, the Mission Directorate may prescribe other reports that may be considered appropriate from time to time. Given the scale of the mission, a comprehensive and robust IT enabled MIS will be established for tracking of targets and achievements. States / UTs will be required to submit progress reports online once this MIS is operational.

Monitoring activities will include, but not be limited to, third party evaluation, impact evaluation studies, etc. The evaluation of the mission will be undertaken during the course of its implementation to effect mid-term correction and align the mission to achieve its objectives

A District Level Review and Monitoring Committee (DLRMC) will be constituted with a view to fulfill the objective of ensuring satisfactory monitoring of projects under the Chairpersonship of a Member of Parliament. Detailed guidelines for this purpose will be issued separately by the SBM National Mission Directorate.

3: Write about Integration of Swatch Bharath with Educational Institutions.

Ans: As a part of integration of Swatch Bharath with educational institutions Swatch Bharat Swatch Vidyalaya'

campaign was launched by Smriti Irani, Minister of HRD Government of India.

Swachh Bharat: Swachh Vidyalaya is the National Campaign driving 'Clean India: Clean Schools'. A key feature of the campaign is to ensure that every school in India has a set of functioning and well maintained water, sanitation and hygiene facilities. Water, sanitation and hygiene in schools refers to a combination of technical and human development components that are necessary to produce a healthy school environment and to develop or support appropriate health and hygiene behaviours. The technical components include drinking water, handwashing, toilet and soap facilities in the school compound for use by children and teachers. The human development components are the activities that promote conditions within the school and the practices of children that help to prevent water, hygiene and sanitation related diseases.

School sanitation and hygiene depend on a process of capacity enhancement of teahers, community members, SMCs, Non-Governmental Organisations (NGOs) and Community Based Organisations (CBOs) and education administrators. Water, sanitation and hygiene in school aims to make a visible impact on the health and hygiene of children through improvement in their health and hygiene practices, and those of their families and the communities. It also aims to improve the curriculum and teaching methods while promoting hygiene practices and community ownership of water and sanitation facilities within schools. It improve children's health, school enrolment, attendance and retention and paves the way for new generation of healthy children. It is the role of policymakers, government representative, citizens and parents to make sure that every child attends a school that has access to safe drinking water, proper sanitation and hygiene facilities. This is every child's right.

India's strong commitment to providing schools with adequate water, sanitation and hygiene facilities is supported by legislation and is championed by the Honourable Prime Minister and supported by the Right to Education Act (2009) which necessitates ensuring drinking water and sanitation facilities in

schools. The national flagship programmes, Sarva Shiksha Abhiyan (SSA) and the Nirmal Gram Puraskar also support this requirement. The Ministry of Drinking Water and Sanitation (MDWS) national sanitation guidelines provide for additional sanitation facilities in schools, including incinerators for menstrual hygiene management through the NGP incentive. Following are the key policy initiatives by Government of India.

Constitution

- Article21-A "free and compulsory education of all children in the age group of six to fourteen years as a Fundamental Right".

Legislation

- Right of Children to Free and Compulsory Education (RTE) Act, 2009.
- The RTE Act 2009 provides a legally enforceable rights framework with certain time targets that Governments must adhere to. The Schedule to the RTE Act lays down the norms and standards (including drinking water and sanitation) for a school building. A school building has to be an all-weather building comprising at least one classroom for every teacher, barrier free access, separate toilet for boys and girls, safe and adequate drinking water facility for all children.
- Supreme Court directive to all states to prioritise school toilets and drinking water.

Policies and programmes

- **Sarva Shiksha Abhiyan (SSA)**, is Government of India's flagship programme for achievement of Universalisation of Elementary Education (UEE) in a time bound manner. Water, sanitation and hygiene infrastructure facilities are provided in all new schools.
- The mid day meal Programme is a nutrition programme which reaches almost 10 crore children daily, in 12 lakh schools. Group handwashing with soap before mid day meal is promoted across the country in order to enhance the nutritional outcomes.
- **Rashtiya madhyamik Shiksha Abhiyan (RMSA)** launched by Ministry of Human Resource Development, March, 2009, to enhance access to secondary education and to improve its quality. Besides it also lays emphasis on secondary schools to conform to prescribed norms of providing access to quality

physical infrastructure like good classrooms, quality toilet infrastructure and drinking water provisions, and norms of removing gender, socio-economic and disability barriers.

✤ **Kasturba Gandhi Balika Vidyalaya (KGBV)** aims at ensuring access and quality education to girls from disadvantaged groups belonging to SC and ST population, by setting up residential schools at upper primary level. Infrastructure support to these centres includes safe drinking water and toilet facilities as per the prevailing SOR rates.

Operation and Maintenance: Daily, Weekly, Fortnightly, Monthly, Seasonal and Yearly Maintenance.

School Maintenance Schedule

Some members of the SMC as well as school teachers will have to take responsibility for maintaining the school Operation and Maintenance (O&M) schedule. A schedule of periodic visits will have to be planned for the District/BRC/CRC staff to check if the maintenance schedule is being followed in right earnest. For this purpose, will designate a supervisor (at the suitable level) to visit centres and make adequate observations for appropriate follow-up actions. A general checklist of maintenances schedule is as follows:

Daily maintenance

✤ General cleaning of indoor floors of the entire school complex including toilet and kitchen. ✤ Cleaning of any water-logging in the entire school premises. ✤ Dusting of general storage, desks and benches and toy/book storage for children.

Weekly maintenance

✤ Check for all leaky taps, valves, flushing cisterns etc. ✤ Check for any blockage in the drains, sewage pipes and waste water pipes ✤ Check for loose locks and shutters of all the doors, windows and almirah etc. ✤ Loosening of fine sand with a shovel wherever required

Fortnightly maintenance

✤ Cleaning of dust from all appliances and walls etc. ✤ Remove dumped rubble/debris/building waste from the premises. ✤ Observe any water logging in open areas. ✤ Check for clogged drains on the ground, courtyard, and water outlets from courtyards. ✤ Remove stains and marks on the enamel

painted portions of the walls (especially corners and edges) door, window, almirah shutters with damp cloth/mill detergent dampened cloth.

Monthly maintenance

✤ Check for any damp marks on the walls, ceilings, and floor. ✤ Check for any termites in the building. ✤ Check for proper hardware operation of all doors, windows and almirahs. ✤ Check for any cracks on walls and roofs. ✤ Check if main water storage tank cover and outlets are leaking and the stored water is clean. ✤ Check if all the manhole covers/inspection chamber covers are properly in place and not damaged. ✤ Check if the First Aid kit is up-to-date and the medicines are within their expiry date. Replenish as per need.

Seasonal/quarterly maintenance (before monsoon)

✤ Check the water tank thoroughly for leakage etc. Seal it with water proof cement or sealant and clean it at regular intervals. ✤ In case of an underground tank, check if the cover and the brim of the tank is intact and sufficiently raised from the surrounding ground level. ✤ Thorough cleaning of the roof, water outlets, checking for cracks, broken gola, coping, chhajja etc. Checking and repairing of leaky roofs ✤ Leveling and cleaning of open school ground. ✤ Thorough checking of electrical lines and earthing (if applicable). ✤ Clean all dust from the fans, tube lights and bulbs. ✤ Clean coolers (if any), water tank, change pads, check all electrical systems and earthing. ✤ Thorough cleaning of water storage tanks as described above. ✤ Check the functioning of hinges, bolts and other hardware of al doors and windows.

Annual maintenance

✤ General repair and maintenance work during the vacation. ✤ Structural repair and plaster work. ✤ Associated painting work. ✤ Thorough cleaning of sewage and waste water lines. ✤ Thorough cleaning of inspection and junction chambers. Repair of leaks, if any. ✤ Thorough cleaning of septic tanks and leach pits, if being used on any site. ✤ Major repair of any electrical lines and earthing. ✤ Repair of blackboards.

Maintenance works for school infrastructure under SSA are to be undertaken through SMC/community of parents, children,

teachers and others. SMC may thoroughly inspect the school infrastructure, assess the quantum of repair for each and every components such as school building, toilets drinking water facilities, storage tank hand pump, ramps railing, child freindly ements etc., and with the help of local masonry carpenter and other skilled worker, assess the tentative cost after verifying the value in the local market.

The SMC may also assess the resources available from SSA, through convergence such as from education department through MP and MLA funds and any other scheme such as Mnrega and pool all such financial resource. As owernship lies with the community the annual maintenance is carried out effectively to sustain the school infrastructure as long as possible. Shortage of funs, if any, should be contributed through community contribution. It may be understood that the member of school infrastructure is ultimately to be sustained by SMC/local community.

4. Write the strategies to implement the Swatch Bharath Campaign in School.s

Ans : Headmaster and teachers

✤ Integrate hygiene messages in daily school curriculum like morning assembly and prayers, during subject classes like mathematics, science, soical sciences. ✤ Educate students about proper toilet use and handwashing, including washing hands before meals and after toilet used. ✤ Facilitate and supervise daily handwashing before mid day meal activities, supervise operation and maintenance of toilet, drinking water sources and hand washing facilities. ✤ Inform students about the changes they will go through during adolescence and provide space for girls and boys to talk about menstruaction and learn about menstrual hygiene. ✤ Encourage students to consistently use, operate and maintain school water, sanitation and hygeien facilities. ✤ Support children in taking an active role in keeping up hygiene practices, both in school and at home. ✤ Ensure that soap and water are always available at handwashing stands. ✤ Incude supervision of water, sanitation and hygiene activities in teacher's responsibilities and performance evaluations. ✤ Get involved in planning, oversight and on going management of water, sanitation and hygiene programme in consultation with students and parents;

and participation in monitoring and corrective actions. ✤ Organising annual health check-ups of students and supervision of deworming medicines. ✤ Become role models for students by adopting critical hygiene behaviours liek handwashing with soap before meals.

Mid day meal cooks and helpers

✤ Handwashing with soap before touching, preparing or serving food. ✤ Ensuring high standards of hygiene in the kitchen. ✤ Facilitate group handwashing by children in schools on a daily basis. ✤ Ensure that the handwashing facilities are functioning and used daily.

Parents, SMCs and community members can

✤ Participate and contribute to the school based programmes by assisting with planning and oversight for the Swacch Vidyalaya programme. ✤ Participate in and contribute to the installation, operation an maintenance of water, sanitation and hygiene facilities in schools. ✤ Encourage children's regular school attendance, especially for girls, throughout your community. ✤ Supporting hygiene promotion of water, sanitation and hygiene related supplies such as soap and toilet paper. ✤ Construct water, sanitation and hygiene facilities at home and encourage children to use them properly. ✤ Promote healthy hygiene practices at home and in the community. ✤ Participation in monitoring and corrective actions.

Child cabinets and students can

✤ Participate in hygiene and sanitation activities such as child cabinets, school health clubs and encourage other students to join you. ✤ Helping all children to adopt appropriate hygiene facilitates and the availability of consumables. ✤ Promote healthy hygiene at home and in the community by sharing the lessons you learned at school with your siblings and friends.

School administrators support water, sanitation and hygiene in schools can

✤ Work with parents and governments officials to generate funds for keeping water, sanitation and hygiene in schools facilities functioning and clean at all times. ✤ Work with teachers continously to promote water, sanitation and hygiene in schools.

UNIT - 2
OBJECTIVES, SCOPE AND NATURE OF ENVIRONMENTAL EDUCATION

1. Write the meaning, importance, definition, characteristics and objectives of environmental education.

Ans : Meaning of environmental education: Environmental, education is an education about, through and for environment. Its scope is, therefore, very wide. It begins from using environment as a medium of learning and includes all that a student learns and appreciates what Kalidasa, Wordsworth and others have said of nature. The Finnish National Commission (1974) had said environmental education is a way of implementing the goals of environmental protection.

Definitions: ***Environmental education is a process that equips human beings with awareness, knowledge, skills, attitudes and commitment to improve environment.*** ***- Mishra.***

Environmental education refers to the awareness of physical and cultural environment and perceive its relevance for real life situations. ***- R.A.Sharma***

Importance of Environmental Education: Saxena (1986) says environmental education is aimed at developing responsible action necessary for preservation, conservation and improvement of environment and its components.

✤ It improves the quality of surroundings. ✤ It helps to improve the skills of solving problems related nature. ✤ It provides opportunity to interact with real life situations and to develop insight about it. ✤ It develops man power for managing, protecting, preserving and improving our environment. ✤ It gives idea about other sources of energy which are environmentally suitable.

Characteristics of Environmental Education: There is increasing literature on environmental education and some of

it describes its characteristics. The commonly agreed characteristics are (UNESCO, 1981).

1.Environmental education should be integrated into the whole system of formal education at all levels. 2.Environmental education should be interdisciplinary in nature. 3.Environmental education should adopt a holistic perspective which will examine the ecological, social, cultural and other aspects of particular problems. 4.Environmental education should be centered on practical problems related to real life, and 5.Environmental education should aim at building up sense of values.

Objectives of Environmental Education: In practical terms the objectives of environment education have been stated by Stappetal (1970) as follows.

1.A clear understanding that man is inseparable part of a system, consisting of man, cultural and biophysical environment and the man has ability to alter the inter relation this system. 2.A broad understanding of the biophysical environment, both natural and man-made and its role in the contemporary society. 3.Attitude of concern for the quality of biophysical environment that will motivate citizens to participate in biophysical environment problem solving. 4.Fundamental understanding of the biophysical environmental problems confronting man, how these problems can be solved and the responsibilities of the citizens and government to work towards their solution.

2. Explain the principles and scope of the environmental education.

1.Be an interdisciplinary in its approach. 2.Emphasise active participation in preventing and solving environmental problems. 3.Experience major environmental issues from local, regional, national and international point of view so that learners receive insights into environmental conditions in other geographical areas. 4. Focus on current environmental situations, while taking into account the historical perspective. 5.Explicity consider environmental aspect in plans for development and growth. 6.Emphasise the complexity of environmental problems and thus there is a need to develop critical thinking and problem

solving skills. 7.Promote the value and necessity of local, national and international cooperation in the prevention and solution of environmental problems. 8.Utilise diverse learning environment and various approaches to teaching and learning about and from the environment with due stress on practical activities and first hand experience. 9.Help learners to discover the symptoms and the real causes of environmental problems. 10.Relate environmental sensitivity, knowledge, problem solving and values clarification at every grade level with special emphasis on environmental sensitivity to the learners own community in early years. 11.Enable-learners to have a role in planning their learning experiences and provide an opportunity for making decisions and accepting their consequences.

From these principles, it is clear that there is certain knowledge component which is essential for learning the skill and developing the attitude which forms the main focus for environmental learning.

Environmental education is to be learner oriented and the role of a teacher should be to create a learning environment, assist learners as they search for information and participate with the students with learning process.

Environment education should not be viewed as one or more subjects added to the heavy curriculum, but as growing important concern to be integrated into the programmes for all learners whatever be their age and the learning situation.

Scope of Environmental Education

Environment interwover with man's life, the environmental education should therefore, include environment into its totality. Environmental education should become an important concern to be integrated in to the programmers for all learners. The out of school environmental education may be either governmental or non-governmental. For youth of school age this may involve school clubs conducting the environmental activities, in normal school hours and outside the classroom. For adults it may mean lecture series on voluntary basis. Non-formal environmental education may also be organised. Environmental education should cover both the natural world and the social and manmade environment.

Environmental education curriculum may be incorporated in two ways as a separate subject or it could be integrated with other subjects.

Formal Environmental Education

The spectrum of environmental education has 4 major intergrading and interrelated components i.e. awareness, real life situations, conservation and sustainable development.

3. What are the factors of degradation of environment - adverse socio - economic impacts of degradation of environment?

Environmental degradation is the deterioration of the environment through depletion of resources such as air, water and soil, the destruction of eco systems and the extinction of wild life. It is defined as any change or disturbance to the environment perceived to be deleterious or undesirable.

Factors of Degradation of Environment

The factors that are responsible for the degradation of the environment and the importance of biodiversity in our lives. 1.Water pollution 2.Deforestation 3.Nuclear tests 4.Air pollution 5.Soil degradation 6.Atmospheric changes 7.Loss of biodiversity 8.Soil and hazardous wastes.

Socio-economic Impacts of Degradation of Environment

Most of the environmental problems are due to the explosion of human population. At present serious problem of environmental pollution which is also generated by the explosion of human population. At present serious problem of environmental pollution which is also generated by the explosion of human population.

The current rate of increase is about 55 million per year. Due to this rapid growth of human population problems like degradation of the quality of the environment, deteriorating the quality of food, poor standard of living and economic status, lack of educational facilities use of chemical fertilizers occur.

As economic development progresses the production capacity and living standards for people improve, leading to a higher demand for energy. They process of industrialization is not any different from that of other countries, where the

environment is often sacrificed in order to pave way for economic development.

4. Describe different types of pollution a) Air pollution b) water pollution c) noise pollution d) radiation e) land pollution.

Pollution: pollution is an undesirable change in the physical, chemical and biological characteristics of air, water and soil that may have harmfully affect the life or create a potential health hazard of any living organism.

Types of Pollution:

1. Air pollution: This is the most common type of pollution that will adversely affect the health of humen beings. Air pollution may be generally because of industrialization. Each industry will be liberating large quantities of exhaust gases like CO, CO_2, SO_2, P_2O_5 etc., which are all important graseous pollutants.

Major Sources of Air Pollution:

1.Cement factories 2.Thermal power stations 3.Peterochemical refineries 4.Automobile pollution 5.Acid Rain 6.Aeroplane exhaust.

Control of air pollution:

1.Smoke from automobile emissions can be considerably reduced by fixing catalytic converters in the exhaust pipes. 2.The installation of tall stacks or chimneys in industrial gas outlets prevents the accumulation of smoke in the ground level. 3.Cottrell electrostatic precipitator is a device used in industrial gas outlets which makes the smoke in the ground level.

2. Water Pollution: Water pollution can be defined as the undesirable effect present in water due to physical, chemical or biological changes in water that affects the human beings, animal, vegetation as well as aquatic life.

Sources of Water Pollution: 1.Natural sources and run off waters 2.Domestic sewage 3.Industrial effluents

Specially the following are various kinds of water pollutions, that are given below.

1.Domestic sewage 2.Industrial effluents 3.Organic pollution 4. Pesticidal pollution

7)

3.Noise Pollution: Noise pollution is the unpleasentness of sound produced by the massive industrialisation that hamper the health of human beings. The quality of unpleasantness of sound has been found to depend upon the following factors.

1.The intensity of the sound waves 2.The frequency of the sound waves 3.The time of exposure of sound waves 4.Intermittence of sound waves.

Sources: Noise can produced mainly from the following three sources.

1.Natural Sources: The natural sources like thunder or certain kind of natural disasters can produce noise pollution.

2.Domestic and Community Noise: The domestic noise produce the major noise pollution, especially in the urban areas mainly due to the automobiles.

3.Industrial Production of Noise: The noise due to various kinds of industries causes noise pollution but are limited to certain region or zones.

Effects: 1. Neurotic disorders 2. Physical disorders 3. Speaking and hearing ability 4. Sleep

Control measures: 1. The factory workers should be provided with earplugs where an abnormal noise is produced due to the engine. 2. Unwanted usage of public address systems using speakers for entertainment in public areas should be prohibited.

4. Radiation: Nuclear hazards are caused by radio-active pollution. Nuclear hazards due to radio active pollution is caused by the natural as well as artificial radiation from radio active materials. These radioactive materials can be isotopes of lower as well as higher atomic weight metals.

Sources: The sources can be broadly divided into two categories.

1. Natural Sources: The natural sources of radioactivity is mainly from cosmic radiation received from the space and the naturally occurring radioactive isotopes present in the environment as well as organisms.

2. Man made Radiation: Many of the modern devices

such as cell phones, TV sets, telephone dials, luminous clocks etc. have a meager radiation effect which may exceed 1% from the normal environmental radiation conditions.

Control measures: The radioactive wastes are generally in solid or liquid form. The various radioactive wastes have different problems of disposal and the technique used also varies.

In the bituminization technique the radioactive wastes are introduced into asphalt and mixed in a storage container and dumped.

5. Land Pollution: Many undesirable changes occur in land, there by land loses its fertility and becomes sterile gradually due to various land pollutants.

Land Pollutants: They include ash, cinder, plastic rubber products, glass pieces, dead bodies of animals, chemicals, sewage etc are the main land pollutants.

Methods of Controlling Land Pollution: Land Pollution can be controlled by adopting the following

1. **Minimal use:** It can be controlled by using the necessary chemical in minimum quantites on land. 2. It can be controlled by rotation of crops. 3. It can be controlled by having good drainage. 4. Selective pesticides should only be used on land. 5. Pesticides should be used in selective seasons of the year only specially during rainy season and winter. 6. Farmers should be given pesticide education.

5. What is green house effect? Explain the ozone layer depletion?

Ans : Green house effect: Because of excessive release of CO_2 from living organisms a layer is formed which will be responsible for increase of the temperature of planet earth. It is called green house effect. It is a kind of ecological thermal pollution which is relatively more dangerous because it is responsible for destruction of living organisms on the planet earth leading to floods and other untold natural disasters.

Effects:

1. Change in Climate: A continuous increase of green house gases, leads to the rise in mean global temperature which affects the climate, leading to change in rainfall pattern, conversion of fertile lands into deserts, shortage of water due to evaporation.

2. Effect on Agricultural Lands: Due to change in the weather condition, the production of crops is also affected and reduces the yield of rice, wheat and other crops.

3. Ecological Disturbances: Green house effects disturb the food chain and destroy many cold habitat species.

4. Rising of Ocean Beds: High temperature on earth will melt polar ice caps and glaciers rising the sea level by 20 cms. to 140 cms. This leads to the submergence of islands and coastal areas.

Ozone Depletion: Ozone is a chemically active trace gas in the earth's atmosphere. Its chief characteristic property is that it extraordinary thin layer of ozone molecules are dispersed throughout the atmosphere, particularly in the stratosphere, 6 to 30 miles in altitude and absord certain wave lengths of ultraviolet radiation (uv-B) that can damage and cause mutations in animal and plant cells and there by prevents them from reaching earth's surface. In 1970 that man made gases like chlorofluoro carbons (CFCS) and halogens cause significant depletion of the ozone layer.

The united nation environmental programme (UNEP) sought a global approach to ozone protection since 1977. In 1987, the final round of negotiations adopted the Montreal protocol on substances that deplete the ozone layer. The protocol came into forceby 01-01-1989. This protocol seeks to reduce CFCS (chlorofluoro carbons) consumption and production to 50% of 1986 levels, by 1998.

6. Write about importance of need and scope of environmental conservation and regeneration?

Importance of Environmental Conservation: Environmental conservation is important for many reasons, including protecting the ozone layer, maintaining animal and human food chains, preserving potable water and making efficient use of non renewable resources.

According to the nature conservancy, serious environmental

damage often takes years to manifest obvious symptoms. Environmental conservation seeks to prevent dormant damage through measures such as proactive management and ecologically susfainable energy production.

Importance to agriculture: Conserving the environment and preventing soil erosion, desertification and flooding is essential.

Importance to fishing: Conservation issues affecting the oceans, including over fishing.

Importance to climate: Conservation of natural environments should be done not just for their own sake, but also for that of the world as a whole.

Scope of environmental conservation and regeneration: Environmental conservation is very wide in scope and includes all the technical, economical and other aspects of environment.

The broader objective of environmental conservation includes: 1.To identify the environmental problem and to find its solution 2. To restrict and regulate the exploitation and utilization of natural resources 3. To control environmental pollution and gradation 4. To reduce the impacts of extreme events and natural disaster. 5. To review and revise the existing technologies and make them eco friendly.

7. Explain the impact of industry/mining/transport on environment.

Ans : Industry: Industrial processes contribute significantly to air pollution. Industries give off various types of pollutants. For example factories that produce aluminum expel fluoride dust, oil refineries discharge ammonia, hydrocarbons organic acids and sulphur onides into the atmosphere. Industrial

8)

plants that produce plastic foams are a major source of chlorofluoro carbons (CFC's) compounds of chlorine, fluorine and carbon.

Transportation: Aero planes, cars, ships and trains are leading sources of air pollution. Between 1970 and 1990 the number of vehicles has grown 11.5 times from about a million to more than a million. At the same time, the figure per 1000 population increased from 3.4 to 25.31 and is expected to exceed 40 by the year 2001. The bulk of this vehicular population is found in urban areas. Exhaust from engines contains various kinds of harmful pollutants. Such pollutants include carbon monoxide gas suspended particulate matter. Nitrogen oxides in the air help produce a form of oxygen called ozone. Ozone reacts with hydro carbons to form a type of air pollution known as smog.

Mining: Mining is the process of removing minerals or ores deposited far below the earth surface. Mining may be surface mining or underground mining.

Mining is usually carried out by surface mining method, due to its significant economics. But, mineral deposits generally occur in the forest zones, and any mining operation will greatly affect the fauna and flora. In addition, it creates water, air and noise pollution.

UNIT - 3
ENVIRONMENTAL MANAGEMENT AND PROTECTION

1. Write the need functions and characteristics of environmental management.

Ans. Environmental management is the process of allocating natural and man made resources so as to make optimum use of the environment in satisfying not only the present basic human needs of the coming generations also.

This management implies an element of conscious choice from a variety of alternative proposals and further more that such a choice involves purposeful commitment to recognized desired objectives.

The characteristic features of the environmental management are:

1.It deals with a world affected by humans. 2.It supports sustainable development 3. It demands a multidisciplinary approach 4. It has no integrate different development view points 5.It concerns with short term and long term planning as well as from local to global scale.

Need for Environmental management:

Environmental management need are given below

1. For use of resources 2. To overcome environment and ecology crisis 3. For sustainable development 4. For economic need and values 5. To reduce disasters 6. To decide the limiting line between environment and development.

Main Functions of Management:

The environmental management comprises four main functions : Environmental planning, environmental status evaluation environmental impact assessment and environmental legislation and law

Environmental Planning: It is an integrated approach to economic development planning, taking into consideration the

impacts of ecological issues arising out of the proposed development activity, the social relevance and the long term economic benefits. The environmental planning frame has to be (a) Flexible in approach (b) Integrating the environmental concerns in the social economic decision making (c) sensitive to exploitation of resources and to Impacts on the quality of life of people (d) ensuring environmental protection compatible with socio - economic development.

Environment Status Evaluation: An effective management of a system requires knowledge about the "status" of the system.

Environment Impact Assessment: It is an essential exercise for assessing the imminent effects or Impacts of human activities on ecological systems. The impact analysis Includes (a) strategic planning in the broadest sense and (b) sensitivity analysis which is the process of evaluating 'how the level of achievement of objectives or the system output vary with changes in policy decisions and other system parameters.

Environmental Legislation and Law: The environment management requires a strong back up of legislation and law to deal with the Issues affecting the environment by different sectors of the society. The legislation should be supported by clearly defined regulations and an efficient enforcement machinery.

2. Explain the Dimensions of environmental management?

Dimensions of Environmental Management

There are four dimensions of environment management they are

1. Economic : The economic dimension deals with strategies regarding the utilization of resources in the most effective manner, and how the damages that may be caused to the environment is the process of production can be included in the cost of any product. This process is often referred to as 'internalizing the externalities', or including the indirect cost in the production cost. The total cost that may be repaired to deal with the environment is often huge. The economic aspect of

environment management cover the costs involved in the use of desirable resources and minimizing undesirable pollution. This dimension stipulates that resources should be utilized in an effective manner, rather than conserving them. Economic growth and vitality are often considered contradictory to environmental protection. However, in reality economic vitality is a part of sustainability, as it encompasses growth, environmental protection and a strong social system. This dimensional also deals with certain intangible factors like aesthetics.

2. Technological: Science and technology can either be of great use, or cause harm to the environment. In the recent past, due to population explosion and the consequent need for more resources has led to considerable harm to the environment. This harm occured as direct consquence of the development of new technologies. However, technology is also the only solution to meet the demands of the future generations and sustain the environment.

Technology is of three types: a) One which adversely affects environment, b) That which has no or little effect on environment, and c) That which contributes towards improvement of the environment without causing any significant long-term depletion of resources.

The second and third technologies are in dispensible for sustainable development.

3. Socio - Culteral: This dimension focuses on aspects such as community, participation, empowerment, gender quity, women development, etc. Community has an important role to play for identifying and managing the available resources efficiently. The participation of people is various development projects right from the process of planning, implementation, monitoring , evaluation operation and maintenance is also given due focus is this dimension. This participation would be effective if there is community mobilization. Community mobilization is a process wherein a group of people transcend their differences to meet on equal term to facilitate a participatory decision making process. Social activists and organizations have an indensible and significant role to play in community mobilization. Community

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monbilization allows the people is a number of activities like identifying the needs and promotion of community interests, promoting good leadership and democratic decision making, identifying the available resources in the community, planning the best use of the available resources, better governance of the community. Organizations like NGOS, political parties, religious institutions, schools, various voluntary groups, etc. have played a significant role in facilitating community mobilization.

4. Ethical and moral dimension: This dimension focuses on equity and justice in environmental management for dealing with environmental crisis that has engulfed the world. According to this dimension, problems like pollution, destruction of forests, over exploitation of natural resources and releted issues can be overcame only through reducing the urge for mole and more processions. For this to be achieved there should be a radical change in the way humans think and interact with the environment. A feeling that animals, plants and the environment too have rights like human rights should be inculcated among the community. It is based on this dimension that the discipline of "Environmental Ethics" has emeged. Environmental ethics studies the moral relationship of human beings, and also the value and moral status of the environment and its non-human contents.

3. Write the Scope and Importance of Environmental Management.

Ans : The scope of environmental management is very wide. It involves the complex relationship that living beings have with their respective habitats. As such, it is the comprehensive management of all the biotic and abiotic components of the environment. It also involves the interrelationships of human environment, with the bio-physical environment. The various human environments include socio-cultural and economic environment.

Further, the movements that provided impetus to environment management rayes from social, to economic and environmental issues. Some of the social issues include civil rights issues, issues related to women, tribal issues, and so on. On the environmental side, the endangered species and their protection,

the protected areas, water bodies, pesticides, toxic wastes contributed to the emergence of environment management. During this time, experts and scientists highlighted the need for a more integrated, careful, and protective approaches to the state of the environment we live in. It is this approach that lead to a thought process that went beyond the resource and development focused emphasis of the yesteryears. The earlier focus was limit to a few areas that included enhanced air and water quality, reducing the negative effects of development projects, improving human equality of life and protecting endangered species.

4. What are the factors responsible for the depletion of flora and fauna

Ans : The main reason for the depletion of fauna is excessive hunting and poaching. Forests and wetlands are natural habitats of animals and the destruction of these has resulted in the depletion of our wildlife. Over-exploitation of forests has resulted in the depletion of flora. Deforestation is one of the main causes of the depletion of flora. In colonial India, vast stretches of natural forests were destroyed for the expansion of railways, agriculture, commercial farming and mining.

The colonial practice continued even after independence. Large infrastructure projects, like multipurpose dams, have also resulted in massive deforestation. Mining also contributes to deforestation. Poor cultivation methods like slash and burn agriculture, or thumbing, practised by tribal people have also led to deforestation.

Over grazing by cattle herds also leads to large scale destruction of pastures and natural forests. Factors like environmental pollution and forest fires lead to a depletion of both our flora and fauna. The environmental factors that lead to a decline in biodiversity are caused by inequitable consumption of resources and inequitable consumption of resources and inequitable responsibility borne for the well-being of the environment.

Hunting and poaching, habitat destruction, deforestation, over-exploitation, enrichment plantations, environmental pollution

and forest fires are factors responsible for the extinction of flora and fauna.

5. Write the measures to conserve flora and fauna.

Ans: Measures to conserve flora and fauna. The Government has taken firm steps to conserve flora and fauna of the country. ✤ Survey and invetorisation of floral and faunal resources are carried out by Botanical survey of India (BSI) and Zoolgical Survey of India (ZSI). The forest survey of India assesses the forest cover to develop an accurate database for planning and monitoring purposes. ✤ A protected area Network of 96 National Parks and 509 wild life sanctuaries and three conservation reserves, covering more than 4.74% of the geographical area of the country has been created for in-situ conservation of habitats and ecosystems. ✤ 14 biodiversity rich areas have been designated as biosphere reserves for conservation or representative ecosystems. ✤ To complement in-situ conservation efforts, ex-situ conservation has been undertaken through botanic gardens, Zoos, gene banks etc. ✤ Biological diversity Act 2002 has been enacted and Biological diversity Rules 2004 haas been notified, which aim at conservation of biological resources of the country and regulation of access to these resources to ensure equitable sharing of benefits arising out of their use. ✤ Industries to obtain "consent for establishment as well as consent to operate under the provisions of the water Act 1974 and Air Act,1987 from the concerned state pollution control boards (SPCBS) prior to carrying out operations. ✤ Environmental impact assessment of developmental projects and preparation of environmental management plan as per the provisions of the environmental impact assessment notification of September 2006. ✤ Adoption of cleaner technologies and use of improved fuel quality.

6. What are the causes for forest fire? Write its measures of prevention.

Ans. 1. Human Activities: The majority of forest fires caused by human activities can be termed as accidental fires one of the most important human activities that can cause forest fires is the use of arson for clearing land, which can sometimes to out of control.

2. Underground Coal Fires: Underground coal fires or the smoldering of coal deposits is another important contributory factor is reigniting, as well as spreading forest fires.

3. Spontaneous Forest Fires: Spontaneous forest fires have neen mostly observed in climates that are moist enough to promote the growth of vegetation, but are also characterized by extended hot and dry periods.

4. Lightning and Volcanic Eruptions: Forest fires are usually caused by dry lightning or lightning not accompanised by rain. Volcanic eruptions can also ignite forest fires, as the hot lava or magma burns everything that comes in its way.

Measures of preservation:

1. Use of wood for fuel should be discouraged. The use of solar energy and bio-gas should be encouraged for cooking.

2. New plants of more or less of the same variety should be planted to replace the trees cut down for timber or fire woods so that no scarcity of wood occurs.

3. The union and state Governments have launched several programmes to develop forest in the country. The social forestry programmes have been started in 1976. The main objectives of this programmes are to use the waste lands to produce wood, fodder and timber for the use of rural people.

4. Another programme namely agro forestry programme encourages the use of same land for farming forestry and animal husbandry.

7. What are the major environmental problems in India? Explain the environmental protection and polices in India?

Ans : Major Environmental Challenges Faced by India:

1. Growing Population: A population of over thousands of millions is growing at 2.11% every year. It puts considerable

pressure on its natural resources and reduces the gains of development. Hence, the greatest challenge before us is to limit the population growth. Although population control does automatically lead to development, yet the development leads to a decrease in population growth rates.

2. Poverty: India has often been described a rich land with poor people. The poverty and environmental degradation have a nexus between them. The vast majority of our people are directly dependent on the nature resources of the country for their basic needs of food, fuel shelter and fodder. About 40% of our people are still below the poverty line.

Environment degradation has adversely affected the poor who depend upon the resources of their immediate surroundings. Thus, the challenge of poverty and the challenge environment degradation are facts of the same challenge. The population growth is essentially a function of poverty. Because to the very poor, every child is an earner and helper and global concerns have little relevance for him.

3. Agricultural Growth: The people must be acquainted with the methods to sustain and increase agricultural growth with damaging the environment. High yielding varieties have caused soil salinity and damage to physical structure of soil.

4. Need to Ground Water: It is essential of rationalizing the use of groundwater. Factors like community wastes, industrial effluents and chemical fertilizers and pesticides have polluted our surface water and affected quality of the groundwater.

It is essential to restore the water quality of our rivers and other water body as lakes is an important challenge. It so finding our suitable strategies for consecration of water, provision of safe drinking water and keeping water bodies clean which are difficult challenges is essential.

5. Development and Forests: Forests serve catchments for the rivers. With increasing demand of water, plan to harness

the mighty river through large irrigation projects were made. Certainly, these would submerge forests; displace local people damage flora and fauna.

As such, the dams on the river Narmada, Bhagirathi and elsewhere have become areas of political and scientific debate. Forests in India gave been shrinking for several centuries owing to pressures of agriculture and other uses. Vast areas that were once green, stand today as wastelands. These areas are to be brought back under vegetative cover. The tribal communities ingabiting forests respects the trees and birds and animal that gives them sustenacce. We must recognize the role of these people in restoring and conserving forests. The modern knowledge and skills of the forest dept. should be integrated with the traditional knowledge and experience of the local communities. The strategies for the joint management of forests sgould be evolved in a well planned way.

6. Degradation of land: At present out of the total 329 mha of land, only 266 mha possess any potential for production. Of this, 143 mha is agricultural land nearly and 85 suffer from varying degrees of soil degradation. Of the remaining 123 mha, 40 are completely unproductive. The remaining 83 mha is classified as forest land, of which over half is denuded to various degrees. Nearly 406 million head of livestock have to be supported on 13 mha, or less than 4 per cent of the land classified as pasture land, most of which is overgrazed. Thus, our of 226 mha, about 175 mha or 66 per cent is degraded to varying degrees. Water and wind erosion causes further degradation of almost 150 mha.

7. Reorientation of Institutions: the people should be roused to orient institutions, attitudes and infrastructures, to suit conditions and needs today. The cgange gas to be brought in keeping in view India's traditions for resources use managements and education etc. change sgould be brought in education, in attitudes, in administrative procedures and in institutions. Because it affects way people view tecgnology resources and development.

8. Reduction of Genetic Diversity: at present most wild genetic stocks have been disappearing from nature. Wilding including the a siatic lion are facing problem of loss of genetic diversity. The protected areas network like sanctuaries, national parks, biosphere reserves are isolating populations. So, they are decreasing changes of one group breeding with another. Remedial steps are to be taken to check decreasing genetic diversity.

9. Evil Consequenees of Urbanization: Nearly 27 per cent Indias live in urban areas. Urbanization and industrialization has given birth to a great number of environmental problems that need urgent attention. Over 30 per cent of urban Indians live in slums. Out of India's 3,245 towns and cities, only 21 have partial or full sewerage and treatment facilities. Hence, coping with rapid urbanization is major challenge.

10. Air and Water Population: Majority of our industrial plants are using out-dated and population technologies and makeshift facilities devoid of any provision of treating their wastes. A great number of cities and industrial areas that gave been identified as the worst in terms of air and water pollution.

Acts are enforced in the country, but their implement is not so easy. The reason is their implementation needs great resources, technical expertise, political and social will. Again the people are to be made aware of these rules. Their support is indispensable to implement these rules.

Some other problems:

11. Mining in thar desert in Rajasthan:
12. Maheshwar hydel project in Madhya a Pradesh
13. Pollution by a textile unit in kerala
14. Ground water exploitation by cocacola plant in kerala
15. Peoples movement in Maharashtra

ENVIRONMENTAL PROTECTION AND POLICES IN INDIA:

List of laws **Source**

Legislation	Year	Domain	Protected Areas	Use of other Natural resources
Indian Forest Act	1927	British India	Developed procedures for setting up and protection of reserved forests, protected forests, and village forests	Regulation of movement and transit of forest produce with duties on such produce. Special focus on timber
Ist Five Year Plan	1951			
2nd Five Year Plan	1956			
3rd Five Year Plan	1961	Almost the same but with extra deer saving act		
4th Five Year Plan	1969			
Wildlife Protection Act	1972	India except J&K	Formalisation of national parks, wildlife sanctuaries, conservation reserves and community reserves. Protection to habitat and wildlife within	Penal codes for animal poaching, and trade in products derived from protected animals

			premises of such protected areas. Development of National Board for Wildlife and State Board for Wildlife and State Boards for Wildlife for identification of future protected areas.	
National Wildlife Action Plan	1973	Environment Protection Act		
5th Five Year Plan				
6th Five Year Plan				
7th Five Year Plan	1974			
	1978			
	1980. Forest (Conservation)		stating that: No State Government or other authority shall make any	

	Act, 1980 (with Amendments Made in 1988)	1986 (23 May 1986) It it is a legislation which signifies the central governments determination to take effective steps to protect the environment.	Order directing- * (i) That any reserved forest shall cease to be reserved; * (ii) that any forest land or any portion there of may be used for any non-forest purpose; * (iii) that any forest land or any portion thereof may be assigned by way of lease or otherwise to any private person or to any authority, corporation, agency or any other organization not owned, managed or controlled by Government; * (iv) that any forest land or any portion thereof may be cleared of trees which gave grown naturally in that land or portion, for the purpose of using it for reafforestation.	
Environment (Protection) Act	1986			
National Forest Policy	1988			
Foreign Trade Development and Regulation Act	1992			

8th Five Year Plan	1992			
9th Fie Year Plan	1997			
10th Five Year Plan	2002			
11th Five Year Plan	2007			

8. Write about need and objectives of conservation of environment?

Ans : Conservation is a broad sense can be defined as "a method to stop the unplanned development that breaks ecological as well as human laws by cared less use of natural resources.

Technically speaking conservation Includes Methods and policies for programming long term retention of Naturally occurring plants and animals without being Influenced by various adverse factors that may terminate their existence.

Conservation of plants and animals is Important to maintain the existance of life on the surface of earth.

Objectives of conservation: Objectives for the conservation is to protect the present resources and situation so that good, clean and self-sufficient environment should be provided go the future generations also.

The following are the objectives: 1. Proper ecological balance Including biotic community management and other basic components like earth, air, soil etc. 2. To keep the diversity of organisms on earth and their development. 3. For the conservation of natural resources for a long time on this earth. Think globally but act locally. Renedubos

Why should we conserve environment?

The natural resources are over exploited It is necessary to have a control over it.

Development in civilization has already done a lot of damage to the environment. At national and international level, environment is already destroyed due to lack of co-operation and communication. Every society has interfered in the environment and, it is necessary to collectively think over this problem.

Strategies of Conservation: at global level there are only two strategies which are as:-

1. Special Interest conservation Strategies: In this, conservaties of important and limited resources have been done

2. Total eco-system conservation: It includes, conservation of all the species of the organisms on this earth.

Need of Conservation: conservation is not just important for animals but to all living things. Conservation is also very important to prevent floods, fires, new deserts and drought. It is important to protect habitats and natural areas like rain forests.

Environmental conservation measures taken in India:

a) Waste Management: waste management in India is basically a pollution control exercise to meet the legislative requirements. The ministry of environment, is implementing the provisions of several acts enacted since 1974. General standards for discharge of effluents applicable to all industrial units including municipal sewage have been specified. In dealing with hazardous wastes also, their generation, collection, treatment, recovery and disposal are strictly carried out as per the regulations.

For industries which discharge effluents and emissions such as oil refineries, sugar, coke-making plants, minimum National standards (MINAS) have been formulated and control measures are being implemented. The impact of legislative directives is such that in all the classified polluting Industries, a variety of changes in the total pattern-particularly in organisation, systems, framing of internal standards and other facilities have been brought about.

Alternative sources of energy:

1. Solar Energy: there has been growing interest in the utilisation of solar energy be cause both heat and electricity are produced directly from solar radiation with out any harmful emissions, noise or any significant visible adverse effects.

2. Bio Energy : It is energy derived from bio matter i.e agricultural waste, animal, waste, food waste, municipal waste etc. bio energy can be derived from those wastes through different chemical processes, such as pyrolysis, gasification and anerobic digestion.

3. Wind Energy: wind energy is another potential renewable energy source and the electric power generation is economically and technically viable and commercially attractive.

Rain Water Harvesting: Rain water harvesting in the collection and storage of rain water for reuse on-site rather than allowing it to run off. These stored waters are used for various purposes such as gardening, irrigation etc various methods of rain water harvesting are

1. Surface runoff Harvesting: In urban area rain water flows away as surface runoff. This run off could be caught and used for recharging aquifers by adopting appropriate methods .

2. Roof top rain Water Harvesting: It is a system of catching rain water where it falls.

3. Components of Rain Water Harvesting: The system mainly constitutes of following sub components 1.Catchments 2. Transportation 3. First flush 4. Filter

Organic Farming: Organic Farming is a form of agriculture that relies on techniques such as crop rotation, green manure, compost and biological pest control.

Government is promoting organic forming through various schems.

1. National Project On Organic Farming (NPOF)
2. National Horticulture Mission (NHM)
3. Horticulture Mission for North East and Himalyan states (HMNEH)

4. Rashtriaya Krishi Vikas Yojana (RKVY)

5. Net Work Project on organic Farming of Indian council agricultural research (ICAR)

Community Participation in Nature Resource Management: public participation in resource management, It becomes clear that there are different approaches to community participation. Some achieved positive participation, while others are passive.

Water Management: water conservation is a key element of any strategy that aims to alleviate the water scarcity crisis in India.

Water Conservation Methods: 1. Protection of water from pollution 2. Redistribution of water 3. Rational use of ground water 4. Population control 5. Renovation of traditional water sources 6. Use of modern irrigation methods 7. Increasing forest cover 8. Change in crop pattern 9. Flood management 10. Use of geothermal water.

Government Acts: 1. River boards act, 1956 2. Orissa river pollution prevention act, 1953 3. Maharashtra prevention of water pollution act, 1969 4. Merchant shipping act 1970

Forest (Conservation) Act, 1980 (Amended 1988)

A forest policy was framed in 1894, revised in 1952 and then 1988. Indian forest act was promulgated in 1927 with amendments in 1930, 1933 and 1948. Forest (Conservation) Act was an Improvement over it.

1. Diversion of forest land for non-forest purposes or conversion of a reserved forest into non-reserved one cannot occur with out the prior approval of central government. 2. Forest land, lessthan 20hect are, can be used for non forest purposes with the approval of state government. For more than this land, the approval of ministry of environment and forests will have to be taken which will set up an advisory committee for this purpose 3. A control should be exerted over shifting cultivation and encroachments. 4. Tribal rights and concessions must be highlighted along with control mechanisms. 5. No forest area should be cleared of self grown trees and shrubs for the purpose of reforestation

9. Mention different constitutional amendments made and environmental laws?

Ans : Provisions of the Indian Constitution Regarding the environment: the constitution (42 Amendment) act of 1976 explicitly incorporates environmental protection and improvement. Article 48A, which was added to the directive principles of state policy, declares: "The state shall end eavour to protect and improve the environment and to safeguard the forests and wildlife of the country.

Article 51A (g) in a new chapter entitled "Fundamental duties", imposes a similar responsibility on every citizen to protect and improve the natural environment including forests, lakes, rivers and wildlife, and to have compassion for living creatures.

In addition, Article 21 of the constitution states" no person shall be deprived of his life or personal liberty except according to procedure established by law. This article protects the right to life as a fundamental right.

In 1980, the union government established the department of environment. It became the ministry of environment and forests (MOEF) in 1985. The ministry initiates and oversees the implementation of environmental policies, plans, laws and regulations.

MOEF prepared the first national environmental action plan in December 1993, laying down India's environmental priorities. In 2004, the MOEF unveiled a new draft environmental policy.

Begining of environmental legislation in India: Prime minister Indhira Gandhi gave a speech at the un conference on the human environment held at Stockholm in June 1972. The participating countries agreed to take appropriate steps to preserve the natural resources of the earth. In consonance with this decision, India began enacting various environmental law.

Main Environmental laws In India:

Environment protection act of 1986: The act is an umbrella legislation. It is an enabling law that provides the executive with powers to frame various rules and regulations.

The act defines terms such as environment, environmental pollutant and hazardous substance. According to the act, the

central government has the power to:

✤ Take measures to protect and improve the environment ✤ Give directions (for example to close, prohibit) and ✤ make rules to regulate environmental pollution

Air (prevention and control of pollution) act of 1981: The objective of this act is to provide for the prevention, control, and abatement of air pollution. The act lists a number of functions of the CPCB

Including: Setting of air quality standards, organizing training and awareness programmes, establishing laboratories etc

Water related environmental laws in India: The early acts concerned with water issues were the following:

✤ the easement act of 1882, which allowed private rights to use ground water by viewing It as an attachment to the land. It also states that all surface water belongs to the state and is state property. ✤ The merchant shipping act of 1970, which deals with waste arising from ships along the coastal areas with in a specified radius.

Forest conservation act of 1980: The forest conservation act of 1980 and the forest rules of 1981 provide for the protection and conservation of forests.

✤ preservation of public health ✤ Maintenance of a water supply in springs river and tanks ✤ protection of roads, railways and other modes of communication.

UNIT - 4
ENVIRONMENTAL MOVEMENTS AND DEVELOPMENTS

1. Discuss the environmental Movements in India.

Ans: Silent Valley Movement A dam, Silent Valley project, was to be built on the Kundhipuzha river, in the Palghat district of Kerala. It was to produce 240 MW of power, irrigate 10,000 ha of additional agricultural land, and provide employment to 2000 to 3000 people. Although, the project was conceived in 1963, there was delay in its execution for want of finances. In 1976, a task force on the project suggested that this area ought to be preserved. Later on, the Kerala Shastra Sahitya Parishad, a non-governmental organization working on science education, deputed a multi-disciplinary team consisting of a biologist, a nuclear physicist, an electrical engineer, an economist and an agricultural scientist, to study the feasibility and impact of this project. This team prepared a Report, "The Silent Valley Hydro-electric Project : A Techno-economic and Socio-political Assessment".

According to this report, if the dam were to be built, the first calamity would have to be the forests. Apart from inundation, large tracts of forest area would have to be surrendered to the Electricity Board, who would clear them to build quarters for their employees. Thus, forest devastation would begin ever before the dam came up. Then submergence would have deleterious effects like destruction of shoreline, riverine vegetation and the disappearance of several valuable species of flora and fauna.

Following this adverse report, a nation-wide campaign was launched to save the Silent Valley. 'Save Silent Valley' groups were started in various states and several NGOs with in Kerala joined hands. KSSP spearheaded this struggle. Scientists, research workers, intellectuals and youth supported the campaign, which was resisted by the KSEB and the State government. Ultimately, the execution of the project was abandoned based on a report

submitted by a joint committee headed by Prof. M.G.K.Menon. And the Silent Valley was declared a national park.

This movement, first of its kind in India, brought to the fore the following considerations.

1. There is a difference between academic knowledge and the day to day experiences of the people.

2. Alternatives have to be considered, and publicized to protest against a particular option. Kerala State government and the Kerala State Electricity Board (KSEB) based their propaganda on the fact that the dam would provide electricity, irrigation and jobs, and the people in the adjoining districts firmly believed that the Silent Valley project would be the panacea for all their ills. It was suggested that this project would be located at the northern end of the State, which was suffering from an acute power shortage.

However, the Silent Valley project was located in the middle of the State, and would not be able solve the problems of the north. Also, at the time Kerala was selling power to Tamil Nadu and Karnataka i.e., it was producing surplus power. Based on these two points, KSSP pointed out that if the State can transmit electricity to other states, why can It not transmit power to the north ? The Electricity Board had no answer to this. So people began to look at the wires passing overhead, and they started to ask themselves, if electricity can flow over our heads, why can it now flow here too ? It was a similar case with irrigation too and jobs

This movement is a very good example of how certain shortsighted activities could have turned to be detrimental to people's subsistence. The campaign was led by local people and they got it stopped. In the initial stages, none of the local people believed that a dam could possibly have any bad effects. It was Kerala Shastra Sahitya Parishad (KSSP) which made the local people realize the value of a gene pool and the fact that the forest was a reservoir of genes. In this pursuit, both the human and the bio-physical dimension of our environment had been taken into account.

Chipko Movement : Chipko - "to hug" in Hindi - today evokes romantic images of poor, village women in the hills of northern India determinedly hugging trees to prevent them from being cut down by the very axes of forest contractors that were also a threat to their lives. However, Chipko's multi-faced identity has meant different things to different people. For some, it is the extraordinary movement of the poor for conservation of resources; for others it is local people's movement to regain control of their natural resources, snatched away by successive governments from the colonial periods; and finally, it is a movement of women trying to save their environment. In fact, as a women's movement, it inspired eco-feminsim in India and to some extent, throughout the world.

The people of Uttrakhand region, situated in the central Himalayas, raised their voice for the first time through the Chipko movement, to say that their life is mainly dependent on forests. In the last three decades, heavy destruction of forests degraded not only the environment but also the daily life of the villagers. There was discontent among the people, but they received their biggest shock in the 1960s, when under a working plan, trees were cut on a large-scale. This increased the intensity of the 1970 flood in the Alakananda river, which swept away six bridges, 16 footbridges and 25 buses. Hundreds of people and animals died. In 101 villages, 604 houses and 500 acres of crops were destroyed. Roads were blocked. Despite this exploitation of forest for commercial purpose continued and no thought was given to stopping or reducing it. Between 1973 and 1977, the people of Gopsehwar. Mandal, Phata, Rampur, Reni and Bhyundar in the Chamoli District, situated in the watershed of Alakananda, had to protest at least half a dozen times against the Forest Department's working.

Chipko's first battle took place in early 1973 in Chamoli district, when the villagers of Mandal, led by Chandi prasad Bhatt and Dasholi Gram Swarajya Mandal (DGSM), prevented the Alllahabad - based sports company, Symonds from feeling 14 ash trees. This act took place on 24 th April. And again in December, villagers stopped tree felling in Phata - Rampur forests,

about 60 km from Gopeshwar. In 1974, more than 680 ha of forest were auctioned by the Forest Department, in the area which was badly affected by the massive Alkananda flood of 1970. But the women of Reni village drove out the contractor's laborers on 26 March, 1974. Meanwhile, other protests were staged in the Uttarakhand region. In 1974, a struggle was launched on July 25 by villagers from the Vyali forest area near Uttarkashi, seeking to halt tree-felling. In Kumaon, Chipko made its debut at the Nainadevi fair in Nainital in 1974, and activists proceeded to block forest auctions at several places, including Nainital, Ramnagar and Kotdwar. The movement in Kumaon gathered momentum following major landslides in Tawaghat. In Tehri-Garhwal, Chipko activist led by Sunderlal Bahuguna began organising villagers n May 1977 to oppose tree -feeling in the Henwal valley.

Irrespective of Chipko's grassroots achievement, it accomplished a great deal at the national and international levels. In its growth, Chipko contributed immensely to national and international ecological movements. International ecologists saw this movement as a cultural response of the people' love for their environment. Chipko was popularised by the feminist movement, who pointed out that village women have to walk long distances to collect fuel and fodder and they become the first victims of forests destruction.

Chipko's biggest contribution probably as the pro-poor environmentalism that it brought in it wake. Several environmental activists discerned in Chipko a powerful assertion by people of their rights over their environment. This was a true social justification of the protests, which defined a new morality in environmental concern. Chipko generated a volume of literature, but 20 years after its birth the questions remain : What has been its impact locally, nationally and internationally ? Did it achieve its objectives or were its gains only intellectual, with few benefits for the villagers ?

Ecological balance and traditional human relations with forests are so inter-twined that it is difficult to see them separately. Destruction of forests has degraded not only the natural

environment but also the daily life of the villagers. Declining area under forests and the inability of the forest department to conserve forests resulted in the birth of Chipko Andolan.

The local economically backward people of Uttarkhand region, in Uttar Pradesh, raised their voice for the first time through the Chipko movement, to say that their life is mainly dependent on forests.

In 1960s, under a working plan, trees were cut on a large scale. This deforestation deprived the local people of the firewood sources for their cooking purposes. Women had to increasingly walk miles in search of broken branches, and twigs in the forests. Proportionately, the intensity of the floods in the Alakananda river increased in 1970 sweeping away six bridges, 16 food bridges and 25 buses due to soil erosion and siltation of streams, rivulets and rivers. More than Rs.10 million was spend on desilting the Upper Ganga canal and several millions of rupees worth of direct and indirect damage took place. On the other hand, the exploitation of forests yielded an income of Rs.10 lakh over the entire decade. Between 1973 and 1977, the people of Chamoli district protested at least half a dozen times against the mismanagement of the forests by the Forest Department.

Following the Chipko Andolan in Reni, where the women took to the unique way of protest by embracing the trees whenever the contractors approached them to cut down, a committee of experts under. Dr. Virendra Kumar, studied the problem. This committee agreed that the issues raised by the villagers were significantly correct, and forest management based on the so-called Forest Science was wrong. On the one hand, the forest conservation policy of the government allows the sale of forest produce in international markets and metropolitan centres at competitive prices. On the other, people living in forests have lost their rights to utilize the forest produce for their livelihood.

The Working plans of the Forest Department, based on the approach, were challenged by the ordinary villagers. Chipko leaders believed that the only way out is to create awareness among people and that these interests coincide with those of the forests themselves. People realized that the forests are the basic

foundations of their living standards and their survival will be at stake once the forests disappear. Women became partners in the protection and the development of forest wealth because they were the prime victims of this destruction. For this reason, Chipko Andolan has always seen women at the forefront.

In their bid to save their forests in 1974, the women of Reni village, situated in an extremely sensitive region of the Alakananda catchment, had called their forests their "mother home" (mayaka). In the same way, in 1975, 200 women from Gopeshwar waged a struggle against the district authorities to save their oak trees. Later, the women of Bhyundar village, situated in the lower reaches of the world famous valley of flowers, had also launched their Chipko movement. In 1980, the women of Dungri and Paitoli villages, situated in an extremely remote region of Chamoli had also launched Chipko.

Dasholi Gra Swarajya Mandal was associated with this movement significantly. Following are its experiences:

✤ Psychology of the villagers was taken into consideration. ✤ created awareness among the people about the important of forests and peoples participation in afforestation and conservation. ✤ Organized eco-development camps in seriously affected areas. ✤ Educational discussions were held. ✤ People started planting trees as their contribution. ✤ Nurseries were raised and improved chulhas (for efficient burning of fire-wood) were built. ✤ Soil erosion in the field was prevented by constructing stonewalls. In the space between the walls and the fields, grass, fuel fodder and fruit trees were planted. ✤ People from different walks of life were actively involved in planning and implementation of the programmes.

This brought the Chipko Andolan to the notice of environmentalists and the government and it is today known in many parts of the world. The Andolan, which started by saving the forests, continues to insist on the need for conservation of forests and draws the attention of the government towards it.

National Test Range at Baliapal, Orissa This National Test Range (NTR) was planned to be set up on the coast of the Bay of Bengal in 126 villages of Baliapal and Bhogarai

blocks in Balasore district of Orissa, spread over 400 sq.kms. Establishment of this missile Base necessitates the evacuation of more than 1 lakh people. This area is the most fertile landscape in an otherwise backward state like Orissa, and is famous for its betel leaves, meat, fish, vegetables paddy, cashewnuts, and many other produces.

Fearing displacement, villagers launched their protests against the project. The whole people of Balipal unitedly lodged the protests to such an extent as to obstruct the entrance of the District Collector into the region under the leadership of Khepansastra Ghati Birodhi Committee, a notable example in the history of mass movements in post Independent India. The government is offering massive rehabilitation measures including model villages to be set up with 500 sq.yards for each family free of cost, and financial assistance for house construction and building other infrastructure. The entire rehabilitation package costs more than s.400 crores. However, the villagers were not to be convinced. Basically, the government did not take the people into confidence while planning the Range. Also villagers are unwilling to lose their traditional homes and living environment, and established lifestyle. Further, there was no confidence, among the people, in the government, on fulfilling its promises, in the light of experience elsewhere wherever such displacement was forced on people.

This movement of the people as joined by civil rights actvists, sociologists, academics. NGOs and environmentalists. However, political leaders have been using this issue to further their interests, dilly dallying, sometimes opposing and sometimes supporting the National Test Range. But the people have not withdrawn their protests and resistance even an inch. This was one movement which had spontaneity, without any political group or organization having any role in its initial stages. Even now organized groups and organizations are only at the periphery of this movement.

Narmada Controversy : On the 312 KM long Narmada river, government had planned to build some 30 big, 300 medium, and 3000 small dams. This is known as the country's largest river

valley project. The area to be affected by this project is spread over in the State of Madhya Pradesh. Maharashtra and Gujarat. The idea of the project was conceived long back. However, the implementation was complicated by the fact that the river passes through three states, which could not agree upon division of project costs and the benefits. In 1969, the dispute was referred to the Narmada Water Disputes Tribunal, established under India's Inter-state Water Disputes Act 1956. In 1979, the tribunal handed down in award. The Tribunal, by agreement of the States, for the purpose of distribution of benefits accepted the figure of 28 million acre feet as the annual water yield from the Narmada with 75 per cent dependability, to be shared by Madhya Pradesh, Maharashtra, Gujarat and Rajasthan - Gujarat's share is 9 m.a.f. and the of Rajasthan 0.5 m .a.f. The Sardar Sarovar Dam, one component of the entire project, is meant to divert water to users in Gujarat and Rajasthan : their share of the Narmada water.

The Sardar Sarovar Projects are intended to bring drinking water to Kutch and other drought - prone regions of Gujarat, and to irrigate a vast area of the State as well as two districts of Rajasthan. This requires a large reservoir on the Narmada river and an extensive canal and irrigation system. The dam, under construction on the Narmada river, at Navagam and Kevadia, will impound water to a full reservoir level of 455 feet. It will submerge 37,000 hectares of ladn in three states : Gujarat, Maharasthra and Madhya Pradesh.

The impact of the Sardar Sarovar Projects extend over a vast area and affects a very large number of people, most of whom are tribals. At least 100,000 people, in 245 villages, live in the area affected by submergence. In additions to the 100,000 people living in these villages in the submergence area, there are likely to be 140,000 farmers who will be affected by the canal and irrigation system. Finally, there are the people living downstream, below the dam, numbering thousands more, whose lives will be significantly affected. In 1985, the World Bank agreed to lend a total of $450 million for these projects. This immense development and the World Bank;s role in it have become the focus of heated controversy.

In 1985, when the credit and loan agreements were signed, no one knew the scale of displacement that would result from the Sardar Sarovar Projects, nor did anyone have anything like a picture of the people who were to be displaced, nor had the people themselves been consulted. The backwater effect of sedimentation at the upstream of the dam is also an issue which has been ignored. In fact, resettlement policies for Sardar Sarovar, both those of the states and to a great extent those of the Bank, have been based on the measures set out in the 1979 Tribunal Award. But the award sought mainly to adjudicate an inter-state dispute. It did not, and should not have been expected to, design, policies that would meet the needs of the affected people of the projects as a whole. It did not even mention the Gujarat ouster, nor did it take i- / 51414nto account the cultural attributes of the outsee population; in the award there is no discussion of tribal people, or of the real meaning of "landlessness". There was no adequate resettlement plan, with the result that human costs could not be included as part of the equation.

In 1990, the Bank announced a comprehensive resettlement policy applying to oustees generally, and in 1991 a specific resettlement policy relating to tribal people. The Government of Gujarat and the Government of Madhya Pradesh and Maharashtra contend the Gujarat's policy goes beyond the requirements set out in the Tribunal Award and the Bank agreements. Maharasthra, with 3,000 families to be resettled and Madhya Pradesh, with as many as 23,000 families to be resettled, were prepared to offer two heactares of land to landed outstees. But they are not willing to provide two hectares for sons of the family who are majors. Neither Madhya Pradesh nor Maharasthra had acknowledged and right of displaced people to adequate land on resettlement.

In Madhya Pradesh, virtually steps were taken towards resettlement and rehabilitation. In Maharashtra there are 33 submergence villages divided between two talukas or districts. Akkalkuwa and Akrani. Resettlement and rehabilitation in Maharastra are beset by serious difficulties. Maharasthra's policies fail no provide adequate land to the displaced families.

Significantly, none of the 24 Akrani villages are deemed by the Maharashtra government to have any revenue land. Thus, the can only qualify for encroacher status, with one acre land benefits. The only resettlement policy applicable to the three States in the World Bank's Policy. But Bank policy has not been respected. The projects were not appraised in accordance with the Banks requirements. Basic information had not been gathered and adequate plans for resettlement and rehabilitation were not in place.

There is a close connection between the engineering designs and the human and environmental impacts. The various parts of the projects were described as death traps, taking malaria to the doorsteps of the villagers are creating ideal breeding sites for malarial mosquitoes. The failure to anticipate and prevent malarial hazards is a part of the failure to implement measures to mitigate the impact of the projects.

Both the 1982 and 1991 policy directives emphasize the importance of detailed research in to the social, economic and cultural implications of projects that impinge on tribunal people's lives and lands. It is no wonder that the status of the people of the Narmada valley has been the subject of many arguments. In April 1987, in response to outing pressure to examine what was happening to implementation of resettlement policies for these projects, the Bank sent it's largest ever mission to the region.

In 1991, the World Bank appointed Mr. Bradford Morse to organize and independent review of the measure being taken to mitigate the human and environmental impacts of the Sardar Sarvour Projects. The saga of the controversial Narmada Project had continued into 1994. When the World Bank pulled out of its commitment to the project, it appeared as if an important milestone in the history of the project has been crossed. The Gujarat government exhibited its determination to go full steam ahead with the project, despite the adverse comments made by Mrs. Bradford Morse which played a role in the cancellation of the World Bank loan. It decided to go to the public to raise funds through the Narmada bonds and emerged triumphant when the bonds issue was oversubscribed twice over.

The most vociferous amongst the "anti-dam" groups has been the Narmada Bachao Andolan, which has put all its efforts to oppose the project. When began as a campaign for better rehabilitation for over lakh outsees of this project, spread across the three States, and has crystallized into a movement against large dams. While the actions of the NBA have revolved round the government's efforts to move and relocate people living in the submergence area, particularly in Maharashtra and Madhya Pradesh its ideological position has been centred on questioning the direction of a development policy which does not weigh the benefits and the costs of projects like the Narmada for the people living in their shadow.

While the project seemed to move from strength to strength in building the dam, the NBA touched the lowest point in its credibility in the course of its eight - year struggle against the dam in 1993. Then the indomitable Ms.Medha Patkar went on a fast - unto death in June 1993 in Bombay demanding that the Central Government institute a review of the project. Once again, in another act of desperation the NBA announced that they would do "Jai Samarpan" and it was set up for August 6th, 1993. As the very last minute, the Government announced the formation of a review committee. To push through their point of view, NBA activists have lobbied in India and abroad. They have petitioned the World Bank, and resorted to some, rather dramatic actions, such as the decision to wait until the floodwaters drowned them in the village of Manibeli in Maharashtra, to demonstrate their opposition to the project.

The movement and protest is still going on.

2. What are the conditions for achieving the goals of sustainable development.

Ans: Sustainable Development : Brundtland commission is the First Commission who defined sustainable development in an authoritative way. It has defined sustainable development is development that meets the needs of the present without compromising the ability of the future generations to meet their own needs.

UNO followed the same definition and included three

components in achieving sustainable development in the year 2002, Johannesburg, South Africa. The three components are 1) Economic development 2) Social development 3) Environmental protection.

Conditions for achieving the goals of sustainable development : Sustainable development in general goals to create chains of mutual social, economic and environmental benefits at local, intermediate the global levels. Benefits of sustainable development at local level should include the provision of basic seeds such as food, water, shelter and health. According to Agenda 21, Chapter 15 Urgent and decisive action is need to conserve and maintain genes, species and ecosystems with a view to the sustainable management and use of biological resources ... the participation and support of local communities are elements essential to the success of such an approach.

Sustainable forestry will increasingly rely on growth in the use of Non-wood Forest products along with timber, fuel wood and other wood products such growth will probably continue to depend on largely on Market forces and natural opportunities coupled with basic requirements of rural communities and their ability to innovate.

3. Explain different strategies for sustainable development.

Ans : Some of the strategies for sustainable development are as follows :

1) Technology : Using appropriate technology is one which is locally adaptable, eco-friendly, resource efficient and culturally suitable. It mostly involves local resources and local labour. Indigenous technologies are more usefully cost effective and sustainable. Nature is often taken as a model, using the natural conditions of that region as its components. This concept is known as "design with nature". The technology should use less of resources and should produce minimum waste.

2) Reduce, Reuse and Recycle : The 3-R strategy advocating minimization of resource use, using them again and again instead of passing it on to the waste stream and recycling

the materials goes a long way in achieving the goals of sustainability. It reduces pressure on our resources as well as reduces waste generation and pollution.

3) Promoting Environmental Education and Awareness : Making environmental education the centre of all learning process will greatly help in changing the thinking pattern and attitude of people towards our earth and the environment. Introducing subject right from the school stage will inculcate a feeling of belongingness to earth in small children. Earth thinking will gradually get incorporated in our thinking and action which will greatly help in transforming our lifestyles to sustainable ones.

4) Resource Utilization as per Carrying capacity : Any system can sustain a limited number of organisms on a long - term basis which is known as its carrying capacity. In case of human beings, the carrying capacity concept becomes all the more complex. It is because unlike other animals, human beings, not only need food to live, but need so many other things to maintain the quality of life. Sustainability of a system depends largely upon the carrying capacity of the system. If the carrying capacity of a system is crossed (say, by over exploration of a resource) environmental degradation starts and continues till it reaches a point of no return.

Carrying capacity has two basic components :
i) Supporting capacity i.e. the capacity to regenerate
ii) Assimilative capacity i.e. the capacity to tolerate different stresses.

In order to attain sustainability it is very important to utilize the resources based upon the above two properties of the system. Consumption should not exceed regeneration and changes should not be allowed to occur beyond the tolerance capacity of the system.

5) Improving Quality of life including Social, Cultural and Economic Dimensions : Development should not focus just on one-section of already affluent people. Rather it should include showing of benefits between the rich and the poor. The tribal, ethnic people and their cultural heritage should also

be conserved. Strong community participate in should be there in policy and practice. Population growth should be stabilized.

6) Integrated Rural Development Programmes : Government sold pay attention on Integrated rural development programmes;. Though this the burden and interdependency on cities for employment can be decrease.

4. Explain the following :

a) The Stockholm conference (1972)

b)Brundtland commission (1983)

c) Nairobi Conference (1982)

Ans : A "UN" conference on human environment was held at stockholm From 5th to 16 June 1972. The conference considered the need for a common out look and for common principles to enspire and guide the people of the world in this preservation and enhancement of human environment. The developing countries must direct their efforts to improve the environment.

History : Swedan First suggested to ECOSOC in 1968 ECOSOC passed resolution 1346 supporting the Idea General Assembly Resolution 2398 in 1969 decided to convene a conference in 1972 and Mandated a set of reports from the UN secretary - general suggesting that the conference focus on stimulating and providing guidelines for action by National government and International organizations facing environmental issues.

Stockholm Declaration The meeting agreed upon a Declaration containing 26 principles concerning the environment and development an Action Plan with 109 recommendations, and a Resolution. Principles of the Stockholm Declaration.

1. Human rights must be asserted, apartheid and colonialism condemned.
2. Natural resources must be safeguarded.
3. The Earth's capacity to produce renewable resources must be maintained
4. Wildlife must be safeguarded

5. Non-renewable resources must be shared and not exhausted
6. Pollution must not exceed the environment's capacity to clean itself
7. Damaging oceanic pollution must be prevented
8. Development is needed to improve the environment
9. Developing countries therefore need assistance
10. Developing countries need reasonable prices for exports to carry out environmental management
11. Environment policy must not hamper development
12. Developing countries need money to develop environmental safeguards
13. Integrated development planning is needed
14. Rational planning should resolve conflicts between environment and development
15. Human settlements must be planned to eliminate environmental problems
16. Governments should plan their own appropriate population policies
17. National institutions must plan development of states natural resources
18. Science and technology must be used to improve the environment
19. Environmental education is essential
20. Environmental research must be promoted particularly in developing countries
21. States may exploit their resources as they wish but must not endanger others
22. Compensation is due to states thus endangered
23. Each nation must establish its own standards
24. There must be cooperation on international issues
25. International organizations should help to improve the environment
26. Weapons of mass destruction must be eliminated

b) Brundt land Commission (1983) : Formally known as the world commission on environment and development

(WCED) the Mission of Brundtland Commission is to unite countries to pursue sustainable development together. The chair person of the commission, Gro Harlem Brundtland, was appointed by Javier perezde weller, Former secretary General of the United nations in December 1983. The Brundtland Commission officially dissolved in December 1987 after releasing our common future also known as the Brundtland report in October 1987, a document which coined and defined the meaning of the term "Sustainable Development".

Main Revolutions :

1. The invention of sustainable development : The report defined sustainable development for the first time. And by doing so, it awoke the public to the Idea that man kind to think of the generations to come and they world they would live in

2.The re-Invention of Multilateralism : Our common future indeed of laid the foundations of international co-operation in the field of sustainable development.

3. The invention of corporate social responsibility: Our common future identified new actors of environment and economic development.

c) Nairobi Conference (1982) : The world community of states, assembled in Nairobie from 10 to 18 May 1982 to commemorate the tenth anniversary of the United Nations conference on the Human Environment, held in Stockholm, having reviewed the measures taken to implement the Declaration and Action plan adopted at that Conference, solemnly requests Governments and people to build on the progress so far achieved, but expresses its serious concern about the present state of the environment worldwide, and recognizes the urgent necessity of intensifying the efforts at the global regional and national levels to protect and improve it.

1. The Stockholm Conference was a powerful force in increasing public awareness and understanding of the fragility of the human environment. The year since then have witnessed significant progress in environmental sciences; education, information dissemination and training have expanded considerably; in nearly all countries, environmental legislation has

been adopted, and a significant number of countries have incorporated withion their constitutions provisions for the protection of the environment. Apart from the United Nations Environment Programmes, additional governmental and non-governmental organizations have been established at all levels, and a number of important international agreements in respect of environmental co-operation have been concluded. The principles of the Stockholm Declaration are as valid today as they were in 1972. They provide a basic code of environmental conduct for the years to come.

2. However, the Action Plan has only been partially implemented, and the results cannot be considered as satisfactory, due mainly to inadequate foresight and understanding of the long term benefits of environmental protection, to inadequate co-ordination of approaches and efforts, and to unavailability and inequitable distribution of resources. For these reasons, the Action Plan has not had sufficient impact on the international community as a whole. Some uncontrolled deterioration, deforestation, soil and water degradation and desertification and reaching alarming proportions and seriously endanger the living conditions in large part of the world. Diseases associated with adverse environmental conditions continue to cause human misery. Changes in the atmosphere - such as those in the ozone layer, the increasing concentration of carbon dioxide and acid rain - pollution of the seas and inland waters, careless use and disposal of hazardous substances and the extinction of animal and plant species constitute further grave threats to the human environment.

3. **During the last decade, new perceptions have emerged:** The need for environmental management and assessment, the intimate complex interrelationship between environment, development, population and resources and the strain on the environment generated, particularly in urban areas, by increasing population have become widely recognized. A comprehensive and regionally integrated approach emphasizes this interrelationship can lead to environmentally sound and sustainable socio-economic development.

4. Threats to the environment are aggravated by poverty

as well as by wasteful consumption patterns: both can lead people to over exploit their environment. The International Development strategy for the Third United Nations Development Decade and the establishment of a new international economic order are thus among the major instruments in the global effort to reverse environmental degradation. Combination of market and planning mechanism can also favour sound development and rational environmental and resource management.

5. The human environment would greatly benefit form an international atmosphere of peace and security free from the threats of any war, especially nuclear war, and the waste of intellectual and natural resources on arnaments as well as from apartheid, racial segregation and all forms of discrimination, colonial and other forms of oppression and foreign domination.

6. Many environmental problems transcend national boundaries and should, when appropriate, be resolved for the benefit of all through consultation action. Thus states should promote he progressive development of environmental including conventions and agreements and expand co-operation in scientific research and environmental management.

7. Enviornment deficiencies generated by conditions of underdevelopment, including external factors beyond the control of the countries concerned, pose grave problems, which can be combated by a more equitable distribution of technical and economic resources within and among states. Development countries, and other countries in a position to do so, should assist domestic efforts to deal with their most serious environmental problems. Utilizaton of appropriate technologies, particularly from other developing countries, could make economic and social progress compatible with conservation of natural resources.

8. Further efforts are needed to develop environmentally sound management and methods for the exploitation and utilization of natural resources and to modernize traditional pastoral system. Particular attention should be paid to the role of technical innovation in promoting resources substitution, recycling

and conservation. The rapid depletion of traditional and conventional energy sources poses new and demanding challenges for the effective management and conservation of energy and the environment.

Rational energy planning among nations or grops of nations could be beneficial. Measures such as the development of new and renewable sources of energy will have a highly beneficial impact on the environment.

9. Prevention of damage to the environment is preferable to the burdensome and extensive repair of damage already done. Preventive action should include proper planning of all activities that have an impact on the environment. It is also important to increase public and political awareness of the importance of the environment through information, education and training. Responsible individual behaviours and involvement are essential in furthering the ause of the environment. Non-governmental organizations have a particularly important and often inspiratoional role to play in this sphere. All enterprises, including multinational coroprations, should rake account of their envirnmental resonsibilities when adopting industrial production methods of technologies or when exporting to other countries. Timely adequate legislation action is important in this regard.

10. The world community of states solemnly reaffirms its commitment to the Stockholm Declaration and Action plan, as well as to the further strenghtening and expansion of national efforts and international co-opration in the field of environmental protection. It also reaffirms its support for strengthening the United Nations Environment Programme as the major catalytic instrument for global environmental co-operation, and calls for incresed resources to be made available, in particular through the enironment fund, to address the problems of the environment. It urges all Governments and people of the world to discharge their historical responsibility, collectively and indivdually, to ensure that our small planet is passed over to future generations in a conditon which guarantees a life of human dignity for all.

5. Write about the Rio Summit 1992.

Ans : From 3-14 June 1992 Riode Janeiro hosted the United Nations conference on environment and development (UNCED). The focus of this conference was the state of the global environment and the relationship between economics, science and the environment in a political context. The conference concluded with the earth summit, at which leaders of 105 Nations gathered to demonstrate their commitment to sustainable development.

Major achievements of the Earth summit were "

1. Recognition that the increasingly serious environmental and development problems facing the world require global solutions.

2. Recognition that solution to these problems require cooperation between Nations and between all sectors of society and

3. Recognition that the well - being of humanity depends on the well - being of nature.

There are five key agreements adopted by consensus, Namely :

1. The Rio declaration on environment and development which states that human beings are at the center of concerns for sustainable development and that they are entitled to a healthy and productive life in harmony with nature.

2. Agenda 21 which sets the common frame work of action for all countries to achieve sustainable development.

3. Forest principles which covers the management, conservation and sustainable development of all forests.

4. A frame work convention on climate change which seeks to stabilize green house gas emissions in the earth's atmosphere.

5. A convention on protection of Biological diversity the

objective of which is to achieve the sustainable management and conservation of the world's biological diversity while ensuring that the benefits from these genetic resources are fairly distributed.

6. Write about Kyoto conference and part on Global warming 1997.

Ans : Kyoto conference and part on Global warming 1997 : The Kyoto protocol is an International treaty which extends the 1992 United Nations Frame work convention on climate change (UNFCCC) that commits state parties to reduce greenhouse gas emissions, based on the premise that (a) Global warming exists and (b) human made CO_2 emissions have caused it. The Kyoto protocol was adopted in Kyoto, Japan, on 11-12-1997 and entered into force on 16-02-2005. There are currently 192 parties to the protocol.

Some of the principal concepts of the Kyotoprotocol are :

✤ Minimizing impacts on developing countries by establishing an adaptation fund for climatechange ✤ Accounting, Reporting and Review in order to ensure the integrity of the protocol; ✤ Compliance establishing a compliance committee to enforce compliance with the commitments under the protocol. ✤ The main feature of the protocol is that it established legally binding commitments to reduce emissions of green house gases for parties.

Chronology :

✤ 1992 the unconference on the environment and development is held in Riode Janeiro. It results in the frame work convention on climate change among other agreements.

✤ 1995 parties to the UNFCCC meet in Berlin to out line specific targets on emissions.

✤ 1997 in December the parties conclude the Kyoto protocol in Kyoto Japan in which they agree to the broad out lines of emissions targets.

✤ 2002 Russia and Canada ratify the Kyoto protocol to the UNFCCC bringing the treaty into effect on 16-02-2005.

✤ 2011 canada become the first signatory to announce its with drawal from the kyoto protocol.

✤ 2012 on 31-12-2012, the first commitment period under the protocol expired.

Major Features : The protocol's Major feature is that it has mandatory targets on greenhouse gasemissions for the worlds leading economics which have accepted it. These targets range from - 8 percent to + 10 percent of the countries individual 1990 emissions of such gases by at least 5% below existing 1990 levels in the commitment period 2008 to 2012.

✤ **Commitments under the protocolvary from nation to nation :** The overall 5% target for developed countries is to be met through cuts of 8% In the Europeanunion Switzerland and most central and east European states

✤ To compensate for the sting of binding targets, as they are called the agreement offers flexibility in how countries may meet their targets.

✤ The protocol not only has to be an effective against a complicated world wide problem - It also has to be politically acceptable.

✤ There is a delicate balance to International treaties. Those appealing enough to gain wide spread support often aren't strong enough to solve the problem they focus on.

UNIT - 5
ENVIRONMENTAL EDUCATION IN THE SCHOOL CURRICULUM AND MEANS TO SENSITIZE THE STUDENTS

1. Write about environmental education primary, secondary and higher education level?

Ans : Primary school stage : The attempt is made to sensitise the child about environment emphasis should be mostly (75%) on building up awareness followed by real life situation 20%, conservation 5% concepts such as hygiene, public health, nutrition and even pollution may be introduced. These are good interdisciplinary topics and closely related to the environment. At primary stage visits and games should be given emphasis children should also be given an opportunity to take part in measures to protect and improve their own environment in their immediate vicinity for example, tree planting activities in the school campus.

Lower Secondary School Stage: At this level, the objective must be real life experience, awareness and problem solving identification. Teaching, practicals and field visits are to be done.

Higher Secondary Stage: At this stage the emphasis must be on conservation, assimilation of knowledge, problem identification and action skills. Biology is the principle medium for instruction on environmental issues, environmental education should be interdisciplinary out of school activities through nature and eco development camps have to be encouraged for imparting the integrated knowledge of environment subjects such as transport safety, overcrowding, food hygiene and public health should be taught.

College Stage: Maximum emphasis is on knowledge regarding sustainable development based on experience with conservation. The content must be college based science and

technology, teaching practicals and action oriented field work is to be done.

University Education: environmental education level is being looked after by the UGC. Environmental education at university level should give the students a through knowledge of the functioning of eco systems, eco disasters, environmental indicators, environmental planning and environmental legislation and so on.

2. What are the major constraints in environmental education for its implementation at primary, secondary and higher education levels?

Constraints for Environmental Education: Environmental institutions require access to timely and credible information on the state of environment, extent of the problem, its impact on human beings and ways to resolve problems. In India, data and information are very often collected and managed by different agencies and there is lack of coordination and communication among these agencies in the sharing of information.

The development of environmental education in India as a whole has concentrated on primary and secondary levels, of the formal education system, with less attention paid to the tertiary and preschool levels. Too much emphasis has been placed on theoretical cognitive aspects, while affective components and techniques are still given little or no attention.

In India, formal environmental education programmes are limited by:

1. Shortage of EE materials for teachers and students. 2. Weak monitoring system. 3. lack of focus on schools and formal education. 4. A shortage of trained education officers in environmental education (EE) in the government to plan, organise, implement and monitor EE programmes in schools. 5. A shortage of supporting staff and office equipment at the national environmental education centre. 6. Limited resources to address the environment and environmental education. 7. Lack of appropriate legislative frame work, enforcement and institutional

support. 8. Government control of mass media. 9. Lack of commitment, personal involvement of the various factors. 10. Lack of Government priorities or political will for environmental policy.

3. Explain in detail about national resource centre for environmental education?

Centre for environment education: The centre for environment education (CEE) in India was established in August 1984 as a centre of excellence supported by the ministry of environment and forests. The head office is located in Ahmedabad. The centre has 41 offices across India including regional cells in Banglore (South), Guwahati (North East), Lucknow (North), Ahmedabad (West) and Pune (Central): State offices in Delhi, Hyderabad, Rajpur, Goa, Coimbatore and several field offices. It has international offices in Australia and Srilanka.

History: The centre for environment education was created in recognition of the importance of environmental education in India's overall environment and development strategy. CEE has inherited the rich multi disciplinary resource base and varied experience of Nehru foundation for development, its parent organisation, which has been promoting educational efforts since 1966 in the areas of science, nature study, health, development and environment.

Thrust areas:

✤ EE in higher education ✤ EE through interpretation ✤ EE for fragile areas ✤ Biodiversity conservation ✤ Water management ✤ Sustainable rural development

Vision: To be an institution of excellence that, in partnership with others, plays a significant role in local, National and global efforts towards sustainable development through innovations and being at the cutting edge of environmental education and education for sustainable development.

Mission: To achieve the vision CEE's mission is to enhance understanding of sustainable development in formal non-formal and informal education through its work with schools, higher educational institutions, policy makers and reaching out to youth

and the general community. It is to integrate education, education as a key driver for change in demonstrating and advancing sustainable practices in rural and urban communities and in business and in meeting challenges of global issues such as climate change and biodiversity conservation.

Strategies: *Focus on capacity - building activities in programs and projects. *Develop programmes and materials to build on the existing strategic opportunities and facilities for EE *Build synergies between the Government, NGOS and CEE for comprehensive impact.

Teacher's Role - National resource Centre for Environmental Education: From the very beginning, school and the school system have been at the centre of a major part of centre for environmental educations programmes. The centre develops, coordinates and conducts a number of educational programmes for school children, in both formal and non-formal streams of education To this end, on the one hand, it trains teachers, develops materials for environmental education, and assists other groups in developing such materials. On the other hand, it endeavours to bring a hands-on, field-based, dimension to school education through opportunities offered by governmental and non-governmental initiatives such as the National Green Corps, eco-clubs, camping, education in and around protected areas etc.

It initiated the nationwide paryavaran Mitra Programme which at creating a large network of environmentally educated students, teachers and whole schools be engaging them in project based learning opportunities associated with environmental education. Thus the teachers should take responsibility for the implementation of different programmes related to environmental education in their schools.

4. Mention the characteristics of good teaching method.

Characteristics of good Teaching Method: The main characteristics of good teaching are as following:

1. It gives desirable information about environment. 2. It creates self-motivation for learning. 3. Effective planning is

essential for good teaching. 4. The students remain active in good teaching. 5. It focuses on selected information. 6. It is based on democratic ideals. 7. It is sympathetic and full of pity. 8. It is directional in nature. 9. It is based on the co-operation of teacher and students. 10. It is progressive. 11. It is based on previous knowledge of teacher. 12. It produces emotional stability. 13. The teacher works as a philosopher, friend and a direction. 14. It reflects harmony between teacher and the students. 15. It enhances the potentialities of the students.

5. Explain the following: a. Field trips b. Exhibition c. Seminar d. Projects e. Workshop f. Surveys g. problem solving h. Other methods.

Many methodologies are used for environmental education according to the suitability to the topic, local resources and other requirements, more common methodologies are: Seminar, workshop, problem solving, field trips and surveys, projects, exhibition and other methods.

Field trips: Field trip is very effective method. A place is chosen which may be educationally relevant, as well as of interest to the children teacher plans in detail a trip to that place including the educational objectives and strategies to achieve these objectives. Keown (1984) gives the following reason for making a field trip.

1. Those concepts that are integral part of the students' environment are best learned in the outdoor environment. 2. The concepts have a better chance of being understood and retaining it, if parts of the concept can be related to students environment.

Exhibition: Exhibition forms another important medium of environment education. It can be used independently or jointly with other methods. An exhibition can be organized to show the work done by children on a particular theme, or work done by them under some projects. It may also be one organized by some other agency and teachers may consider it useful for EE. Personal hygiene, community health etc can be themes of common interest.

Seminar: In this a topic or problem and its various aspects are discussed in the class. Sometimes children are given time to study and references are also cited. The advantage is that it does

not require much money and children are exposed to various aspects of the problem.

Projects: This method is slightly more extensive for study. Here a class is divided into small groups and each group is assigned a project. The projects assigned to various groups may have some kind of relationship such as different aspects of one common problem children are given time to work on those projects and they finally report their observations and conclusion to the whole class.

Workshop : Workshops can be conducted independently or combined into one or more days workshop depending on the time available and the needs of the school. ECO-UNESCO offers a wide range of exciting, fun and interactive environmental workshops for children under the age of 12.

Environmental workshops:

1. Fashion focus workshiop 2. Sustainability and media workshop 3. Green trails-biodiversity tours of Dublin (Age 6-60) 4. Urban ecology discovery days (Ages: 12-18)

Surveys: Using qualitative research method, an in-depth interview and field trip investigation were carried out to explore the implementation of environmental education (EE) in education institutions with an aim to put forward possible solutions and suggestions.

Problem-Solving: Stapp and Cox (1974) are of the opinion that problem solving and value clarification are integral parts of environmental education. Problem solving is action based and community centered. The purpose of problem solving is to make aware of the problem, its existence and attempt to find solutions of problems. The problems may be such as noise, litter and vandalism. The curriculum activities make the children actively involved in environmental enquiry and problem solving.

Other Methods:

1. Outdoor study: Children's work may be study of different aspects of an interesting environmental object such as river, lake, cave, mud.

2. Implication for others subject areas: a) Music:

Sing a song of appreciation for the earthworms. B) Language arts: Tell stories about earthwarms.

3. Simulation and Games: Simulation and games can be used to focus attention on both attitudes and content according to Tansay (1971): what it does do is change the classroom relationship between teacher pupil, and so doing offer a chance of a different method of education.

6. Write about Relative Efficiency of Teaching Methods in Environmental Education.

Ans : EE curriculum is mostly of multi disciplinary or inter disciplinary nature, depending on organization of concepts and the treatment during the studies. The difference between these two kinds - Inter disciplinary and multi disciplinary approaches.

In inter disciplinary model relevant components of many disciplines are drawn to create an EE unit.

Where as in multi disciplinary model the concepts of a theme of EE are infuced into various established disciplines.

Here we take the topic 'Trees' to illustrate the differences between the two approaches.

Topic: Trees

A. Interdisciplinary concepts	**Disciplines**
1. Uses of trees	Medicine, science, social
2. Different kinds of trees	Science, art
3. Cost of a tree	Science, social studies
4. Games related to trees.	Recreation, science, maths
5. Effects of trees on environment	Science, social studies
B. Multi disciplinary: Discipline	**Activities**
Science	Plant a tree near school examine the leaves of different trees, adaption by trees
Social studies	Discussion how trees are used by people. Trees in religion, trees for society.

The interdisciplinary and multi disciplinary modes have relative advantages and disadvantages for employment in school curriculum. These may be related to various aspects such as ease of implementation, teacher's skills, curriculum load, modification in existing evaluation system, extent of coverage etc.

The advantages and disadvantages of inter disciplinary and multi disciplinary modes.

	Inter disciplinary (Separate one subject)	Multi disciplinary (infusion in existing subject)
1. Implementation	Easy to implement as one subject, needs adjustment in the curriculum for this subject, teacher training is easy.	Requires training of more teacher, time requirements less
2. Evaluation	Easy due to one subject	Difficult due to spreading over in all subjects.
3. Curriculum load requirements	Increases an extra subject in the busy curriculum	Does not need extra time, can be adjusted in the existing curriculum.
4. Teacher skills	More extensive training is needed in teaching EE. Teacher traing is less demanding in terms of skills.	Requires teachers of all disciplines to be trained to deal with EE with less extensive training.
5. Effectiveness in teaching for transfer.	More difficult to use for effective transfer.	Teaching for transfer is inherent.

Teaching methods:

a. Lecture method: This is one of the most popular methods of teaching on our schools. This is a teacher structured, and the students are just passive listeners most of the time.

" According to Flanders, N.A." we want to encourage out

pupils to learn to express themselves fluently, yet on average there are two speeches by each pupil each day in class, and mean length of these is 8.4 words."

Advantages: ✤ It is quick, and a lot of knowledge can be imparted in quite a lesser time ✤ It is highly efficient teacher teaches in systematic and logical manner.

Disadvantages: ✤ Developing scientific skills are neglected ✤ Teacher needs a lot prior knowledge to prepare a lecture.

b. Project Method: A project is any purposeful activity in progressive school students is allotted some projects during summer holidays. It may be a curricular or enrichment activity.

Titles of some projects generally given to students are as follows:

a. Indian scientists b. story of wheel c. from earth to moon.

This method involves the steps of scientific method.

1. Problem 2. Hypotheses 3. Experiment 4. Conclusion

Advantages: ✤ It develops understanding ✤ It creates interest in environmental science *It develops abstract and concrete scientific skills.

Limitations: The amount of time consumed by the projects may be so great as to make it impossible to cover a wide variety of topics thus resulting in an incomplete course.

Heuristic method: Heuristic method discovery in Greek. Henry Edward Armstrong was a strong advocate of Heuristic method.

Heuristic method demands that the students should be allowed to stop and think, discusss and suggest modifications for further experiments.

Advantages and disadvantages: Hevristic method develops spirit of enquiry in students, but this method can never be the main method for environmental science teaching. This method is a time consuming process by which students gainless worth while and significant knowledge in more time.

7. Explain the role of I.T and media in environment and human health.

Ans : Role of information technology (I.T) in environment and human health: 21st. century is the century

of development of information technology (I.T) people have named it as "e-seva" which may be correct logically but it is wrong scientifically. We know that information technology related to environment depends upon the following points:

1. Predictions of natural calamities through the use of I.T: Populations in a state or country will be subjected to many natural environmental disasters. Scientists should scan them and know them before hand and predictions are to be given through information technology to people about the possible occurrance of any natural disaster quite before hand through weather satellites which can be put to proper use by I.T. which is a modern subject in which we say our state of A.P is at the top in our country.

2. Dissemination of information about disasters to reach people before hand through the use of I.T. The predictions about any disaster that is about to occur in a short time, in future should be studied well and the information about the forth coming disaster should be informed to all people sufficient before through the use of I.T.

3. To bring about public awareness of environmental disesters through the use of I.T: Whenever any environmental disester occurs, people concerned should prepare to do some activities which will help them that disaster pain will be minimal and to avert maximum damage to people. This can be done through the use of I.T.

4. Let official help the affected people through the use of I.T.

5. Public health hazards made known through I.T.

6. Disease control also should be made known through I.T.

Role of media in environment and human health: Media has a greater role in promoting environment media have a central role to play-especially in promoting environmental awareness and education.

The various media, such as news papers, radio, T.V and the internet have a two-pronged role. The media can make use of new presentation techniques and methods to get the message on the environment across to the public or the decision maker. Also media should use easy, simple terms and hold an optimistic view towards environmental problems.