



SRI KRISHNA ENGINEERING COLLEGE

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DEPARTMENT OF FASHION TECHNOLOGY

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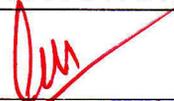
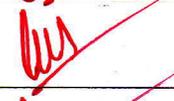
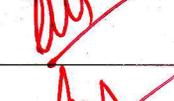
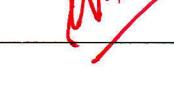
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Geo-Textiles

Geotech segment comprises of technical textile products used in Geotechnical applications pertaining to soil, rock, earth etc.

This class of product is loosely called Geotextiles.

However Geotextiles particularly refers to permeable fabric or synthetic material, woven or non-woven, which can be used with geotechnical engineering material.

The principal functions performed by Geotextiles are

- o Confinement / separation,
- o Reinforcement,
- o Filtration and drainage, and
- o Protection.

PRESENTATION SKILLS

- Applications
- o Slope stabilization and embankment protection,
 - o Tunnels,
 - o Rail-track bed etc.
 - o Ground stabilization,
 - o Marine engineering (soil erosion control and embankment protection, breakwaters etc).
 - o Environmental engineering (landfills and waste management).

Other specialized Geotech products comprise

- o Geogrids – plastic filaments and tapes are formed into a very open, grid like configuration having large apertures
- o Geonets – extruded polymer ribs set in net like fashion with small apertures,
- o Geomembranes – impermeable fabric as barrier and
- o Geocomposites – products using two or more Geotextiles e.g. Pre-fabricated Drains (PVD).

Product characteristics

In general, the greater part of Geotextiles is manufactured from raw materials like polypropylene (PP), polyethylene or polyester which later formed into fabrics based on kind of practice.

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The principal **functions** performed by Geotextiles are

- Confinement /separation,
- Reinforcement,
- Filtration and drainage, and
- Protection.

Application areas include Civil Engineering

- Roads and pavements,
- Slope stabilization and embankment protection,
- Tunnels,
- Rail-track bed stabilization,
- Ground stabilization and drainage etc),
- Marine engineering (soil erosion control and embankment protection, breakwaters) and
- Environmental engineering (landfills and waste management).

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The mechanical and hydraulic properties vary widely depending on type of application designed for.

- Depending on type (woven/non-woven),
- Process (thermal bonded/resin bonded),
- Desired performance specifications (load bearing ability, tear resistance etc),

Geotextiles can range from under 40 GSM to over 3000 GSM which mainly used in landfill end uses.

Geogrids are usually knitted and PVC coated. Products are designed to be resistant to

- Mildew,
- Bacteria,
- Soil acids (pp) and
- Alkalis (pp, pes) and most chemicals.

Apart from the above, Agro based Geotextiles (woven textiles based on Jute, Coir) are also a niche but growing segment. These have the advantage of being bio-degradable as well as being cheaper.

Application areas

The principal functions performed by Geotextiles are

- Confinement /separation,
- Reinforcement,
- Filtration and drainage, and
- Protection.

These functions can be described thus:

Separation:

Separation provides a media between the aggregate and the subsoil which absorbs the load in the form of tension and prevents change in alignment of the aggregate.

Geotextile economically helps the separation concept of keeping two dissimilar materials apart to maximize the physical attributes of each of those materials.

The object of separation by geotextiles is to prevent a well defined material or rich material from penetrating the sub-grade or the poor soil.

If the separating media of geotextiles is absent, the infiltration of the sub-grade

decreases permeability of the aggregate to the point where it cannot adequately transport the water reaching it.

Suitable geotextile fabric with good puncture/tear resistance when used as a separator media - eliminates the loss of costly aggregate material into subsoil, prevents upward pumping of subsoil, eliminates contamination and maintains porosity of different levels.

For separation purposes, both woven / nonwoven geotextiles may be used.

Reinforcement:

The purpose of geotextiles in the reinforcement function is to reinforce the weak sub-grade or subsoil.

It helps to strengthen the soil surface and to increase the soils ability to stay put especially on the slopes. Due to this the slopes are stabilized either permanently or temporarily and creep stops or at least diminishes.

Further, it helps in preventing water from permeating a slope and controlling the amount of infiltration that occurs during various rain events.

Reinforcing aspect of geotextiles can be used for roads, temporary roads, pavements, air strips, stabilized road slopes, retaining walls, containment systems, controlling reflective cracking, fibre or fabric reinforced concrete etc.

Asphalt impregnated geotextile is used as a paving fabric, relieving stress and acting as moisture barrier. For reinforcement synthetic woven fabric or spun-bond is preferred. Reinforcement is further enhanced by use of geo-grids or geo-nets.

Filtration:

The purpose of geotextiles with reference to drainage and filtration is simply to retain soil while allowing the passage of water.

When geotextiles are used as drains, the water flow is within the plane of the geotextile itself i.e., they have high lateral permeability.

At the same time, geotextiles must possess adequate dimensional stability to retain their thickness under pressure.

The life of pavement of highways/air fields etc is affected by the time for which the water remains under the structural section and its drainage system which is responsible for the removal of free water which is fed directly from the stone base course beneath

the structure.

Needle punched nonwoven is the preferred geotextile for such applications where primary requirement is filtration. Drainage: The use of geotextiles in drainage has made significant strides in changing the conventional procedure of using graded filters.

Outstanding advantages of geotextiles in drainage are:

- It eliminates the filter sand with the dual media backfill.
- In some cases, it eliminates the need for perforated pipes.
- In situations where only sand backfill is available, it is possible to wrap the drainage pipe with fabric to act as a screening agent. The fabric, thereby, prevents the sand from entering perforation in the pipe.
- With Geotextiles, trench excavation is considerably reduced.
- Many times the use of geotextiles eliminates the need for trench shoring.

Needle-punched nonwoven geotextile is preferred where drainage is the primary functional requirement.

Protection:

Lining is used for cushioning and protection of membrane used for applications such as land fill and waste containment from puncture or training by sharp stone or stress.

Geotextiles can also be impregnated with polymeric or mineral sealing materials such as bentonite clay to provide flexible barriers to mixture.

Usually spun bond or needle-punched nonwovens are preferred for such applications.

Each of these functions calls for highly specific textile performance characteristics. As the functional requirements are to be met over many years of the life of the civil construction, durability is often a very key requirement. Many applications require several of the above functions to be met simultaneously.

Further, the cost of the geotechnical solution is also an important factor to be taken into account in evaluating solutions.

Segment of Geotech:

The segments of geotech are:

- Geogrid,
- Geonet and
- Geomembrane www.Vidyarthiplus.com

Technology used:

Manufacturing process for Woven products includes Weaving / Knitting and Coating (PVC).

Products can be –

- Woven multi-filament,
- Woven slit-film monofilament and
- Woven slit-film multifilament.

The non-woven Geotextiles can be made from heat bonding or needle-punching.

Geogrids are knitted, while Geonets and Geomembranes are extruded from HDPE.

Environment and Health in India

Introduction

Environmental pollution is one of the serious problems faced by the people in the country, especially in urban areas, which not only experiences a rapid growth of population due to high fertility, low mortality and increasing rural-urban migration, but also industrialization which is accompanied by growing number of vehicles. In India, the rapid increase of human numbers combines with desperate poverty to deplete and pollute local resource bases on which the livelihood of present and future generations depends. Though the relationship is complex, population size and growth tend to expand and accelerate these human impacts on the environment.

According to the World Development Indicators report in 1997, 1.5 billion people live exposed to dangerous levels of air pollution, 1 billion live without clean water and 2 billion live without sanitation. The increase of population has been tending towards alarming situation. The world's population was estimated to be 6.14 billion in mid 2001 and projected 7.82 billion and 9.04 billion in the year 2025 and 2050 respectively. Contribution of India alone to this population was estimated to be 1033 millions in mid 2001 which has been projected 1363 millions and 1628 millions in 2025 and 2050 respectively. (2001 World Population Data Sheet). According to the provisional results of the Census of India 2001, the population of India on 1st March 2001 is 1027 millions. If the world population continues to multiply, the impact on environment could be devastating.

Population impacts on the environment primarily through the use of natural resources and production of wastes and is associated with environmental stresses like biodiversity, air and water pollution and increased pressure on arable land. India is the world's sixth largest and second fastest growing producer of greenhouse gases. Delhi, Mumbai and Chennai are three of the world's ten most populated cities. Two-thirds of city dwellers lack sewerage, one-third lack potable water. India grows equivalent of another New York City every year in its urban population. By the year 2000, more than 350 million Indians will live in cities. In 15 years, more than half of Indians will be urban dwellers; 1/3 will be slum dwellers and squatters (downloaded from [http://www.usaid.gov/in/programareas/ environm.htm](http://www.usaid.gov/in/programareas/environm.htm)).

India is one of the most degraded environment countries in the world and it is paying heavy health and economic price for it. According to a World Bank sponsored study, estimated environmental damage in the year 1992 amounted to about US \$ 10 billion or Rs. 34,000 crores, which is 4.5 % of GDP. Urban air pollution costs India US \$ 1.3 billion a year. Water degradation leads to health costs amounting to US \$ 5.7 million every year,

nearly 60 percent of the total environmental cost. Soil erosion affects 83 to 163 million hectares of land every year. Beside, land degradation leads to productivity loss equal to US \$ 2.4 billion or 4 to 6.3 percent of the agricultural productivity every year (UNDP 1998).

The lack of services such as water supply, sanitation, drainage of storm water, treatment and disposal of waste water, management of solid and hazardous wastes, supply of safe food, water and housing are all unable to keep pace with urban growth. All these in turn lead to an increase in the pollution levels. Also the unplanned location of industries in urban and sub-urban areas followed by traffic congestion, poor housing, poor drainage and garbage accumulation causes serious pollution problems. However, all these factors together not only lead to deteriorating environmental conditions but also have adverse effects on the health of people. The peoples in environment polluted areas are infected by pollution related diseases. Due to air pollution the incidence of respiratory diseases lead to increase and water pollution triggers the number of patients suffering from acute water borne diseases. Hence it have been the main areas of concern for demographers, ecologists, planners and policy makers over the recent past. The present paper is an attempt to examine population growth, increasing urbanization and its influence on the environment and health of the people.

Demographic characteristics of the population of India

India is the second most populous country in the world after China. India supports 16.87 percent of the world's population on its meager 2.4 percent world surface area of 135.79 million square kms. The selected demographic characteristics of the population of India are presented in Table 1. At the time of independence country's population was 342 million. The country's population size had grown from 361 million in 1951 to around 846 million in 1991 and 1027 million in 2001. The population of India almost trippled during the period of 1951-2001. The phenomenal increase in the population during the last fifty years has led to rapid industrialization and high rate of urbanization which have created tremendous pressure on natural resources like land, air and water. The urban population has increased three and half times, from 62.4 million in 1951 to 217.6 million in 1991 and it again increased to 288 million in 2001. The percentage of urban population increased from 17.28 percent in 1951 to 23.33 percent in 1981, 25.71 percent in 1991 and which further increased to 28 percent in 2001. The decadal growth rates of the population are irregular, as it increased from 13.31 percent in 1951 to 24.8 percent in 1971 and afterwards it marginally declined to 24.7 percent in 1981, 23.9 percent in 1991 and 21.34 percent in 2001. The urban growth lead to an increase in the pollution levels and exposes population to serious environmental health hazards. Environmental pollution in urban areas is associated with excessive morbidity and mortality. Overcrowding and inadequate housing contribute to pollution related diseases such as respiratory diseases, acute water borne diseases, tuberculosis, meningitis and various other diseases. Lack of opportunities for gainful employment in villages and the ecological stresses is leading to an ever-increasing movement of poor families to towns. Mega cities are emerging and urban slums are expanding. There has been three and half times increase in urban population

over 1951-1991. During the past two decades of 1971-91, India's urban population has doubled from 109 million to 218 million and is estimated to reach 300 million by 2000 AD. Such rapid and unplanned expansion of cities has resulted in degradation of urban environment. It has widened the gap between demand and supply of infrastructure services such as energy, housing, transport, communication, education, water supply and sewerage and recreational activities, thus depleted the precious scarce environmental resource base of the cities. The result is the growing trend in air and water quality, generation of wastes, and the proliferation of slums and undesirable land use changes, all of which contribute to urban poverty.

Poverty is said to be both cause and effect of environment degradation. The poor people, who rely on natural resources more than the rich, deplete natural resources faster as they have no real prospects of gaining access to other types of resources. Poorer people, who cannot meet their subsistence needs through purchase, are forced to use common property resources such as forests for food and fuel, pastures for fodder, and ponds and rivers for water. Clean drinking water facility through taps is available to only 35 percent of urban households and 18 percent of rural households in India. Other residents use unsafe water sources like wells, ponds and rivers. Population pressure driven overexploitation of the surface and underground water resources by the poor has resulted into contamination and exhaustion of the water resources. Urban population is also using rivers to dispose of untreated sewage and industrial effluent. The result is that health of those dependents on untreated water resources is increasing at risk. In the absence of capital resources, the poor are directly dependent on natural resources. Moreover degraded environment can accelerate the process of impoverishment, again because the poor depend directly on natural assets. Although there has been significant drop in the poverty ratio in the country from 55 percent in 1973 to 36 percent in 1993-94, the absolute number of poor have, however, remained constant at around 320 million over the years. Acceleration in poverty alleviation is imperative to break this link between poverty and the environment. The poverty and rapid population growth are found to coexist and thus seems to reinforcing each other. It also contributes to environmental degradation through over exploitation of natural resources like land, air and water. The deterioration of natural resources and unsafe living conditions affects the environment and health of the poor people.

Deforestation

Forests are an important natural resource of India. They have moderate influence against floods and thus they protect the soil erosion. Forests also play an important role in enhancing the quality of environment by influencing the ecological balance and life support system (checking soil erosion, maintaining soil fertility, conserving water, regulating water cycles and floods, balancing carbon dioxide and oxygen content in atmosphere etc. India has a forest cover of 76.52 million square kms. of recorded forest area, while only 63.34 million square kms. can be classified as actual forest cover. This accounts for 23.28 percent of total geographic area against 33 percent recommended

by National Forest Policy of 1988. Per capita availability of forests in India is much lower than the world average. In the year 1997, as compared to 1993, the total forest cover has decreased by 6710 Sq. Kms. The states, which have shown significant decline in the forest covers, are Andhra Pradesh and Madhya Pradesh. Whereas the states of Gujrat, Maharashtra, Rajasthan and West Bengal have shown an increase in forest cover (Table 2).

In 1981-83, only 11.2 percent of country's total land area, comprises dense forest with a crown density of more than 40 percent, thus reflecting a qualitative decline of forests in the country. The total forest area diverted for non-forestry purposes between 1950 and 1980 was 4.5 million hectares i.e. at an annual rate of 0.15 million hectare. To regulate unabated diversion of forestland for non-forestry purposes, Forest (Conservation) Act, 1980 was enacted. It has resulted in reduction of diversion of forest area for non-forestry purposes considerably and the present rate of diversion is 16,000 hectare annually (Economic Survey of India, 1998-99). Continuing deforestation, therefore, has brought us face to face with a major ecological and socio-economic crisis.

Land/Soil degradation

Direct impacts of agricultural development on the environment arise from farming activities, which contribute to soil erosion, land salination and loss of nutrients. The spread of green revolution has been accompanied by over exploitation of land and water resources and use of fertilizers and pesticides and fertilizers have increased many folds. Shifting cultivation has also been an important cause of land degradation. Leaching from extensive use of pesticides and fertilizers is an important source of contamination of water bodies. Intensive agriculture and irrigation contribute to land degradation particularly salination, alkalization and water logging. It is evident that most of the land in the country is degrading, thus affecting the productive resource base of the economy. Out of the total geographical area of 328.7 million hectares, 175 million hectares are considered to be land-degraded area (Table 3). Water and wind erosion is the major contributor of 141.3 million hectares to soil erosion, with other factors like water logging 8.5 million hectares, alkali soil 3.6 million hectares, acid soil 4.5 million hectares, saline soil including coastal sandy areas 5.5 million hectares adding to the situ degradation. While soil erosion by rain and river in hill areas causes landslides and floods, deforestation, overgrazing, traditional agricultural practices, mining and incorrect siting of development projects in forest areas have resulted in opening up of these areas to heavy soil erosion. Ravines and gullies reported 4 million hectares, area subject to shifting cultivation reported 4.9 million hectares and riverine and torrents erosion due to floods and eutrophication due to agricultural run off reported 2.7 million hectares. The increasing intensification and extensification also results in salination, alkalization and water logging in irrigated areas of the country. For achieving and maintaining food security, sustainable forestry agricultural and rural developments controlling of land/soil erosion is very much necessary.

Environmental pollution

The term Environmental Pollution refers to ways by which people pollute their surroundings, air with gases and smoke, poison the water with chemicals and other substances, and damage the soil with too many fertilizers and pesticides. Also pollute the surroundings in various other ways. Environmental degradation is a result of the dynamic interplay of socio-economic, institutional and technological activities. Environmental changes may be driven by many factors including economic growth, population growth, urbanization, intensification of agriculture, rising energy use and transportation. Poverty still remains a problem at the root of several environmental problems. The pollution is widespread in the country and can be broadly categorized as flux type of pollution and sink type of pollution. The former refers to the pollutants dumped into the environment, either to air or in water; while the later is caused by accumulation either in soil or riverbed or also in ground water. In this paper an attempt has been made to study air and water pollution, which pose more threat to urban life.

Air pollution

The World Health Organization (WHO) defines air pollution as "substances put into the air by the activity of mankind into concentrations sufficient to cause harmful effects to health, property, crop yield or to interfere with the enjoyment of property". Some of the most important air pollutants are suspended particulate matter (SPM), nitrogen oxides (NO_x), carbon monoxide (CO), lead, sulphur dioxide (SO_2) etc. (Table 4). The urban air pollution has grown across India in the last decade is alarming. The main factors accounts to urban air quality deterioration are growing industrialization and increasing vehicular pollution, industrial emissions, automobile exhaust and the burning of fossil fuels kills thousands and lives many more to suffer mainly from respiratory damage, heart and lung diseases. According to a pollution related studies in the community and patients at the K.E.M. Hospital, Mumbai over the last twenty years have evaluated the full extent of the correlation and damage to human health (Kamat and Mahasur, 1997). According to a study, 84,000 deaths were directly attributable to outdoor air pollution in Indian cities (WHO, 1996). At the same time, indoor air pollution accounted for 496,000 deaths in villages and 93,000 deaths in cities (WHO, 1997). It is found that the area around RSP village, Jharia ranks fifth and FCI (Fertilizer Corporation of India) Hospital, Sindri ranks eighth among the top ten locations with highest annual mean concentrations of Nitrogen Oxides (NO_x), having 54 and 46 micro grams per cubic meters respectively. Apart from this, the suspended particulate matter (SPM) level in RSP College, Jharia is the fourth highest in India (Anon 1995). A study conducted by Center for Science and Environment from 1987 to 1998, to understand the trend of air pollution in Delhi based on three major pollutants: sulphur dioxide, nitrogen oxide and SPM. It shows an increasing trend, though fluctuations are noticed in terms of annual maximum levels. According to the studies conducted by Center for Science and Environment, total SPM levels are not only always above the standard but there are days when they have reached nearly seven times the standard. A World Bank

study conducted in 1995 revealed that if the air pollution is controlled in Calcutta according to the guidelines of World Health Organization (WHO), lives of 5726 persons may be saved from premature death and of 30 lakhs people may also to be saved to be admitted to hospital.

Vehicular pollution

Transport activities have a wide variety of effects on the environment such as air pollution, noise from road traffic. Transport infrastructure in India has expanded considerably in terms of network and services. Thus road transport accounts for a major share of air pollution load in mega cities. In most urban areas of India, air pollution has worsened due to traffic congestion, poor housing, poor sanitation and drainage and garbage accumulation. The environmental effects of fuels like oil and petroleum products are of growing concern owing to increasing consumption levels. The combustion of these fuels in vehicles has been a major source of pollution. With the increasing vehicles in country, the vehicular pollution has also increased and it accounts for a considerable share of vehicular pollution in India. The different factors are the types of engines used, the age of the vehicles, poor road conditions and congested traffic. They add to air pollution in cities, which is a major cause of respiratory diseases. The principal vehicular pollutants are Carbon Monoxide, Oxides of Nitrogen, Hydrocarbons, suspended particulate matters, a varying amount of Sulphur Dioxide depending on the Sulphur content of the fuel and lead compounds.. Table 5 presents the registered motor vehicles in India during 1950-51 to 1995-96. The total number of registered vehicles in India has increased from 3 million in 1950-51 to more than 33 million in 1995-96, of which about 28 percent are concentrated in the 23 metropolitan cities of India (Motor Transport Statistics of India, 1997). The number of registered two wheelers rose from just 0.27 million in 1950-51 to more than 231 million in 1991. The number of cars, jeeps and taxis also registered an increase from 1.59 million in 1950-51 to 41.89 million in 1991. The number of registered trucks and buses also registered an increase from 0.82 million in 1950-51 to 17.85 million in 1991 and 0.34 million in 1950-51 to more than 4.49 million in 1991 respectively. The major share is contributed by metropolitan cities in all registered vehicles in the country. An increase in vehicular pollution is associated with a number of environmental problems like air pollution and global warming. Technical pollution parameters suggest that two wheelers are more polluting as compared to other motor vehicles. Carbon Monoxide, Oxides of Nitrogen, Hydrocarbons, suspended and particulate matters, a varying amount of Sulphur Dioxide depending on the Sulphur content of the fuel and lead compounds are the major vehicular pollutants.

As a result of urbanization in India, pressure on urban transport is likely to increase substantially in this new millennium. It has been attempted to evaluate the future transport scenario to forecast the vehicle air pollution levels. Following are some of the points of due consideration:www.Vidyarthiplus.com

- India is expected to have 31 metro cities by 2001 and 51 by 2021.
- The number of vehicles on Indian roads is estimated to increase by nine times by the tune of the century out of which 65 % to 70 % shall be two wheelers or three wheelers.
- Urban transport demand is expected to grow by 2.6 times by 2016 at the existing model split in larger medium sized cities.
- At the existing model split, the urban air quality is expected to deteriorate faster in the 21st century, as two-wheeler population would be as high as 86.13 % of the total vehicles used for passenger transportation.
- By the year 2001, CO emission levels are likely to rise seven times and that of hydrocarbons by nine times. The levels of other major pollutants are expected to go up five fold (Luthra, 1999)

Pollution from energy production and consumption in India

The environmental effects due to increasing consumption levels of fuels like coal, lignite, oil and nuclear etc. are of growing concern to various researchers. The combustion of these fuels in industries has been a major source of pollution. Coal production through open cast mining; its supply to and consumption in power stations and industrial boilers leads to particulate and gaseous pollution which can cause pneumoconiosis, bronchitis and respiratory diseases. The energy production/ consumption in India during 1950-51 to 1995-96 is depicted in Table 6. Energy production and consumption has increased steadily in India since 1950 onwards. The production of coal and lignite has increased from 32.2 million tons in 1950-51 to 292.27 million tons in 1995-96, an increase of more than 9 times. The production of petroleum products registered an increase of more than 22 times, from 3.3 million tons in 1950-51 to 74.7 million tons in 1995-96. The bulk of commercial energy comes from the burning of fossil fuels viz. coal and lignite in solid form, petroleum in liquid form and gas in gaseous form. In addition to emission of greenhouse gases, the burning of fossil fuels has led to several ecological problems and associated with health problems like cancer risk, respiratory diseases and other health problems. Burning of traditional fuel adds a large amount of carbon-di-oxide into atmosphere and increases air pollution. The production of electricity has increased from 5 billion KWH in 1950-51 to about 380 billion KWH in 1995-96. The shares of thermal power and hydropower changed substantially. The share of thermal power has increased from 51 percent in 1950-51 to about 79 percent in 1995-96 whereas the share of hydropower declined from 49 percent in 1950-51 to 19 percent in 1995-96. The share of nuclear power is nominal. This clearly indicates that burning of fossil fuels, especially coals, emits lot of carbon di oxide in the atmosphere and leads to global warming. The per capita commercial energy use in India has increased from 137 Kg of oil equivalent in 1980 to 248 Kg of oil equivalent in 1994 and it again increased to 476 Kg of oil equivalent in 1996 (World Development Indicators, 1997). The energy consumption in India would be quite high and thus stricter commands and controls, technical innovations and application of

efficient pollution abatement technology for vehicular and industrial air pollution could help in reduction of atmospheric pollution. A considerable amount of air pollution results from burning of fossil fuels. Moreover the resources for fossil fuels are also limited thus exploration of alternate energy resources would provide the way out. Thus increased population and increased per capita commercial energy use would worsen the national as well as global atmospheric pollution.

An automobile exhaust accounts a sizable part of pollution. Their effect on human health is particularly of concern. There is a strong correlation between average blood lead levels and the lead content in gasoline. Hydrocarbons present in the exhaust, particularly, in vehicles with poor combustion cause respiratory problems. Table 7 shows estimated annual episodes of illness and premature deaths due to ambient SPM in the air in four largest cities of India. It can be inferred from the table that both, the illness and premature deaths have risen significantly in less than five years. About 15 to 18 million children in developing countries are affected by high levels of lead in their blood, which could be the result of emissions from vehicle exhaust and are likely to suffer from related illness (Kapoor, 1997).

Water pollution

Water is among the most essential requisites that nature has provided to sustain life on earth. About 80% of earth's surface are covered by water. The deteriorating quality of water is creating various problems for the mankind. The growth in population, about 90 percent of which will occur in urban areas, will also increase the demand for water for domestic and industrial use and treatment of wastes. Water pollution from domestic and human wastewater is the main cause for much severe water borne diseases. The industrial water pollution is due to inadequate measures adopted in the industry for the abatement of pollution. Inadequate disposal of urban waste and open dumping of garbage contaminates surface and ground water.

Water and sanitation services are basic necessities of a community and are most essential conditions for development, as they play an important role in improving health and quality of life. Inadequate water and sanitation coverage is one of the most serious environmental problems (Sumeet, p 123). It has been estimated that 80 percent of the diseases in the world are associated with water usage or poor environmental hygiene (Sumeet p. xvii). In India, water pollution comes from three main sources: domestic sewage, industrial effluents and run-off from activities such as agriculture. The large scale use of pesticides may have revolutionized food production, but these chemicals are responsible for more than 2 million human poisonings every year with a resultant 20,000 deaths (WHO, 1986).

Polluting a river is dangerous because generally, rivers are the primary source of drinking water for towns and cities downstream of the point of pollution. Broadly, the causes of water pollution can be attributed to:

- Urbanization
- Industrialization
- Withdrawal of wastes
- Agricultural run-off and improper agricultural practices
- Religious and social practices

According to the scientists at the National Environmental Engineering and Research Institute, a staggering 70% of the available water in India is polluted. Only five states, Maharashtra, Gujrat, Delhi, Uttar Pradesh and West Bengal, generate more than 63% of the total waste water in India as they lack treatment facilities (Down to Earth, July 15, p.19). Sewage generated from 25 heavy polluting cities and towns account for about 75 percent of the pollution load in the river. The Yamuna with 200 million litres of untreated muck being dumped in it everyday by Delhi's Sewerage System has become one of the most polluted rivers in the world (Down to Earth, June 30, 2000, p.55).

The increasing river water pollution is the biggest threat to public health. The diseases commonly caused due to polluted water are cholera, diarrhoea, hepatitis, typhoid amoebic and bacillary, dysentery, guineaworm, whereas scabies, leprosy, trachoma and conjucvitis are some of the diseases associated with water scarcity. All these could be attributed to the rapidly increasing population and lack of water resources. Inadequate access to safe drinking water and sanitation facilities leads to higher infant mortality and intestinal diseases. More than one million children died due to diarrhoea and other gastrointestinal disorders in 1990s. In addition, around 90 lakh cases of acute diarrhoeal diseases have been reported in India, Uttar Pradesh reporting the highest number of cases (Central Bureau of Health Investigation, 1996). It is estimated that 73 million workdays are lost every year due to water related diseases. The cost of treating them and the loss in production amount to Rs. 600 crores a year (Citizen's Report, 1982).

Summary and conclusions

Rapid population growth continues to be a matter of concern for the country as it has manifold effects, one of the most important being environment degradation. The outcomes of excessive population are industrialization and urbanization. The study reveals that rapid population growth has led to the overexploitation of natural resources. The deforestation has led to the shrinking of forest cover, which eventually affects human health. The considerable magnitude of air pollution in the country also pulls up the number of people suffering from respiratory diseases and many a times leading to deaths and serious health hazards. The situation is also similar for water pollution, as both ground water and surface water contamination leads to various water borne diseases. From the various effects of environmental degradation on human beings, discussed in this paper, it appears that if human beings want to exist on earth, there is now high time to give top priority to control pollution of all types for a healthy living. It

can be said that even after fifty years of independence, India is unable to achieve the desirable standards of health for its population as consequences of environment degradation.

There is a need to control population growth in the country. Special efforts should be made for educating the general mass and local leaders about the adverse effects of large population through specially designed IEC (Information, Education and Communication) activities. In order to increase green cover and to preserve the existing forests, afforestation and social forestry programmes should be implemented at the local level. Further, measures to control air pollution should be intensified throughout the country. Wastewater treatment plants be established in accordance with the need of time and its usage should be encouraged. The heavy penalty should be imposed on industries disposing off the wastes into the river. Moreover, the landfills are to be properly managed to prevent ground water contamination. Since slums are one of the major sources of water pollution proper measures should be taken to facilitate the slums with water and sanitation facilities. More emphasis should be laid on compulsory environmental education at the school level in order to make people aware of the environment protection. The environment protection should not be a responsibility of government alone but mass and local leaders should be encouraged to make dedicated efforts to eradicate the environmental problems.

To sum up, it may be emphasized that the environment is neither a free gift of environmental goods and services, nor it can be thought of as just a sink for depositing of waste products from houses, industries and other sources. It is the need of time to protect environment for the present and future generation.

Ex. no: 2

Date : 21/7/11

GAP FILLING

AUDIO TRANSCRIPT:

QUESTIONS:

Game theory has found its application in numerous fields such as economics, social science, political science and evolutionary biology. Game theory is now finding its applications in computer science. The nature of computing is changing because of success of internet and revolution in information technology. The advancement in technologies has made it possible to commoditize the components such as network computing, storage and software. In the new paradigm, there are multiple entities that work on behalf of different autonomous bodies and provide services to other similar entities. Internet has made it possible for many such as geographically distributed autonomous entities to interact with each other and provide various services.

LISTENING COMPREHENSION

Game theory has found its applications in numerous fields such as economics, social science, political science and evolutionary biology. Game theory is now finding its applications in computer science. The nature of computing is changing because of success of internet and revolution in information technology. The advancement in technologies has made it possible to commoditize the components such as network computing, storage and software. In the new paradigm, there are multiple entities that work on behalf of different autonomous bodies and provide services to other similar entities. Internet has made it possible for many such as geographically distributed autonomous entities to interact with each other and provide various services.

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ANSWERS:

Game theory has found its applications in numerous fields such as economics, social science, political science and evolutionary biology. Game theory is now finding its applications in computer science. The nature of computing is changing because of success of internet and revolution in information technology. The advancement in technologies has made it possible to commoditize the components such as network computing, storage and software. In the new paradigm, there are multiple entities that work on behalf of different autonomous bodies and provide services to other similar entities. Internet has made it possible for many such as geographically distributed autonomous entities to interact with each other and provide various services.

TRUE/FALSE

AUDIO TRANSCRIPT:

QUESTION:

The stratosphere the layer of our atmosphere just above the one we breathe includes a thin layer of ozone. This is thicker over the poles than the equator. Ozone protects us from the sun by interacting with the light. When ultra-violet light hits oxygen molecules in stratosphere, it splits the molecules into two combine to make ozone. Ultra-violet light also breaks ozone back down into an oxygen molecule and an oxygen atom.

LISTEN TO THE PASSAGE AND INDICATE WHETHER THE GIVEN STATEMENTS IS TRUE OR FALSE BY CLICKING ON THE APPROPRIATE OPTION:

ANSWERS:

1. This stratosphere layer is thicker over the poles than the equator.
(TRUE/FALSE)
2. Thin layer between the air we breathe and the stratosphere is called ozone.
(TURE/FALSE)
3. Stratosphere when interact with ultra-violet light it produces ozone.
(TRUE/FALSE)
4. UV-light combines oxygen molecules and oxygen atom into molecule.
(TRUE/FALSE)
5. Oxygen protects us from direct sunlight.
(TRUE/FALSE)

MULTIPLE CHOICES

AUDIO TRANSCRIPT: INCREDIBLE INSECTS

QUESTIONS:

All of us, at some time or the other, have paused to look at ants laboriously carrying burdens several times their weights! What is more, they move these loads over long distances and even climb trees while carrying more than their fair share!

Imagine this: a slim weighing 50kg lifting a small car, carrying it on her back for 15km and then climbing a hill, still carrying the car! That is the kind of load ants carry. Small wonder that we associate 'work' with ants.

The scientific study of these fascinating creatures is called myrmecology. Ants are social insects. They inhabit colonies called nests and carry out complicated tasks. They clean, groom and feed each other. Just like people-especially those who are in power-especially those who are in power-favor relatives and friends, ants are known to be nepotism too.

As social creatures, ants need to identify their own mates from non-nest. They do this by recognizing the odor that estimates from their nest mates, which is different from that give off by non-nest mates.

Ants have hierarchies comprising forager ants, workers and queens-each has a well defined role to play in the colony. They strictly adhere to their social structure.

ANSWERS:

LISTEN TO THE PASSAGE AND ANSWER THE QUESTION BY CLICKING ON THE APPROPRIATE OPTION:

1. According to the passage, ants can carry objects up to

- **50 times their weight.**
- 100 times their weight.
- 1000 times their weight.

2. To emphasize the ants capability of carrying loads, the writer of this passage gives an apology of a

- **Slim women weighting the 50kg, lifting a small car and climbing a hill with it.**
- Slim woman weighting 50kg, who drives about 15km and climbs a hill.
- Woman who climbs a hill to get a car.

3. The scientific study of an ants is called

- Myrmecotology.
- **Myrmecology.**
- Miermecology.

4. According to the passage, ants recognize their mates by

- **Their odor.**
- Their color.
- Their size.

5. ants clean, groom, feed each other and have been known to show

- Communism.
- **Nepotism.**
- Culturalism.

6. As social creatures, ants need to identify their own _____ from non-nest mates.

- **Nest mates.**
- Friends.
- Neighbors.

7. Ants have hierarchies comprising.

Date: 5/8/11

- Workers, nest mates, queens.
- **Forager ants, workers, queens.**
- Queens, servants, leaders.

8. They strictly adhere to their.

- Social responsibility.
- **Social structure.**
- Social accountability.

9. The odor of the same nest mates and non-nest mates is

- **Unlike.**
- Same.
- Alike.

10. Each ant has a _____ role to play in the colony.

- Equality.
- **Well defined.**
- Ambiguous.

READING
COMPREHENSION

Ex. no: 3

Date : 5/8/11

India Wildlife information with Wildlife adventures

There is good news for all wildlife adventurers, ornithologist and nature lovers. Tour My India, a leading tour operating company in India renewed its wildlife portal - IndiaWildliferesorts.com with new, attractive, more informative and unique presentation.

It has been a great achievement for Tour My India to present the India wildlife resorts (<http://www.indiawildliferesorts.com>) with such a unique presentation after a lot of brainstorming, planning and strategy formulation by industry leaders and travel experts. It needed a lot of research work on India wildlife, national parks, wildlife sanctuaries, bird sanctuaries for accumulating information on wild animals, migratory birds, mammals, reptiles that are rare to be found elsewhere and presenting all the collected information on the wildlife portal.

The site is categorized in 3 main areas - one for wildlife information including national parks, wildlife sanctuaries and bird sanctuaries, other two for wildlife resorts and wildlife tour packages.

"We are glad that we have been able to represent the wildlife heritage of India in the best possible way to make it informative and useful for our clients and all the adventure and travel enthusiasts from all over the world," says the Managing Director, Tour My India.

Wildlife Information:

It is the main attraction of the site with information including general information of the park, map etc of park or sanctuary and travel assistance.

Wildlife Resorts:

Wildlife Resorts is another main section of the site which includes all the information about resorts and hotels available along with their photo galleries where one can visualize the incredible resort locations, room facilities and much more.

Wildlife Tour Packages:

It is the biggest section of TMI which provides more than 100 wildlife tour packages which covers tours at almost all national parks, wildlife sanctuaries and Bird sanctuaries in India. The wildlife packages are designed keeping in mind the interests of wildlife enthusiasts, nature lovers, and corporate groups.

If you are wildlife enthusiasts then wildlife tour packages, tiger tour packages, wildlife safari tours are best for you. If you are ornithologist then bird watching tour packages, wildlife safari tours, wildlife packages are more suitable to you.

For corporate tours, weekend tour packages, fixed departure tours, wildlife packages around major cities flexible with trip date and time duration would be more suitable.

India Wildlife information with Wildlife adventures

Here is good news for all wildlife adventurers, ornithologist and nature lovers. Tour My India, a leading tour operating company in India renewed its wildlife portal – IndiaWildliferesorts.com with new, attractive, more informative and unique presentation.

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The site is categorized in 3 main areas – one for wildlife information including national parks, wildlife sanctuaries and bird sanctuaries, other two for wildlife resorts and wildlife tour packages.

“We are glad that we have been able to represent the wildlife heritage of India in the best possible way to make it informative and useful for our clients and all the adventure and travel enthusiasts from all over the world. “, says the Managing Director, Tour My India.

Wildlife Information:

It is the main attraction of the site with information including general information of the particular national parks and sanctuaries with the respective wild animals, birds, resorts and other accommodation facilities available there along with the tour and travel info and tour packages. Those who are planning for wildlife tours can get information about how to reach, geographical map etc of park or sanctuary and travel assistance.

Wildlife Resorts:

Wildlife Resorts is another main section of the site which includes all the information about resorts and hotels available along with their photo galleries where one can visualize the incredible resort locations, room facilities and much more.

Wildlife Tour Packages:

It is the biggest section of IWR which provides more than 100 wildlife tour packages which covers tours at almost all national parks, wildlife sanctuaries and bird sanctuaries in India. The wildlife packages are designed keeping in mind the interests of wildlife enthusiasts, nature lovers, and corporate groups.

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Ex. no: 4
Date : 27/8/11

ARRANGE THE FOLLOWING SENTENCE IN CORRECT SEQUENCE

QUESTIONS:

- > Fiction is the term used to describe novels, short stories, classics and popular pleasure reading.
- > Though they cannot be borrowed from the library, the readers can refer this books in a reading room set aside for this purpose.
- > Non-fiction describes technical and factual works and books which cover events and things that exist in reality.
- Most public and general libraries have three main areas - fiction, non-fiction and reference.
- > Reference books are simply non-fiction books of a kind, which includes encyclopedias and dictionaries.

ANSWERS:

**SEQUENCE
OF
SENTENCE**

1. Most public and general libraries have three main areas - fiction, non-fiction and reference.
2. Fiction is the term used to describe novels, short stories, classics and popular pleasure reading.
3. Non-fiction describes technical and factual works and books which cover event and things that exist in reality.
4. Reference books are simply non-fiction books of a kind, which includes encyclopedias and dictionaries.
5. Though they cannot be borrowed from the library, the readers can refer these books in a reading room set aside for this purpose.

***ARRANGE THE FOLLOWING SENTENCE IN CORRECT
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ANSWERS:

1. Most public and general libraries have three main areas-fictions, non-fiction and reference.
2. Fiction is the term used to describe novels, short stories, classics and popular pleasure reading.
3. Non-fiction describes technical and factual works and books which cover event and things that exist in reality.
4. Reference books are simply non-fiction books of a kind, which includes encyclopedias and dictionaries.
5. Though they cannot be borrowed from the library, the readers can refer these books in a reading room set aside for this purpose.

Ex. no:

5

Date :

2/9/11

COMMON ERRORS IN ENGLISH

From the following pairs of sentences identify the grammatically correct sentence:

1. He is not only known for his wealth but also for his wisdom.
✓ He is not only for his wealth but also for his wisdom.

2. She not only lost her ticket but also her suitcase.
✓ She lost not only her ticket but also her suitcase.

3. Please meet the concerned officer.
Please meet the officer concerned.

4. The students of my college are better than your college.
✓ The students of my college are better than those of your college.

5. Last night, the criminal has been arrested.
✓ Last night, the criminal was arrested.

6. Students should avoid.
✓ Students should avoid.

7. Please excuse me being late.
✓ Please excuse my being late.

8. He removed his coat and hanged it on a nail.
✓ He removed his coat and hung it on a nail.

9. The computer monitor with its accessories have been received.
✓ The computer monitor with its accessories has been received.

10. The broken windows has repairs already.
✓ The broken windows have been repaired already.

ERRORS IN ENGLISH

COMMON ERRORS IN ENGLISH

From the following pairs of sentences identify the grammatically correct sentence:

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✓ He is not only for his wealth but also for his wisdom.

2. She not only lost her ticket but also her suitcase.
✓ She lost not only her ticket but also her suitcase.

3. Please meet the concerned officer.
✓ Please meet the officer concerned.

4. The students of my college are better than your college.
✓ The students of my college are better than those of your college.

5. Last night, the criminal has been arrested.
✓ Last night, the criminal was arrested.

6. Students should avail the transport facility.
✓ Students should avail themselves of the transport facility.

7. Please excuse me being late.
✓ Please excuse my being late.

8. He removed his coat and hanged it on a nail.
✓ He removed his coat and hung it on a nail.

9. The computer monitor with its accessories have been received.
✓ The computer monitor with its accessories has been received.

10. The broken windows has repairs already.
✓ The broken windows have been repaired already

RESUME

Ex. no: 6

Date : 9/9/11

VELLATTUMANGALAM
EGANIVAYAL(PO)
ARANTHANGI(TW)
PUDUKOTTAR(DT)-614616
contact no:9047564463

E-Mail id: ramarejan14@gmail.com

Seeking a challenging career to enhance my skills and personal growth in conjunction with the organization's goals/objectives

RESUME

• Word, Excel, power point, photo shop, page maker

• Merchandising, Production area, fashion designer.

• Carrom
• Volley ball

RESUME

A.RAMARAJAN

VELLATTUMANGALAM
EGANIVAYAL(PO)
ARANTHANGI(TK)
PUDUKOTTAI(DT)-614616
contact no:9047564463

E-Mail id: ramarajan24@gmail.com

Career Objective

Seeking a challenging career to enhance my skills and personal growth in conjunction with the organization's goals objectives.

Scholastic Details

Qualifying Exam	Instituion	Aggregate
SSLC	Gov.Hsc.school Nagudi	69%
HSC	Gov boys Hsc school, Aranthangi	72%
DTT	Annamalai polytechnic college chettinad	79%
B.tech	Sri Krishna engg college chennai.	Up to 4 th sem 81%

Computer knowledge

- Word, Excel, power point, photo shop,page makker

Area of Interest

- Mercentizing, Production area, fashion designer.

Extra curricular activities

- Carrrom
- Volley ball

Working experiance

1year in garment production

Project Work

- Coat is produced to denim cloth

Personal Details

Father's Name : s.annadurai
Age : 23
Sex : Male
Date of Birth :30.04.1988
Hobbies : Playing cricket, Hearing Music
Nationality : Indian
Languages Known : English , Tamil.

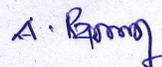
Declaration

I here by confirm that the foregoing information is correct to be best of my knowledge and belief.

Date : 9/9/11

Place : Chennai.

yours faithfully,


(A.RAMARAJAN)