

## **B.Tech.**

First Semester Examination, 2010-2011

### **Essentials of Communication (HUM-101-F)**

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**Note :** Attempt five questions in all, including question number 1 which is compulsory. All questions carry equal marks.

**Q. 1. (a) Give synonyms of :**

(i) **Amazing**

(ii) **Enthusiastic**

**Ans. (i) Amazing : Awesome**

(ii) **Enthusiastic : Eager.**

**Q. 1. (b) Give antonyms of :**

(i) **Steadfast**

(ii) **Bold**

**Ans. (i) Steadfast : Capricious**

(ii) **Bold : Fearful**

**Q. 1. (c) Make a word using the following prefix :**

(i) **Ambi-**

(ii) **Mono-**

**Ans. (i) Ambi- : Ambiguity**

(ii) **Mono- : Monochrome**

**Q. 1. (d) Make a word using the following suffix :**

(i) **-hood**

(ii) **-ment**

**Ans. (i) -hood : Childhood**

(ii) **-ment : Punishment**

**Q. 1. (e) Give the noun form for :**

(i) **Kind**

(ii) **Happy**

**Ans. (i) Kind : Kindness**

(ii) **Happy : Happiness**

**Q. 1. (f) Give the adjective form for :**

(i) **Child**

(ii) **Innocence**

**Ans. (i) Child : Children**

(ii) **Innocence : Innocent**

**Q. 1. (g) Transcribe the words :**

(i) **Tube**

(ii) **Tub**

**Ans. (i) Tube : /tu:bb/**

(ii) **Tub : /tʌb/**

**Q. 1. (h) Describe the working of a drawing room 'Hukkah' in four lines.**

**Ans.** There are four primary parts of a drawing room 'Hukkah'. They are the bowl, the hose, the purge valve, the water jar. The mouth piece of the hose is used to apply an inhalation force. This act causes the, air

above the charcoal to get sucked inside. It becomes hot, enters into the tobacco held in the bowl and vaporizes the tobacco, producing smoke.

**Q. 1. (i) What is meant by an experiment? Explain in four lines.**

**Ans. Experiment :** Special observation, made to confirm or disprove something doubtful; esp., one under conditions determined by the experimenter; an act or operation undertaken in order to discover some unknown principle or effect or to test establish or illustrate some suggest or known truth; practical test; proof.

**Q. 1. (j) Justify the title 'The Mushroom of Death' in four lines.**

**Ans.** "The Mushroom of Death" is a poem written by Zophirus. This reminds that how night time is a dangerous time. This world is wrong and these tiny little things that are so tiny and seemingly insignificant but grow into "new Mushrooms every day"—it really strengthens the idea of little dark secrets being spread around to turn all the people.

**Q. 2. (a) Give synonyms of all five :**

- |              |              |
|--------------|--------------|
| (i) Novel    | (ii) Ancient |
| (iii) Placid | (iv) Rigid   |
| (v) Opponent |              |

**Ans.** (i) Novel : New  
(ii) Ancient : Old  
(iii) Placid : Quiet  
(iv) Rigid : Stiff  
(v) Opponent : Adversary

**Q. 2. (b) Give antonyms of :**

- |                  |             |
|------------------|-------------|
| (i) Rage         | (ii) Expert |
| (iii) Optimistic | (iv) Hope   |
| (v) Firm         |             |

**Ans.** (i) Rage : Happiness  
(ii) Expert : Untrained  
(iii) Optimistic : Pessimistic  
(iv) Hope : Despair  
(v) Firm : Flexible

**Q. 2. (c) Differentiate between the pairs by using in sentences :**

- |                         |
|-------------------------|
| (i) Historic–historical |
| (ii) Jealous–zealous    |

**Ans.** (i) **Historic :** Red fort has its historic importance.  
**Historical :** New Delhi is famous for historical monuments.  
(ii) **Jealous :** My brother became jealous of my deserts.  
**Zealous :** He is very zealous about a new project on which he is going to work.

**Q. 2. (d) Differentiate between the pairs through meaningful sentences :**

- |                        |
|------------------------|
| (i) Wave–waive         |
| (ii) Spacious–specious |

**Ans. (i) Wave :** (Waves in sea) The stormy sea-waves terrified the sailors.

**Waive :** (Forgo) keeping in view of his superb performance at the interview, the interview board waived off all other necessary qualifications.

(ii) **Spacious :** How new house is more spacious than the old house.

**Specious :** The specious promises of the mill-owners could not win the hearts of the labourers.

**Q. 3. (a) Make sentences based on following structures :**

- (i) **Subject + verb**
- (ii) **Subject + verb + subject complement**
- (iii) **Subject + verb + to – infinitive**
- (iv) **Subject + verb + gerund**
- (v) **Subject + verb + indirect object + direct object**

- Ans.** (i) Sita is dancing.  
(ii) Siddharth played football very well.  
(iii) He sang a song not to entertain but to earn.  
(iv) She continues working on her painting.  
(v) Mary gives the ball to John.

**Q. 3. (b) Synthesize the sentences as per the directions :**

- (i) **It must be done. The cost does not count. (use adverbial phrase)**
- (ii) **He is a fool. He is a knave. (transform into a compound sentence)**
- (iii) **He doe'nt tall a lie. He doesn't tolerate a lie. (join using 'neither-nor' couple)**
- (iv) **He had no money. He could not give any away. (use infinitive)**
- (v) **Geoffrey Chaucer was born in 1340. He is the first great English Poet. (join using phrase in apposition)**

**Ans. Synthesize the Sentences as Per the Directions :**

- (i) It must be done at any cost.
- (ii) He is a fool not a knave.
- (iii) Neither he tell lies nor he tolerate a lie.
- (iv) He had no money to give away.
- (v) Geoffrey chaucer, the first great English poet, was born in 1340.

**Q. 4. (a) Write a note on any two : (long note with examples)**

- (i) **Vowels in Phonetics**
- (ii) **Consonants in Phonetics**
- (iii) **Phonemes in Phonetics**
- (iv) **IPA.**

**Ans. (i) Vowels in Phonetics :** In phonetics, a vowels is a sound in spoken language, such as English ah! [a:] or oh! [OŌ], pronounced with an open vocal tract so that there is no build-up of air pressure at any point above the glottis. A vowel is also understood to be syllabic : an equivalent open but non-syllabic sound is called a semivowel.

In all languages, vowels form the nucleus or peak of syllables, whereas consonants form the onset and coda. However, some languages also allow other sounds to form the nucleus of a syllable, such as the syllabic [t] in the English word table [teɪ.bi]. The word vowel comes from the Latin word vocal is, meaning "speaking", because in most languages words and thus speech are not possible without vowels. In English, the word vowel is commonly used to mean both vowel sounds and the written symbols that represent them.

(ii) **Consonants in Phonetics** : The consonants, are marginal that is, a consonant either at the beginning or at the end of a syllable. The air does not flow out freely and the obstruction is caused. In the English word 'leap'/li : p/, for example, the vowel /i:/ provides the escape of air for the syllable. The consonant /l/ checks the air stream and then releases it suddenly; it is a realising consonant. The consonant /p/ stops the air stream at the end of syllable and is thus an arresting consonant. There are 24 consonant sounds in which some are voiceless while others are voiced.

Consonants are, thus, produced by a closure or narrowing of the air passage so that the air stream is blocked completely in the mouth or comes out with audible friction.

(iii) **Phonemes in Phonetics** : While defining a phoneme, Daniel Jones writes, "A phoneme may be described roughly as a family of sounds consisting of an important sound of a language together with other related sounds which takes its place in particular sound sequences or under conditions of length or intonations". Each language has a large number of different sound segments both vowels and consonants. These sound segments of a language are known as phonemes. The consonants like /p, b, v/ etc. are therefore to be recognized as different phonemes in English. Sometimes we find some variation within the phoneme being determined by the environment. Sound segments that are in complementary distribution are members of the same phoneme. Daniel Jones cites an example in order to make his idea clear. The /k/ in the English words keep, cool, call are three distinct sounds articulated at three different parts of the palates; but they are regarded as belonging to the same phoneme, since the use of these different varieties solely upon the nature of the adjoining vowel.

(iv) **IPA** : The International Phonetic Alphabet (IPA) is a system for writing down sounds. It was created by the International Phonetic Association in 1886, so that people could write down sounds of languages in a standard way. Linguists, language teachers and translators use it to write words and phonemes. Wikipedia also uses the IPA to show how certain words are meant to be spoken. Most symbols are letters in the Latin alphabet, or variations of it, for example the palatal approximant (the /y/ in yesterday) is written with [j]. In IPA symbols can be written between slashes (broad transcription, e.g., "little" can be written as /lɪtəl/) or in square brackets (narrow transcription, e.g., "little" can be written [lɪt]).

Narrow transcription is more precise than broad. The IPA has symbols only for sounds that are used normally in spoken languages.

**Q. 4. (b) Transcribe any ten of the given twelve :**

(i) day (ii) bed (iii) glass (iv) jam (v) poor (vi) gauge (vii) cot (viii) honest (ix) think (x) then (xi) chart (xii) sham.

**Ans. (i) Day** : /dē/

**(ii) Bed** : /bed/

**(iii) Glass** : /gläs/

**(iv) Jam** : /jam/

**(v) Poor** : /pūr/

**(vi) Gauge** : /gāj/

**(vii) Cot** : /köt/

**(viii) Honest** : /än'əst/

**(ix) Then** : /ðen/

**(x) Chant** : /chänt/

**Q. 5. (a) Paraphrase the following poetic verse and suggest a suitable title for it :**

With constant rounds to life decreed,  
Both birth and death are no surprises,  
But truly born is he indeed,

**By whose birth his family rises,  
Better than a foolish brood  
Is a single child with merit  
Darkness doth one moon preclude :  
A thousand stars can't do it.  
Will many sons a blessing be  
To add up in the number's game?  
Just one who helps the family,  
Is better for the father's name.**

**Ans. Title :** The virtuous son.

**Paraphrase :** In the following lines the poet wants to highlight the importance of son in a family. Man is immortal as life and death are two set patterns related with human being as it is not a matter to surprise. But what matters is that birth of a person who provides rise to his family. Quantity never overcomes quality. An intelligent child is sufficient in comparison to a number of foolish brood. As the existence of a single moon can prevent the darkness but a thousand stars can not perform the same task. In the same manner only one virtuous son is eligible and sufficient to write his father's name in golden letters.

**Q. 5. (b) Review the above poem in light of two contemporary problems of 'Gender Bias' and 'Overpopulation.'**

**Ans.** Above poem is directly related with two contemporary problems of 'Gender Bias's and 'Overpopulation'. As the poem is highlighting the importance of son. Today, we are facing the problem of 'Gender Biasness.' Parents are not still able to accept a girl child as their only kid. They suppose that only a son can make them feel proud. If they are having daughter they will expect even a single son. They are not somewhere satisfy with themselves. A hole is always alive in their hearts. If parents are having one boy and one girl than they will become gender bias or partial for them girls are useless. They can't do anything in the upliftment of their future. Gender biases are causing girls and boys to be raised in separate societies, with separate expectations and widely diverging treatment on gender. This is not preparing them for their future together or enabling them to fulfill their own potential. But the real fact is that a single child whether girl or boy with merit is better than a foolish brood.

**Q. 6. (a) Two friends A and B are talking too each other. A favours 'Democracy' and B favours 'Dictatorship.' Write an imaginative dialogue to express the content of their discussion.**

**Ans. No. (a) :** Since the end of cold war, many countries across the globe have chosen democracy as the form of government. Today, most of the world's powerful countries, international organizations and political science experts see democracy as a natural choice in comparison to dictatorship.

**No. (b) :** You are right. Yet democracy remains a far more complicated form of government as compared to dictatorship.

**No. (a) :** Democratic system of governments generally have an extensive system of election of government.

**No. (b) :** But dictatorships do not need to spend effort in developing and maintaining such processes and are hence free from this hassle.

**No. (a) :** We have a democracy of elections to elections. But after winning an election the parties become brazen and arrogant

**No. (b) :** I do agree with you. But dictatorship is a form of government in which one person or a small group

possesses absolute power without effective constitutional limitations.

**No. (a) :** Promote democracy as a means to achieve security, stability and prosperity for the entire world. Democratically governed nations are more likely to secure the peace, deter aggression, expand open markets, promote economic development, improve the global environment and protect human health.

**No. (b) :** But dictatorship cannot last long. It is very difficult to get a good successor to a dictator.

**No. (a) :** Democracy leads to the development of the individual as well as society.

**No. (b) :** People are not made to follow the government like sheep and goats. That's why the present dictators take pleasure in calling their dictatorship people's democracies.

**Q. 6. (b) Write a Group Discussion on Global Warming or Ways to Rescue Agriculture in India. Use A, B, C and D as spokespersons.**

**Ans. Group Discussion :**

**Topic : Global Warming**

**No. (a) :** Dear Friends, I want you to think that what is Global Warming? Global warming is a very large area of scientific uncertainty. There are literally thousands of scientists working around the world, trying to understand and formulating models that will predict the consequences of global warming. Recently, however, the earth has seen an increase in temperature change and many scientists now believe that there is a direct link between this warming and emissions of green house gases such as CO<sub>2</sub> and NO<sub>2</sub> caused by human activities.

**No. (b) :** I don't agree with Number A. In the past the green house gases were in balance. It is feared that, at the present rate of increase of green house gases, the natural balance will be upset. It takes millions of years for fossil fuels to form but only a few minutes for them to burn, releasing large quantities of CO<sub>2</sub> into the air.

**No. (c) :** I also agree with you. In the past fluctuations in CO<sub>2</sub> levels have been explained by natural causes such as volcanic eruptions and the number of phytoplankton in the sea. There are currently several other theories about global warming such as (+)ive and (-)ive feedback systems of ocean currents and the position of the earth, in space.

**No. (d) :** Dear friend, I agree with No. A, As a result of the warming, global sea levels are expected to rise by a further 15 to 95 cm by the year 2100 because seawater expands when heated and some glacial ice will melt.

**No. (a) :** Thank you Gentlemen. All the participants have thrown light on the reasons responsible for global warming.

**Q. 7. (a) Write a note on any one of the following :**

**(i) Politics based on Language and Region**

**(ii) Special Economic Zones**

**(iii) Globalization.**

**Ans. (i) Politics Based on Language and Region :** Language politics is a term used to describe political consequences of linguistic differences between people, or on occasion the political consequences of the way a language is spoken and what words are used. It means language can express some authority.

**Examples Include :**

- (i) Recognition (or not) of a language as an official language. Generally this means that all official documents affecting a country or region are published in languages that are 'official', but not in those that are not. Evidence in a court of law may also be expected to be in an official language only.
- (ii) In countries where there are more than one main language, there are often *political implications* in

decisions that are seen to promote one group of speakers over another, and this is often referred to as language politics. An example of a country with this type of language politics is Ballium.

- (iii) In countries where there is one main language, immigrants seeking full citizenship may be expected to have a degree of fluency in that language ('language politics' then being a reference to the debate over the appropriateness of this). This has been a feature of Australian politics.
- (iv) Language politics also sometimes relates to dialect, where speakers of a particular dialect are perceived as speaking a more culturally 'advanced' or 'correct' form of the language. Politicians may therefore try to use that dialect rather than their own when in the public eye. Alternatively, at times those speaking the dialect perceived as more 'correct' may try to use another dialect when in the public eye to be seen as a 'man/woman of the people'.

Many politicians are playing politics on the region which is completely not done and it gives rise to dirty regionalism politics, they ask for the division of various states and want to make their own region and state. This paves way to divide and rule strategy which is not good for any nation as a whole. This difference and entertainment should be stopped from the side of politicians before its too late.

**(ii) Special Economic Zones :** In April 2005, Government of India announced the Special Economic Zone policy to promote exports of goods and services in a highly competitive global market. Basically, Special Economic Zone (SEZ) is an industrial cluster meant largely for exports which is governed by special set of rules aimed at attracting direct investment for export oriented production. In other words SEZ are duty free enclave treated as foreign territory only for trade operations, duties and tariffs.

The Special Economic Zones Act was cleared by parliament and came into effect on February, 2006. The sectors that are benefiting from this Act are - textiles, handicrafts, gems and jewels, telecom, engineering goods, pharmaceuticals, IT and IT enabled services, biotechnology, petroleum and petroleum products. The Special Economic Zones have so far provided direct employment to 25,000+ persons and moreover additional 17.44 lacs jobs are expected from Special Economic Zones. It is believed that if all 341 formally approved Special Economic Zones becomes operational, then 4 million additional jobs are expected by December 2009.

**(iii) Globalization :** Globalization refers to the increasing unification of the world's economic order through reduction of such barriers to international trade as tariffs, export fees and import quotas. The goal is to increase material wealth, goods and services through an international division of labour by efficiencies catalyzed by international relations, specialization and competition. It describes the process by which regional economics, societies and cultures have become integrated through communication, transportation and trade. The term is most closely associated with the term economic globalization : the integration of national economies into the international economy through trade, foreign direct investment, capital flows, migration, the spread of technology and military presence. However, globalization is usually recognized as being driven by a combination of economic, technological, socio cultural, political and biological factors. The term can also refer to the transitional circulation of ideas. Languages or popular culture through acculturation. An aspect of the world which has gone through the process can be said to be globalized.

**Q. 7. (b) Describe a typical stadium or a planetarium.**

**Ans. Planetarium :** A planetarium is a theatre built primarily for presenting educational and entertaining shows about astronomy and the night sky or for training in celestial navigation. A dominant feature of most planetariums is the large dome-shaped projection screen onto which scenes of stars, planets and other celestial objects can be made to appear and move realistically to simulate the complex 'motions of the heavens.' The celestial scenes can be created using a wide variety of technologies, for example precision-engineered 'star balls' that combine optical and electro-mechanical technology, slide projector, video and full dome projector systems and lasers. Whatever technologies are used, the objective is normally to link them together to provide

an accurate relative motion of the sky. Typical systems can be set to display the sky at any point in time, past or present and often to show the night sky as it would appear from any point of latitude on earth. Portable planetariums serve education programs outside of the permanent installations of museums and science centers.

**Q. 8. (a) Answer any two questions :**

**(i) As a student of science compare the relative value of Experiments and Experience in your field. Use instances from the chapter by WR Niblett to argue out your answer.**

**Ans.** According to WR Niblett, an experiment is a method of testing—with the goal of explaining—the nature of reality. Experiments can vary from personal and informal (e.g., tasting a range of chocolates to find a favourite), to highly controlled (e.g., tests requiring complex apparatus overseen by many scientists hoping to discover information about subatomic particles). Experiments vary greatly in their goal and scale, but always rely on repeatable, procedure and logical analysis of the results. A child may carry out basic experiments to understand the nature of gravity, while teams of scientists may take years of systematic investigation to advance the understanding of a phenomenon.

On the otherhand science, which is dependent on experience, does not present is with a unified picture of the world. It reduces phenomena to a number of concepts and propositions that we must accept as ultimate, without being able to establish a connection between them. But what reason and the experience of the natural sciences have denied us is given to us by personal experience, though in a different manner from that of science. We are unable to fathom life through reason, nor can we experience it through science. But we experience life in living and in living our life we live life as such : we experience the unity and indissoluble congenousness of all life. We are unable to grasp the whole by reasoning, but we can experience it in living. But experimentation is the step in the scientific method that helps people decide between two or more competing explanations—or hypothesis. The personal experience of wholeness, unity and infinity is the loftiest peak of human existence. It is the awakening to a higher humanity. It alone transforms everyday living into true living. Such moments occur only seldom, but they are a thousand fold rewarding and reflection upon them illumines the passing days, weeks, months and years. What we experience in these moments of exaltation fills our deepest and most personal thoughts and feelings. Whoever in the presence of his beloved or in the contemplation of an aspect of nature or in the stirring of his own strength has experienced the power of the infinite.

**Q. 8. (ii) What does Indira Gandhi mean by 'Human Environment'? Suggest ways to make it better by using the information gathered from the essay.**

**Ans.** During the final stages of World War II in 1945, the United States Conducted two atomic bombings against the cities of Hiroshima and Nagasaki in Japan. These two events are the only use of nuclear weapons in war to date. After atomic bombs were dropped on Hiroshima and Nagasaki there was in the West, especially the United States, a short triumphal moment, crediting American science and military powers with bringing victory over Japan. This use of atomic bombs against defenseless densely populated cities remains the greatest single act of state terror in human history and had it been committed by the losers in World War II surely the perpetrators would have been held criminally accountable and the weaponry forever prohibited. But history gives the winners in big wars considerable latitude to shape the future according to their own wishes, sometimes for the better, often for the worse.

Not only were these two cities of little military significance devastated beyond recognition, but additionally, inhabitants in a wide surrounding area were exposed to lethal doses of radioactivity causing for decades death, disease, acute anxiety and birth defects. Beyond this, it was clear that such a technology would change the face of war and power and would either be eliminated from the planet or others than the united states would insist on possession of the weaponry. As well, the technology was constantly improved at great cost, allowing



long distance delivery of nuclear warheads by guided missiles and payloads hundreds times greater than those primitive bombs used against Japan. To a certain extent we have considered the loss that we feared during the atomic bombing based in Hiroshima and Nagasaki.

**Q. 8. (iii) Have we been really able to learn the lessons taught by the disaster in Hiroshima and Nagasaki? Discuss in the light of the Armament race and international traffic in arms and ammunition.**

**Ans.** Mrs. Indira Gandhi, the former Prime Minister after delivering the valedictory address at the first International Conference on Human Environment held in 1972 at Stockholm had wholeheartedly realized that most of the development projects all over the world are accompanied by certain undesirable consequences that require immediate mitigative measures to protect public health and natural resources. Accordingly she ordered that major development projects in India also should be subjected to environmental scrutiny. Consequently the irrigation and power projects were ordered to be referred to the department of Science and Technology, Government of India, for sanctioning the clearances for the projects from the Environmental angle since 1971.

Special working groups were constituted to reexamine the projects like Silent Valley Hydro Electric Project in Kerala, Tehri dam across River Ganges [Bhagirathi] in U.P., and Lalpur dam across the Heran river in Gujarat to study in depth about their Environmental impacts and the remedial measures required to be taken along with an assessment of their costs-benefit aspects.

During 1980's Mrs. Indira Gandhi initiated a public policy based on traditional Indian dharma that a Developmental activities intended to promote national prosperity and improve the quality of life of human beings, animal and plant populations and other forms of life in nature must ensure sustainable development. She has thoroughly studied the relationships between the human activities promoted for the progress of human civilization over centuries and their consequential impacts both positive and negative on natural life systems. Over a period of time she recognized that the adverse effects of developmental activities could be caused due to known reasons as well as due to different attitudes of the developers to the quality of life of mankind and their natural life systems and that most of such damaging impacts could be corrected by taking preventive as well as curative measures in time. After listening to detailed explanation on how environmental pollution problems, droughts and floods are mostly due to man-made causes she questioned why preventive and curative measures cannot be implemented in time by making proper environmental impact assessments on all major developmental projects with a view to take timely remedial actions to minimize the impact of industrial pollution.

**Q. 9. Write explanatory answer to both the questions :**

**(i) Write a note on any two technologies that Theodore J. Yordon mentions in 'The Year 2050'.**

**Ans.** By 2050 the world had finally achieved a global economy that appears to be environmentally sustainable while providing nearly all people with the basic necessities of life and the majority with a comfortable living. Biotechnology and nanotechnology fed the world. New and improved sources of energy made clean economic growth. Molecular manufacturing (nanotechnology) lowered manufacturing unit cost, requiring less volume of materials & energy usage and hence lowered the environmental impact of a population that has almost reached 10 billion. Nanotechnology transceivers with voice stress software were incorporated into clothing and jewellery, these systems alerted the user when people were lying or becoming aggressive.

Biotechnology has created high yield plant species that are disease and pest-resistant, use less fertilizer and are more tolerant of drought and brackish water. More recent application of biotechnology are completely changing the 10,000 year traditional use of seeds, water and land to grow crops. Perhaps equally important field has also produced the current biological weapons and removal of pathogenic microbiological agents from food.

**Q. 9. (ii) What could be the implications of actual nuclear explosions. Hiroshima and Nagasaki just point to a worse scenario in the event of detonations in contemporary world. Argue out your answer.**

**Ans.** As a result of nuclear explosions there are several signs of radiation sickness including nausea, vomiting, headache, loss of white blood cells. Doses of 300 rems or more cause temporary hair loss but also more significant internal harm, including damage to nerve cells and the cells that line the digestive tract. Besides the symptoms mentioned above, people also suffer from fever and diarrhea. As of yet, there is no effective treatment so death occurs within in 2 to 17 days. Many people at Hiroshima and Nagasaki died not directly from the actual explosion, but from the radiation released as a result of the explosions. The future of human kind is present today within the bodies of living people, animals and plants the whole seed bearing biosphere. Changes in the environment in today's scenario disturb this balance in two ways : first, by altering the carefully evolved seed by randomly damaging it and second, by altering the infected food, climate or environment. We have looked at the consequences of the use of nuclear weapons, from levels as low as a crude terrorist bomb to a full scale nuclear war. Even at the lowest level of use the consequences would be unimaginably grave, resulting in million of deaths and social chaos. We must act now to prevent nuclear weapons falling into the hands of terrorists.