

One mark questions:

1. How many people were killed in the first space shuttle disaster? Seven people
2. When the explosion did take place and which place? January 28, 1986, Cape Canaveral
3. From where was the space shuttle launched? Pad 39B at Kennedy Space Centre in Florida at 11.38 a.m
4. Why the mission was highly publicized? First time a school teacher was allowed to travel in Space.
5. From which school and what was the name of teacher to reach Space? Christa McAuliffe, from New Hampshire School.
6. How many astronauts went in the space shuttle? Seven astronauts.
7. What was the challenger cargo carrying? Two satellites
8. Expand KSC. Kennedy Space Centre
9. When the shuttle mission 51-L was originally scheduled? July 1985
10. Expand TAL. Transoceanic Abort Landing
11. Who appointed the shuttle investigation commission? President Reagan
12. Expand TDRS. Tracking Data Relay Satellite.
13. How many ultra-violet spectrometers were there in Halley's comet? Two ultra-violet spectrometers.
14. Who was the former secretary of state? William Rogers.
15. Who was the Mission Specialist-2 for space shuttle challenger? Ellison S. Onizuka

Two marks questions:

1. Write a short note on the crew of space shuttle challenger.

The crew of space shuttle challenger consisted of seven astronauts.

- a. Francis R. Scobee – Mission Commander
- b. Michael J. Smith – Pilot
- c. Gregory B. Jarvis – Payload Specialist-1
- d. Christa McAuliffe - Payload Specialist-2
- e. Judith A. Resnik - Mission Specialist-1
- f. Ellison S. Onizuka - Mission Specialist-2
- g. Ronald E. McNair - Mission Specialist-3

2. When was Challenger launched?

The space shuttle challenger was launched on January 28, 1986 from Pad 39B at Kennedy Space Centre in Florida at 11.38 a.m.

3. The date for the launch of space shuttle challenger was changed several times. What were the reasons for this? The first space shuttle disaster involved Challenger which was lost during an explosion as it took off from Cape Canaveral on January 28, 1986 killing all seven astronauts.

However, the launch was rescheduled and postponed due to cross winds, morning lift-off time, unacceptable weather, delayed hardware interface module and cold weather.

4. Why the mission was highly publicized?

The mission was highly publicized because it was the first time a school teacher was allowed to travel in space. Christa McAuliffe, a high school teacher from New Hampshire selected from more than 11,000 applicants.

5. Write a note on TDRS-2.

Tracking Data Relay Satellite-2, a NASA communications satellite that was to have been placed in a geo-synchronous orbit with the aid of a booster called the Inertial Upper Stage. It would have supported communications with the space shuttle and upto 23 other spacecrafts.

6. Mention the importance of Spartan satellite.

Spartan satellite that would be deployed into orbit carrying special instruments for the observation of Halley's Comet. It was to have been deployed into low Earth orbit using the remote manipulator system.

7. Write about Halley's Comet Experiment.

Halley's Comet Experiment Deployable, a free-flying module designed to observe tail and coma of Halley's Comet with two ultraviolet spectrometers and two cameras.

8. Why was the launch of space shuttle delayed on 28th of January?

The launch on January 28 was delayed two hours when a hardware interface module in the launch processing system, which monitors the fire detection system, failed during liquid hydrogen tanking procedures.

9. When and how was the challenger ended in tragedy?

The mission ended in tragedy. Challenger disintegrated into a ball of fire. The accident occurred 73 seconds into flight, at an altitude of 46,000 feet (14,020 meters) and at about twice the speed of sound.

10. What was the main cause of the disaster?

In June 1986, the Commission reported that the accident was caused by a failure of O-rings in the shuttle's right solid rocket booster. O-rings are rubber rings sealed the joint between the two lower segments of the booster. Design flaws in the joint and unusually cold weather during the launch caused the O-rings to allow hot gases to leak out of the booster through the joint.

11. What was the conclusion of the Commission about space shuttle disaster?

The Commission said NASA's decision to launch the shuttle was flawed. Top level decision makers had not been informed of problems with the joints and O-rings or the possible damaging

effects of cold weather. It also concluded that there was a serious flaw in the process leading up to the launch of flight 51-L.

12. "There should be perfect co-ordination between the officials and the engineers to avoid accidents like space shuttle challenger disaster.' Do you agree with this view? Justify your views. Yes, I agree. The investigation uncovered a number of troubling facts about the Shuttle program, including design flaws, mismanagement, poor communications within NASA and with contractors, and inadequate safety procedures. Most obvious of the changes to come out of the investigation were a redesign of the SRB O-ring joint seals, addition of a crew escape system, and greater restrictions on conditions in which the Shuttle can be launched.

13. 'Public money is unscrupulously wasted in the name of space research.' Express your opinions regarding this statement.

No, its not a waste of public money because Space Exploration has given us many, many technologies that are essential.

- a. Satellites were some of the first venturers into space and are another critical part of our society.
- b. Weather Forecasting (Satellites. Very important for hurricanes and dangerous storm systems, have saved lives and help us prepare for the worst.)
- c. Velcor and non-stick pans! (Mostly a joke, but hey, they work!) (General Technology.)
- d. GPS (Very critical if your lost somewhere, has saved lives!) (Satellites.)
- e. Long range television! (Satellites.)
- f. Long Range Communication (Phones, Cellphones,etc.) (Satellites.)
- g. Internet. (Satellites, and power lines of course.)

10 marks question:

1. Describe about the space shuttle challenger disaster.

Challenger disaster: It was a cold morning on Jan. 28, 1986, when Challenger was supposed to fly into space. Temperatures dipped below freezing. There were certain people at NASA and among contractors that worried about the integrity of the seals on the solid rocket boosters in cold weather.

At 78 seconds after liftoff, this image shows Challenger's left wing, main engines (still burning residual propellant) and the forward fuselage (crew cabin).

Challenger launched at 11:38 a.m. Eastern time in front of more media attention than usual, as it was carrying the first teacher to go in space. Christa McAuliffe was planning to give lessons while in orbit.

She and the rest of the crew never made it. Challenger broke up 73 seconds after launch in front of the television cameras. "Flight controllers here are looking very carefully at the situation. Obviously a major malfunction," the NASA launch commentator said as pieces of the shuttle fell from the sky into the Atlantic.

Salvage crews spent several weeks recovering pieces of the shuttle and carefully, bringing up the remains of the seven astronauts. Remains that could be identified were turned over to the families, while the rest were buried in a monument to the Challenger crew at Arlington Cemetery on May 20, 1986.

Cultural and technical problems

A presidential commission was convened to look into the incident, chaired by former attorney general and secretary of state William P. Rogers. It included participation from Neil Armstrong (the first man on the moon) and NASA astronaut Sally Ride, among others.

The commission talked about the technical causes of the accident, which was traced to cold weather degrading the seal on the boosters. Additionally, it brought to light cultural problems at NASA, such as failing to voice all problems to the launch decision team. The commission also said that the shuttle's proposed flight rate was unsustainable given the size of its workforce.

NASA made technical changes to the shuttle and also worked to change the culture of its workforce in the wake of what happened with Challenger. The shuttle program resumed flights in 1988.

After the Challenger wreckage was examined, the pieces were buried and sealed in abandoned Minuteman missile silos at Cape Canaveral Air Force Station, where they remain today.

Challenger's explosion changed the space shuttle program in several ways. Plans to fly other civilians in space (such as journalists) were shelved for 22 years, until Barbara Morgan, who was McAuliffe's backup, flew aboard Endeavour in 2007. Satellite launches were shifted from the shuttle to reusable rockets. Additionally, astronauts were pulled off of duties such as repairing satellites, and the Manned Maneuvering Unit was not flown again, to better preserve their safety.

2. Explain about the space shuttle investigation process.

By the time Reagan appointed the commission, rumors were already circulating that a faulty solid rocket booster could have been to blame, based on evidence recovered by NASA investigators that showed a rupture in a field joint of the SRB. Within a few days of the presidential commission investigation, those rumors began to transform into probable cause.

Of the 13 members of the commission—William P. Rogers, Neil A. Armstrong, David C. Acheson, Eugene E. Covert, Richard P. Feynman, Robert B. Hotz, Donald J. Kutyna, Sally K. Ride, Robert W. Rummel, Joseph F. Sutter, Arthur B. C. Walker, Jr., Albert D. Wheelon, Charles E. Yeager, and Alton G. Keel, Jr.—four key players emerged: Rogers, Ride, Kutyna, and Feynman.

Rogers, former secretary of state, was tasked with quickly finding the technical cause of the accident, fixing it, absolving NASA of any responsibility, and returning to business as usual. That didn't happen as planned. The more the commission's members—particularly Feynman—delved into potential causes of the accident, the more dirt they found on NASA itself. Drama ensued between Rogers and Feynman when Rogers wanted to leave out of the final report a portion of Feynman's findings that were sensitive to NASA. Feynman threatened to withhold his signature, so Rogers gave in, and Feynman's work became the appendix to the official report.

Sally Ride, the first female U.S. astronaut, often remembered as shy but passionate, headed the subcommittee on operations. Ride anonymously leaked a NASA document to former Air Force General Kutyna that indicated NASA was aware that cold temperatures could damage a critical component on the solid rocket booster: the rubber O-rings used to seal gases. Although she had not exposed her knowledge publicly, Ride famously gave Morton Thiokol engineer Roger Boisjoly a hug of support after he exposed similar information to the commission during a hearing in February. She was visibly relieved to hear the truth from a primary source.

Kutyna, then-director of the Air Force's Space Systems and Command Control and Communications, gained media coverage mainly through the friendship he forged with Feynman. He realized Feynman was the only member of the commission who enjoyed complete freedom from political pressure and used this relationship to transfer insider knowledge. He also helped Feynman demonstrate to a national TV-viewing audience how cold impacts the properties of an O-ring by holding him back until he was in full-view of the live cameras.

Feynman, a famous physicist and Nobel Prize laureate with a distinct distaste for corruption and red tape, was the subject of the 2013 movie "The Challenger Disaster." Although he had little demonstrated knowledge of, or interest in, space, his motivation to uncover the truth about *Challenger* was palpable. Ignoring requests to remain in close proximity to the team in Washington, Feynman boarded a plane and visited unannounced the facilities of Morton Thiokol, the firm responsible for manufacturing the shuttle's booster rockets. He interviewed Thiokol employees wherever he could—the lunchroom, the hallway, the manufacturing floor—and quickly realized a great fracture in communication between the engineers, manufacturers, and managers both at Morton Thiokol and NASA. As the investigation continued, he discovered a disturbing lack of technical understanding in some of NASA's highest-ranking managers. The dots became increasingly easier to connect: recklessness and oversight were directly linked to the tragic accident, and Feynman would later demonstrate, on national television, just how much.

B. BIOTECHNOLOGY – ETHICAL QUESTIONS pg-130

One mark questions:

1. Name the scientist who suggested a solution to ethical values of animals? Bernard Rollin
2. Does removing of characteristics of animals can be done by biotechnology?
Yes can be done. For example we can remove and produce horn less cattle.
3. What does the word 'transgene' means?

Transgene means transferring of the genes from one animal to other.

4. Does the human thinking in favour of animals and give reason?
Yes. Because the rules and restrictions are developing on the using of animals for research.
5. On what basis selective breeding and genetic engineering is developing?
Profitability is one of the major drive of both selective breeding and genetic engineering.
6. When is International Animal Rights Day celebrated? 10th of December.

Two marks questions:

1. What is one of the major roles of biotechnology?

Biotechnology means any use of science or technology to alter the characteristics of a particular breed or animal. It can be good or bad for animals and it may also produce an answer to the ethical problems of experimenting on animals.

2. On which reason did the newspapers articles pointed out the biotechnology?

About the ethical problems of genetically engineered are usually concerned about the danger these animals may pose to human beings, usually to human health, rather than any implications for the animals themselves.

3. What was the recent action taken in favour of animals?

Recent action was implemented to allow animals to be patented reinforces the idea of animals as human property, rather than beings in their own right.

4. Are you in favour of genetic engineering and selective breeding? Why?

Yes. Biotechnology can be good for animals. Selective breeding and genetic engineering can benefit in many ways: a. improving resistance to disease b. breeding to remove characteristics that cause injury, got example, selecting cattle without horns.

5. What is the difference between biology and biotechnology?

Biology is the science that studies living organisms. Characteristic life processes and phenomena of living organisms.

Biology is the overall, very broad, area of study that has to do with living things and a lot related to them. Biotechnology is a "specialty," if you will, that is also a bit of a merge between biology and engineering. Biotechnology focuses on applying our knowledge (we call this technology) using organisms, biological systems, and things derived from them. The term is often erroneously used to mean only "genetic engineering."

6. 'Animal rights are as important as human rights.' Express your views regarding this statement.

Recent action to allow animals to be patented reinforces the idea of animals as human property, rather than beings in their own right. According to this point of view, an animal should have as much right as a human being to live out a full life, free of pain and suffering. Others argue that while it is wrong to unnecessarily abuse animals, animal experimentation must continue because of the enormous scientific resource that animal models provide.

7. List the health problems caused in human beings because of the consumption of broiler chicken.

Broiler chicken is not good for health for following reasons:

- They eat harmful chemicals in order to get ready for maximum meat production and gain fat.
- Due to chemicals and injections they face, they grow 3 times faster than the normal chicken. They have growth hormones related problems, which can affect us as well.
- The bones of broiler chickens are weak as well due to improper growth. Also they lack proper nutrition as they are stuffed with chemicals and medications.

8. Express your views about the practice of using animals for experiments.

Animals may be subject to experimentation or modified into conditions useful for gaining knowledge about human disease or for testing potential human treatments. Because animals as distant from humans as mice and rats share many physiological and genetic similarities with humans, animal experimentation can be tremendously helpful for furthering medical science.

9. What is meant by 'sentience'?

The word 'sentience' means which can withstand or unaffected to any experiments on it. The main goal is to develop a species or genetically engineered mammal that lacks sentience, in order to protect them from ethical values while performing experiments on it.

Ten marks question:

1. Describe about the ethical values of animals in selective breeding and genetic engineering.

Biotechnology isn't something new - selective breeding to create more useful varieties of animals and plants is a form of biotechnology that human beings have used for thousands of years.

Biotechnology includes any use of science or technology to alter the characteristics of a particular breed or animal.

Biotechnology can be good or bad for animals - and it may also produce an answer to the ethical problems of experimenting on animals. Transgenic animals raise a particularly difficult problem.

Human problems: Newspaper articles about the ethical problems of genetically engineered animals are usually concerned about the danger these animals may pose to human beings (usually to human health), rather than any implications for the animals themselves.

Animal rights: Genetic engineering and selective breeding appear to violate animal rights, because they involve manipulating animals for human ends as if the animals were nothing more than human property, rather than treating the animals as being of value in themselves. Recent action to allow animals to be patented reinforces the idea of animals as human property, rather than beings in their own right.

Animal welfare: Biotechnology can be good for animals. Selective breeding and genetic engineering can benefit animals in many ways:

- a. Improving resistance to disease
- b. Breeding to remove characteristics that cause injury . eg selecting cattle without horns

But biotechnology can also be bad for animals - the good effects for the breeder can offset by painful side-effects for the animals:

- a. Modern pigs have been bred to grow extra fast - some breeds now grow too fast for their hearts, causing discomfort when animals are too active.
- b. Broiler chickens are bred to grow fast - some now grow too fast for their legs

Regulating genetic engineering: Profitability is one of the major drivers of both selective breeding and genetic engineering.

If animal welfare is not to be compromised, research must be restricted by a counter-balancing ethical principle that prevents altering animals in a way that was bad for the animal.

One writer, Bernard Rollin, suggests that a suitable rule to regulate genetic engineering would be this:

Genetically engineered animals should be no worse off than the parent stock would be if they were not so engineered. This principle can easily be adapted to cover selective breeding.

Biotechnology and experimental animals

It's been suggested that genetic engineering may solve all the ethical problems of laboratory experiments on animals. The goal is to create a genetically engineered mammal that lacks sentience, but is otherwise identical to normal experimental animals. Such an animal could not suffer whatever was done to it, so there should be no ethical difficulty in performing experiments on it.

Less controversially, scientists are reconstructing the quagga - which became extinct in the 1870s

Transgenic animals are animals that have been deliberately bred for research and that contain elements of two different species - they are creatures that blur the barrier between species.

These animals are often deliberately created with genetic defects, and these defects may well cause the animal to have a bad quality of life. A mouse has been created, for example, that has been genetically modified to develop cancer.

Ethical issues of transgenic animals

Transgenic animals raise several particular moral issues (quite apart from any damage they might do to the environment): Suffering may last for a long time in these animals as researchers want to conduct long-term investigations into the development of diseases

Religious views of transgenic animals

Against transgenic animals:

God laid down the structure of creation and any tampering with it is sinful.

Manipulating DNA is manipulating 'life itself' - and this is tampering with something that God did not intend humanity to meddle with.

In favour of transgenic animals:

As human beings have been given 'dominion' over the animals, they are entitled to tamper with them.

Palaeontology shows that the structure of creation has changed over time as some species became extinct and new ones came into being. They say that this shows that there is nothing fixed about the structure of creation.

Transgenic animals and religious food laws

Transgenic animals pose problems for religions that restrict the foods that their believers can eat, since they may produce animals that appear to be one species, but contain some elements of a forbidden species.

C. GENETIC ENGINEERING pg-133

One mark questions

1. Which animals contain elements of two different species? Transgenic animals.
2. How the transgenic animals are often deliberately created? By genetic defects.
3. Which makes the transgenic animals to have a bad quality of life? Genetic defects.
4. Who laid down the structure of creation? God
5. Manipulating DNA is? Manipulating life itself.
6. What is DNA? Deoxyribo Nucleic Acid.
7. Who have been given the 'Domination' over the animals? Human beings.
8. What is meant by paleontology? The study of extinct species is called 'Paleontology'.
9. Which was genetically modified to develop cancer? Mouse
10. Which shows that there is nothing fixed about the structure of creation? Paleontology.

Two mark questions

1. What does the term 'transgenic animals' mean?

A. Transgenic animals are the animals that have been deliberately bred for research and that contain elements of two different species, they are the creatures that blur the barrier between species.

2. Why do scientists show interest in developing transgenic animals?

A. Scientist really show interest in developing of transgenic animals as suffering may last for a long time in these animals as researchers want to conduct long term investigations into the development of several diseases.

3. Do you agree the ethical issues raised in the passage? Can you counter some of the arguments offered?

A. yes, I agree with the ethical issues raised in the passage for some extent as it is unethical to alter the natural order of universe it may produce some side effects that causes for the animal. But, they are useful for development of cure for incurable diseases.

4. What are the religious issues regarding the creation of transgenic animals?

A. The religious issues regarding the creation of transgenic animals are:

a. Concern that is against the issue is that god laid down the structure of creation and any tampering with it is sinful.

b. Manipulating DNA is manipulating life itself and this is tampering with something that god did not intend humanity to meddle with

5. DNA manipulation is an inhuman attempt to cause chaos to the world, do you agree?

A. Yes, I agree with the statement that manipulating DNA is manipulating life itself and this is tampering with something that god did not intend humanity to meddle with

B.

But there are some advantages for the survival of the mankind with this cruel act .So, it is expectable.

6. Imagine the sufferings of the transgenic animals in the laboratory and describe their painful experiences?

A. In the laboratory, the animals are forced in the genetical parts of their body and the DNA is forced from one species to another species of animals. At that time, the animals feel that they are going to die with the pain created by scientists in developing transgenic animals.

7. 'Scientists are unsympathetic people as far as transgenic animals are concerned'. What is your reaction to this statement?

A. Yes, I agree with the statement as scientists behave cruelly with the transgenic animals, they are unsympathetic towards the animals. But, by the act they can cure the incurable diseases of the mankind.

8. Do you expect the government to ban the research involving transgenic animals?

A. Yes, government must take action on the groups making development of the transgenic animals at higher extent. As human beings have been given 'domination' over the animals, they are entitled to tamper with them. Some species became extinct and new ones come into being. It should not be eradicated but should be limited by the government.

Ten mark question:

1. Write a brief summary on Genetic Engineering and Animals

Introduction:

It provides a brief overview of the pros and cons of genetic engineering technology and its creation of and patenting of transgenic animal species.

Summary

With the advent and rapid development of genetic engineering technology, the animal rights movement is currently facing one of its greatest challenges and dilemmas. Proponents of the technology assert that transgenic animals, animals that have been genetically altered through the introduction of another plant's or animal's genes, may one day help solve many of our modern day problems in life, from starvation and ill health, to environmental degradation and the modern extinction crisis. Critics believe that bioengineering poses greater risks than it does benefits. They argue that genetic engineering threatens to increase animal suffering and

decrease species integrity, while at the same time creating a potentially devastating impact on the balance and sustainability of the Earth's ecosystem. Regardless, the value judgments we make regarding the direction and scope that this technology should take are sure to have far reaching implications.

I. A Review of the Technology

Transgenic animals are animals that have, through genetic engineering, genes from other plants and animals. Unlike controlled breeding, which is confined to the genetic material contained in a single species, modern genetic engineering permits an almost limitless scope of modification and introduction of otherwise foreign genetic material. This permits specific traits, and not the host of other traits common from crossbreeding, to be effectively introduced into new, transgenic animal species. Genetic engineering is able to create whole organisms that are not natural to the planet, and whose specific genetic make-up is as much a result of human manipulation as it is natural selection.

II. Pros of Genetic Engineering

With regard to the agricultural industry, transgenic farm animals can be created, that are better able to resist disease, grow faster, and more efficiently reproduce than current species of animals. Transgenic sheep can be created to produce better wool and cows can be engineered to more efficiently convert grain into higher quality milk and meat. Transgenic salmon that grow larger and at a faster rate than natural varieties, have already been created and farmed.

One of the more controversial uses of this technology is found in recent proposals to engineer farm animals to be non-sentient, without the "stress" genes that cause them great suffering during their lives on industrial factory farms. Since sentience, the ability to feel pain and experience suffering is the basis upon which much animal rights ideology is based, some argue that these types of transgenic farm animals would help to solve many of the animal welfare issues posed by industrial factory farms.

The bio-medical research industry has been equally influenced by genetic engineering technology. Instead of relying on numerous test animals to research modern diseases and appropriate drug therapies, the bio-medical community can now rely on specifically engineered animal research models. Such animals are bred to have an increase susceptibility to modern diseases, like hereditary breast cancer. Transgenic animals have made research of such diseases more accurate, less expensive and faster, while at the same time permitting accurate results with the use of fewer individual animals in any given study.

Also, transgenic animals, like goats, sheep, and cattle, have been engineered to produce large amounts of complex human proteins in their milk, something very useful in the creation of therapeutic drugs. By engineering these animals to release these and other proteins in their milk, the mass production of high quality therapeutic drugs is made less costly, easier to manufacture, and at the expense of fewer animal lives than what was formerly the case.

Biotechnology breakthroughs in whole animal cloning have led to many suggestions that such technology could be used to clone endangered species. Cloning provides a great support blanket for the modern extinction crisis and can help to ensure that critical numbers of endangered species will exist for generations to come.

III. Cons of Genetic Engineering

In general, opponents of genetic engineering assert that such technology creates a huge diminution in the standing of animals, leaving them as nothing more than "test tubes with tails," only of benefit for the exploitive practices of factory farming, and drug and organ

manufacturing. Creating more efficient agricultural animals threatens weaken the genetic diversity of the herd and thereby make them more susceptible to new strains of infectious disease. Also, if transgenic farm animals ever escape into wild populations, they can have profoundly disturbing effects on the natural environment, including a complete elimination of natural populations and the processes of natural selection.

Animal rights advocates also argue that each species should enjoy an inherent, natural right to be free of genetic manipulation in any form. This is especially the case when genetic engineering is used as a means of depriving animals of their sentience, of exacerbating the cruel, horrific conditions of the modern factory farm and biomedical lab. Although the sheer numbers may decline, the actual suffering experienced by agricultural and research animals may increase.

Cloning endangered species, although useful as a last resort, may unwisely shift our efforts away from protecting the critical habitat necessary to sustain viable endangered species populations. Habitat protection is as important to saving endangered species as is the specific renewal and maintenance of viable numbers within a population. Since limited funds exist, habitat protection, and not expensive cloning technology, should be the focus of our endangered species protection efforts.

IV. The Legal Terrain

Currently, there are few laws, in either the United States or the European Union (EU) regulating animal cloning and the creation of transgenic animals. In the United States, most research and farm animals are excluded from federal protection. While the European Union (EU) ensures that such animals are treated more humanely than is the case in the United States, both the U.S. and the EU extend patent protection to the owners and creators of transgenic animal species. This provides a huge incentive for the biotechnology industry to continually research and develop novel transgenic animal creations. With patents, researchers can now own and monopolize entire animal species, something unheard of prior to modern genetic engineering. The Supreme Court has upheld transgenic animal patents without any review of the potential ethical and environmental risks associated with the technology involved.

Most modern legislation regarding genetic engineering and cloning technology ensued following the birth of Dolly the sheep, the first multi-cellular organism cloned from adult cells. The primary objectives of the subsequent United States and EU legislation was to ban human cloning while at the same time ensuring that genetic engineering research continued unimpeded by such legislation. Patent protection effectively promotes genetic engineering research and helps to ensure its speedy development.

Conclusion

There is no doubt that genetic engineering of animals will continue well into the future. Both the United States' and the EU's legal systems have been slow to respond with legislation specifically regulating biotechnology, and each have permitted their patent law to provide a supportive ground for genetic engineering research and development. One thing is for sure, we must not sit complacently by as this technology rapidly changes the fabric of our existence from the inside out. We must not wait and see what the effects are. We must form educated opinions, inspire legislative regulation, and hope that whatever direction that bioengineering takes us, is a positive step towards decreased animal suffering, increased environmental sustainability, and an overall compassionate regard for the earth and its precious life.

One mark questions:

1. What is the natural calamity that has capacity to create widespread devastation? Earth quakes
2. What is the magnitude of earthquake that struck near the Sikkim Nepal border? 6.8temblor
3. What was the remark by seismologist after calamitous quake that hit the Caribbean island of Haiti?
In recent earthquakes buildings have acted as weapons of mass destruction
4. Name the cities that are severally panic by the earthquakes? Kolkata ,Patna, Lucknow
5. What was the magnitude of earthquake experienced by Delhi? Magnitude 4.2
6. When did the powerful earthquake occurred at Bhuj? At January 2001
7. Name the institution that has laid out earthquake engineering codes for various structures?
The bureau of Indian standards
8. HUDCO stands for? Housing and Urban Development Corporation
9. Guidelines and brochures on earthquake safe construction were published by?
HUDCO and the union government buildings materials and technology promotion council.

Two mark questions

1. What is a natural disaster? Give examples
A. The disasters caused naturally by the imbalances in the environment are called a natural disaster. Examples are earthquakes, cydones, floods, droughts etc
2. Why do earth quakes occur?
A. Earthquakes occur due to overlapping of plants inside the earth and able to strike without warning and capable of creating widespread devastation.
3. List the types of damage caused by earthquakes?
A. This quake should serve as a wakeup call. Earthquakes don't kill people, buildings do , goes the old adage. But human made structures building, bridges, power plants, and so forth- can be designed and constructed to with stand the sort of quakes that might hit a place. An earth quake quickly exposes failures in construction. Valuable infrastructure is destroyed and falling masonry can crush people to death.
4. What happened as a result of earthquake near the Sikkim –Nepal border?
A. With the magnitude 6.8 temblor the earth quake struck near the Sikkim-Nepal border on Sunday evening. At least 66 people have been killed and many more injured in India as well as in neighboring Nepal and Tibet, china, buildings and roads in Sikkim have been badly damaged.
5. Why should we give importance to earthquake resistant construction?
A. In recent earthquakes, buildings have acted as weapons of mass destruction. So, the damage is caused mainly due to buildings and if we give importance to earthquake resistant construction. We can reduce the damage.

6. Write a short note on the earthquake in the Caribbean island in Haiti?

A. The calamitous quake the Caribbean island in Haiti in Jan-2010 killing tens of thousands of people. Poor quality construction on the island made the earthquakes twice as lethal as any previous magnitude 7.0 event.

Ten mark questions

1. Describe how to avoid Natural Calamities and how to prepare for them.

Natural calamities have been a cause of great destruction and devastation on Earth. Some are more violent in nature as compared to the others, and sometimes, it's simply impossible to estimate a death count – a great example is of a volcanic eruption that lead to tsunami and completely wiped out the Mediterranean Island of Strogli.

Natural calamities are unpredictable in nature and often occur all of a sudden. Due to this nature, avoiding them is almost impossible. However, we can take certain precautions that will help keep the level of devastation down and save precious human lives.

The nature of protection against natural disasters depends on the type of the disaster. For disasters like floods and landslides, plantation of trees is a good long-term solution. On the other hand, there are disasters like lightening or earthquake against which there is not much a man can do. No matter what type of disaster you face, you can always plan something to increase your chances of survival.

As far as earthquakes are concerned, people all over the world are told to calmly leave the building they are in when the quake strikes. In case of damage, people are encouraged and taught to help pull out other people from the debris. On a larger scale, buildings can be constructed in a way that ensures they are less likely to collapse during an earthquake. In Japan for instance, there are shock absorbers installed at the base of the buildings which enables the building to move with the earthquake and prevents collapse.

Floods and landslides are hard to avoid. However, to protect against them, measures can be taken on a government level. These could include passing of laws that prohibit cutting down of trees and building of houses in regions that are flood prone. Disasters like drought can be avoided by proper planning and allocation of resources. Measures can be taken at community level so that no one is misusing or overusing their share of resources like water and food.

Regions where strong winds and tornadoes are a frequent occurrence need different precautionary measures. Tornadoes and storms can be predicted to an extent in today's world. Once one is predicted, it is important not to wander out without reason. Asking the kids to stay at home is another good measure. These regions usually have strongly built houses to withstand the storms. However, having a basement where you can stay and wait for the storm to pass is not a bad idea. Make sure though that the basement has a door that takes you directly out of the house so that in case the house collapses, you can get out of the basement.

To protect against natural calamities, safety measures need to be taken at all levels. Governments need to play their part by passing laws that can result in safety for people while people themselves can learn the basic ways to respond to natural calamities. Communities need to have small plans in place because in case of a disaster, the nearest people who can help you will be those living in your neighborhood.

2. Summarise an Argumentative Essay on Natural Disaster: Their Abatement and Safety Measures.

Introduction

It should be left up to the government when it comes to natural disasters. They are something that government agencies can predict and are able to give warning for. The government should be the main focus when it comes to natural disaster safety measures and abatement.

Argument

The government is not able to predict all natural disasters, and so should not be held accountable for death tolls or the damage caused by natural disasters.

Counter Argument

The government is in a far better position to protect people from natural disasters than they are on their own. Plus, they have access to weather monitoring devices and warning systems that they can use to help save lives. We have seen what happens when a government does nothing from when George Bush Jr did nothing to help the millions affected by hurricane Katrina. The funny online pictures of George Bush Jr fishing in the floodwaters of New Orleans accurately summed up what happens when the government does nothing about natural disasters.

Argument

Natural disasters are the work of god and so cannot be abated or guarded against by humans. Like the story of Job, the bad times should be endured whilst giving thanks for what we do have.

Counter Argument

God helps those who help themselves. God did not give us the capacity for thought and lateral thinking so that we could not use it. It is our job as children of god to use his gifts to cure disease, help the suffering, make safe ourselves from natural disasters and abate their devastation. God did not punish Noah for building an arc to avoid the floods.

Argument

People can help themselves. It is the people who are ill prepared for hurricanes that sustain the most damage. People who stay in their houses and are killed are responsible for their own deaths; the people who do not board up their houses or leave glass items lying around, or do not switch off their water and gas lines. These people are proof that people can take care of themselves during natural disasters if they try harder.

Counter Argument

It is up to the government to give ample warning about things such as hurricanes. If they did not, then people would not even get the chance to board up their houses and secure them. Nor would they know anything about how to make a house safer if the government did not give enough warning and advice. It is up to the government to warn people and to give advice on what to do.

Conclusion

The government is not expected to do all of the work when warning for a natural disaster, implementing safety procedures and abating further damage. But, they are responsible for a lot of it and should be accountable if they do not do a good enough job and do not warn and help

to abate the damage. Death and damage is going to happen if the government fails to act beforehand and afterwards—such as with hurricane Katrina and New Orleans.

Unit – 3 **Learning from Disasters**

A) Challenger disaster

Answer the following the questions

- 1) Write a short note on the crew of space shuttle Challenger.
- 2) When was Challenger launched?
- 3) The for the launch of space shuttle Challenger was changed several times. What were the reasons for this ?
- 4) What was the main cause of the disaster?
- 5) 'There should be perfect coordination between the officials and the engineers to avoid accidents like space shuttle Challenger disaster.' Do you agree with this view? Justify your views.
- 6) ' Public money is unscrupulously wasted in the name of space research.' Express your opinions regarding this statement.

Verbal Ability

Match the following

- | | |
|--|-------------|
| 1. The loud noise of something bursting | - crew |
| 2. To make something known to the public | - deploy |
| 3. All the people working on a plane, ship, etc. | - Propeller |
| 4. To move soldiers or weapons for a military action | - explode |
| 5. A thing or substance that propels something | - publicize |

Read the following outline; write out the full story.

An interesting weekend

Travelled with friends - train journey to Courtallam – eventful – met a famous scientist – waterfalls – disaster – helped by local people – scientist told us about strange phenomenon.

Write a paragraph for the topics given below.

- a) A short biography of your life
- b) Your favourite actor / writer/ teacher / sports person
- c) The happiest day of your life.
- d) A quarrel with your friend / brother/ sister
- e) The place you would like to visit.

Grammar

Direct and Indirect Speech

In the sentences given below identify the differences between each pair of sentences.

- 1 a. Rajesh said, 'I am going to ride a skateboard.'
- 1 b. Rajesh said that he was going to ride a skateboard.
- 2 a. They asked, 'Can you give us ahand?'
- 2 b. They asked if we could give them a hand.
- 3a. She said, 'Please don't tell your mother.'
- 3 b. She asked me not to tell my mother.
- 4 a. He said to his friend, 'When will you return?'
- 4 b. He asked his friend when he would return.

Rewrite the following sentences in indirect speech.

- 1. She asked him, 'Did he go to Delhi last month?'
- 2. She told us, 'He has missed the bus.'
- 3. He asked his wife, 'Will you come with me?'
- 4. He said to his son, 'Don't tell me what to do!'
- 5. Joseph asked, 'What are we going to do tonight?'
- 6. Janani asked, 'Is your mother coming this week?'

PART II

ANSWER THE FOLLOWING QUESTIONS IN DETAIL

- 1. What is the difference between 'biology' and 'biotechnology'?

2. What is one of the major roles of biotechnology?
3. Are you in favour of genetic engineering and selective breeding? Why?
4. 'Animal rights are as important as human rights.' Express your views regarding this statement.
5. List the health problems caused in human beings because of the consumption of broiler chicken.
6. Express your views about the practice of using animals for experiments.
7. What is meant by 'sentience'?

Fill in the blanks in the following sentences with fixed expressions.

Out of sight, within reach, in short supply, out of danger, on duty, in fact, in danger, in case, in brief

1. The World Cup is now _____ of the Indian Cricket team; they only need to beat the Australian team.
2. She stood watching the car until it was _____.
3. Fortunately, he did not incur severe injuries; he is _____ now.
4. He is a police officer, and he usually has to be _____ even on Sundays.
5. In the market, vegetables were _____ because of the strike called by truck drivers.
6. Call the doctor _____ he loses consciousness.
7. He described the stations _____ to the waiting
8. If the bridge collapses they are _____ of being cut off from the city.
9. I thought he was an engineer; _____, he's mechanic.

Write a paragraph on each of the situations given below.

1. You have been elected to be the head
of a village called