9. Disaster Risk Reduction

Exercise

1 A. Question

Give short answers :

Define the terms

a. Disaster Risk Reduction

b. Structural Measures

Answer

(a) Disaster Risk reduction has been defined by the UNISDR as “the concept and practice of disaster risk through systematic efforts to analyze and manage the causal factors of disasters including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and environment, and improved preparedness for adverse events.” The impact of the disaster depends on how much it has been on society and environment. There are some of the important aspects of the Disaster Risk Reduction; they are Mitigation, Early Warning System, Disaster Preparedness and Recovery.

(b) It is one of the categories included in the mitigation. Mitigation is the measures practised to reduce the disaster. The structural measures refer to any physical construction to reduce or avoid the hazard that is yet to happen. These measures include the engineer techniques that are involved to hazard resistance and resilience structures and system of buildings.

1 B. Question

Give short answers :

What is the importance of Disaster Risk Reduction?

Answer

The impact of the disaster depends on how much it has been on society and environment. There are some of the important aspects of the Disaster Risk Reduction; they are Mitigation, Early Warning System, Disaster Preparedness and Recovery.

• Mitigation

Mitigation and mitigation measures are to control the frequency, scale, intensity and impact of the disaster. Mitigation measures include two general categories, they are structural measures and non-structural measures. Mitigation measures can be applied at any time either before or after the happening of the event.

• Early Warning System

The term refers to the provision of information on emergency to reduce the risk involved. Without the early warning system, the evacuation and rescue mission will be irrelevant. The system involves for the natural biographical hazard, geophysical, socio-political, industrial and other hazards. These systems depend upon the four main inter-related variables; they are observation and recordings, Risk knowledge and recognition, warning and dissemination, and appropriate response.

• Disaster Preparedness

It is the programme that is prepared to face all type of disaster activities and related emergencies. The main agenda of these programmes is to reduce the number of deaths and sufferings by the people due to the disaster and this will also reduce the effect of the disaster. Preparing for disaster before its occurrence will increase the communal ability of people and this will also contribute very efficiently towards the rescue operation.

• Recovery

If the disaster has occurred, the recovery mission should be ensured by the disaster risk reduction management. The decision taken after the disaster should be to restore the lost lives by the people due to disaster. This recovery should be such that is should help them to cope up in the future more efficiently. The rehabilitation and reconstruction are the tasks in this stage and afford a valuable opportunity to develop and implement the measures of disaster risk reduction.

2 A. Question

Give Paragraph answers :

Write the importance of Early Warning System in Disaster Risk Reduction.

Answer

The term refers to the provision of information on emergency to reduce the risk involved. Without the early warning system, the evacuation and rescue mission will be irrelevant. The system involves for the natural biographical hazard, geophysical, socio-political, industrial and other hazards. These systems depend upon the four main inter-related variables; they are observation and recordings, Risk knowledge and recognition, warning and dissemination, and appropriate response.

The early warning system is the major element of disaster risk reduction. Early action can often prevent a hazard from turning into human disaster by preventing loss of life and reducing the economic and material impacts. To be effective and sustainable they must actively involve the communities at risk.

The early warning system can be set up to avoid or reduce the impact of hazards such as floods, landslides, storms and forest fires. The significance of an effective early warning system lies in the recognition of its benefits by local people.

2 B. Question

Give Paragraph answers :

What do you understand from the term Recovery stage of Disaster Risk Reduction?

Answer

If the disaster has occurred, the recovery mission should be ensured by the disaster risk reduction management. The decision taken after the disaster should be to restore the lost lives by the people due to disaster. This recovery should be such that is should help them to cope up in the future more efficiently. The rehabilitation and reconstruction are the tasks in this stage and afford a valuable opportunity to develop and implement the measures of disaster risk reduction.

The recovery stage of the disaster risk reduction can be classified into two phases. The short term phase which typically lasts for 6 months to one year and this phase involve delivering immediate services. The long term phase, which can range up to decades, and it requires thoughtful planning and action for the recovery.

2 C. Question

Give Paragraph answers :

Name the two mitigation measures and explain them.

Answer

Mitigation and mitigation measures are to control the frequency, scale, intensity and impact of the disaster. Mitigation measures include two general categories, they are structural measures and non-structural measures. Mitigation measures can be applied at any time either before or after the happening of the event.

• Structural measures

This refers to the physical construction to reduce or avoid possible impacts of the hazards. It involves the application of the engineering techniques to achieve hazard resistance and resilience in structure and system.

The structural measures include the construction of:

 Embankments and strengthening of the embankments.

 Designing the electric system efficiently so that it will withstand in the winter and heavy rainy seasons.

 Enforcing the strict building codes

 Seismic resistant designs of buildings

 Construction of houses and buildings away from hazardous areas.

 Building community shelters and relief centres at hazard prone area.

• Non-Structural measures

This refers to the measures which do not involve any physical construction that involves knowledge, practice

and agreement to reduce the risk and impacts. This is done through the policies and laws, public awareness raising, training and education.

The non-structural measures include:

 Management regulating measures such as zoning, coastal area management, slope management and flood management etc.

 Community services

 Educational programmes

 Natural resources use regulation

 Policies on limiting the buildings of unsafe projects.

3 A. Question

Activities :

List the structural mitigation measures and collect picture related to it.

Answer

Structural measures

This refers to the physical construction to reduce or avoid possible impacts of the hazards. It involves the application of the engineering techniques to achieve hazard resistance and resilience in structure and system.

The structural measures include the construction of:

• Embankments and strengthening of the embankments.

It is the embankment dam in Japan. Tata ragi Dam, these types of dams are constructed to prevent the rise in the water level in the area, which is popularly known as a flood.

• Designing the electric system efficiently so that it will withstand in the winter and heavy rainy seasons

It is very much essential for ensuring the well functioning electric system. If the storm and heavy rain are being affected in the area then any short circuit will lead to heavy damage than anything else.

• Enforcing the strict building codes

The construction of building with strict norms and code by the government will be strong to face the heavy earthquake.

• Seismic resistant building

It is the building which is designed by the Japan which is strong enough to face the wild earthquake. The strings are being attached by the fibre.

• Construction of houses and buildings away from hazardous areas.

Avoid construction of houses and building where is high harm for the life. There are places where the landslide are very high like slope areas. Construction of buildings in that area will lead to heavy disaster.

• Building community shelters and relief centres at hazard prone area.

The community shelter should be such that it is reachable for everyone while the disaster and the shelter home should such that it should not be affected by the disaster.

3 B. Question

Activities :

List to collect information regarding Early Warning System practised for the following :

i. Cyclone at coastal district through radio, T.V and other information Technologies.

ii. Flood Warning

iii. Tsunami warning

(iv) Industrial areas

Answer

(i) A cyclone is the large scale air mass that rotates around a strong centre of low atmospheric pressure. The cyclone is characterized by inward spiralling winds that rotate about a zone of low pressure.

An early warning system that can be done before the occurrence of the cyclone

• Consider the building safe room

• Prepare with disaster supplies such as flashlights and extra batteries, candles, first aid kit, emergency dry

fruits and drinking water etc.

• Clear loose and clogged rain gutters

• Preferably fit shutters, or at least metal screens, to all glass areas.

• Check that walls, eaves and roofs of the home are well secure.

• Check with your local council body that your home is built to cyclone standards.

• Keep a list of emergency phone numbers provided TV and radio channels.

• Ensure the members in the home which is the strongest part of the house.

When cyclone strikes

• Disconnect all electrical appliances. Listen to your battery radio for updates.

• Stay inside the shelter and in the strongest part of the home or building.

• If the building starts to break up start cover yourself with mattresses, rugs or blankets under a strong table or hold onto a solid fixture.

• If you are driving, stop – but be well away from the sea and clear the trees, power lines and streams. Stay in the vehicle.

After cyclone

• Don’t go outside until officially advised it is safe.

• Check for gas leaks. Don’t use electrical appliances if it is wet

• Listen to local radio for official warning and advice

• Beware of damaged power lines, bridges, buildings, trees and don’t enter flood waters

• Don’t make unnecessary telephone calls

• If you have to evacuate or did so earlier, don't return until it is advised. Use the recommended route and don't rush

(ii) A flood is an overflow of water on land which is usually dry. Sometimes a water resource (river, lake or pond) gets flushed with too much water. Unusually heavy rain sometimes causes floods. When there is too much water, it may overflow beyond its normal limits. This water then spreads over land, flooding it. Extreme flooding can also be caused by a tsunami or a large storm that causes a storm surge. Floods that happen quickly are called flash floods.

When a flood is imminent

• Listen to designated radio/TV emergency alert systems for emergency instructions.

• Secure/bring in outdoor furniture or other items that might float away and become a potential hazard.

• Move valuable items and papers/documents to upper floors.

During a flood

• Seek higher ground. Do not wait for instructions.

• Be aware of flash flood areas such as canals, streams, drainage channels.

• Be ready to evacuate.

• If instructed, turn off utilities at main switches and unplug appliances - do not touch electrical equipment if wet.

• If you must leave your home, do not walk through moving water. Six inches of moving water can knock you off your feet. Use a stick to test depth.

• Do not try to drive over a flooded road. If your car stalls, abandon it immediately and seek an alternate route.

After a flood

• Stay away from flood water - do not attempt to swim, walk or drive through the area

• Be aware of areas where water has receded. Roadways may have weakened and could collapse.

• Avoid downed power lines and muddy waters where power lines may have fallen.

• Do not drink tap water until advised by the Health Unit that the water is safe to drink.

• Once flood waters have receded you must not live in your home until the water supply has been declared safe for use, all flood-contaminated rooms have been thoroughly cleaned and disinfected, adequate toilet facilities are available, all electrical appliances and heating/cooling systems have been inspected, food, utensils and dishes have been examined, cleaned or disposed of, and floor drains and sumps have been cleaned and disinfected.

(iii) A tsunami, also known as a seismic sea wave, is a series of waves in a water body caused by the displacement of a large volume of water, generally in an ocean or a large lake. Earthquakes, volcanic eruptions and other underwater explosions (including detonations of underwater nuclear devices), landslides, glacier calvings, meteorite impacts and other disturbances above or below water all have the potential to generate a tsunami.

The Indian Tsunami Early Warning Centre (ITEWC) established at Indian National Centre for Ocean Information Sciences, (INCOIS - ESSO) Hyderabad, autonomous body under Ministry of Earth Sciences, is being upgraded continuously to provide tsunami advisories for the events occurring in the global oceans, though it has been recognized as one of the best systems in the world. The ITEWC encompasses a real-time seismic monitoring network of 17 broadband seismic stations to detect tsunamigenic earthquakes, a network of real-time sea-level sensors with 4 Bottom Pressure Recorders (BPR) in the open ocean and 25 tide gauge stations at different coastal locations monitor tsunamis and a 24 X 7 operational tsunami warning centre to provide timely advisories to vulnerable community. It also receives earthquake data from all other global networks to detect earthquakes of M>6.5. The state-of-the-art early warning centre at INCOIS - ESSO is operational since October 15, 2007, with all the necessary computational and communication infrastructure that enables reception of real-time data from seismic & sea-level sensors, analysis of the data, tsunami modeling, and dissemination of tsunami advisories guided by a comprehensive Standard Operating Procedure (SOP).

A host of all available communication technology options have been employed for timely dissemination of advisories to various designated authorities to deal with effective emergency response actions as appropriate. The centre is capable of detecting tsunamigenic earthquakes occurring in the whole of Indian Ocean region as well as in the Global Oceans within 10 minutes of their occurrence and disseminates the advisories to the concerned authorities within 20 minutes through various modes of communication like email, fax, SMS, GTS and website. ITEWC also acts as one of the Regional Tsunami advisory Service Provider (RTSP) along with Australia & Indonesia for the Indian Ocean region. Currently, there are 1800 coastal forecast points covering coastal areas of the entire Indian Ocean region. The necessary actions have been initiated to upgrade the same for covering other coastal regions.

iv. Most industries and factories use harmful substances in their production which, when transported, stored and processed, may endanger human health and life. Experience from all over the world suggests that despite stringent regulations and great care in performing such activities, there is still a certain level of risk of leakage of such substances and environmental pollution. Therefore, the presence of harmful materials must be monitored continuously and all effective safety measures adopted after they exceed the legally permissible concentrations.

A minimum of two potentially dangerous concentration levels of hazardous substances are usually distinguished and monitored:

• Increased concentrations – the interval of concentrations of hazardous substances exceeding the standard values not yet endangering human health.

• Emergency concentrations – the interval of concentrations of hazardous substances exceeding the legally permissible values and seriously endangering human health.

The number of specific concentration levels of hazardous substances to be monitored can be even higher. It is given by the relevant laws, standards, or internal company regulations, and it also depends on types of hazardous material.