Private Security

NVEQ Level 1 – Class IX

SS102-NQ2012-Disaster Management and Emergency Response (Basic)

Student's Workbook

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Acknowledgements

We would like to thank Smt. Anshu Vaish, Secretary, Department of School Education and Literacy, Ministry of Human Resource Development (MHRD), Dr. Alka Bhargava, Director, Vocational Education, Department of School Education and Literacy, MHRD, Professor Parveen Sinclair, Director, National Council of Educational Research and Training (NCERT), Professor R. B. Shivagunde, Joint Director, PSS Central Institute of Vocational Education (PSSCIVE), Mr. Basab Banerjee, Head, Standards and Quality Assurance, National Skill Development Corporation for guidance and steering the whole process of the development of curricula and teaching-learning materials. We express our sincere gratitude and thanks to Kunwar Vikram Singh, Chairman, Security Knowledge and Skill Development Council (SKSDC), Lt. General S.S. Chahal (Retd.), Chief Executive Officer, SKSDC, and Major General Bhupinder Singh Ghotra (Retd.), Chief Operating Officer, SKSDC, for their guidance and help.

Sincerest thanks are due to contributor Mrs Leena Kapoor, Unifiers Social Ventures Pvt. Ltd., D- 253, Sarvodaya Enclave, New Delhi for her earnest efforts and commitment in developing this Unit. We are grateful to Dr. Vinay Swarup Mehrotra, Associate Professor and Head, Task Group on Curriculum Development and Evaluation, PSSCIVE and Col. (Retd.) Tapesh Chandra Sen who have made substantial contributions to finalizing the content and editing of the workbook.

Special thanks are due to Professor Rajaram S Sharma, Joint Director, Central Institute of Educational Technology (CIET), New Delhi for providing facilities for conducting meetings of the Curriculum Committee at CIET. We also acknowledge the help of Dr. Amarendra Prasad Behra, Associate Professor, CIET during the working group meetings. We take this opportunity to express our gratitude to Mr. Vikrant Abrol, M/s Unifiers Social Ventures Pvt. Ltd. for technical support. We also acknowledge the help of Mr. Chalapathi Rao, Computer Operator, PSSCIVE for his help in word processing.

Table of Contents

Preface

The National Curriculum Framework, 2005, recommends that children's life at school must be linked to their life outside the school. This principle makes a departure from the legacy of bookish learning which continues to shape our system and causes a gap between the school, home, community and the workplace.

The student workbook on "**Disaster Management and Emergency Response (Basic)**" is a part of the qualification package developed for the implementation of National Vocational Education Qualification Framework (NVEQF), an initiative of Ministry of Human Resource Development (MHRD), Government of India to set common principles and guidelines for a nationally recognized qualification system covering Schools, Vocational Education and Training Institutions, Technical Education Institutions, Colleges and Universities. It is envisaged that the NVEQF will promote transparency of qualifications, cross-sectoral learning, student-centred learning and facilitate learner's mobility between different qualifications, thus encouraging lifelong learning.

This student workbook, which forms a part of vocational qualification package for student's who have passed Class VIII or equivalent examination, was created by a group of experts. The Security Knowledge and Skill Development Council (SKSDC) approved by the National Skill Development Corporation (NSDC) for the Private Security Industry developed the National Occupation Standards (NOS). The National Occupation Standards are a set of competency standards and guidelines endorsed by the representatives of Private Security Industry for recognizing and assessing skills and knowledge needed to perform effectively in the workplace.

The Pandit Sunderlal Sharma Central Institute of Vocational Education (PSSCIVE), a constituent of National Council of Educational Research and Training (NCERT) in association with SKSDC has developed modular curricula and learning materials (Units) for the vocational qualification package in Private Security sector for NVEQ levels 1 to 4; level 1 is equivalent to Class IX. Based on NOS, occupation related core competencies (knowledge, skills, and abilities) were identified for development of curricula and learning modules (Units).

This student workbook attempts to discourage rote learning and to bring about necessary flexibility in offering of courses, necessary for breaking the sharp

boundaries between different subject areas. The workbook attempts to enhance these endeavour by giving higher priority and space to opportunities for contemplation and wondering, discussion in small groups and activities requiring hands-on-experience. We hope these measures will take us significantly further in the direction of a child-centred system of education outlined in the National Policy of Education (1986).

The success of this effort depends on the steps that school Principals and Teachers will take to encourage children to reflect their own learning and to pursue imaginative and on-the-job activities and questions. Participation of learners in skill development exercises and inculcation of values and creativity is possible if we involve children as participants in learning, and not as receiver of information. These aims imply considerable change in school routines and mode of functioning. Flexibility in the daily time-table would be a necessity to maintain the rigour in implementing the activities and the required number of teaching days will have to be increased for teaching and training.

About Your Workbook

This workbook is to assist you with completing the Unit of Competency **SS102-NQ2012: Disaster Management and Emergency Response (Basic).** You should work through the workbook in the classroom, at the workplace or in your own time under the guidance and supervision of your teacher or trainer. This workbook contains sessions which will help you to acquire relevant knowledge and skills (soft and hard) on various aspects of the unit of competency. Each session is small enough to be easily tackled and digested by you before you move on to the next session. Animated pictures and photographs have been included to bring about visual appeal and to make the text lively and interactive for you. You can also try to create your own illustrations using your imagination or taking the help of your teacher. Let us now see what the sections in the sessions have for you.

Section1: Introduction

This section introduces you to the topic of the Unit. It also tells you what you will learn through the various sessions covered in the Unit.

Section 2: Relevant Knowledge

This section provides you with the relevant information on the topic (s) covered in the session. The knowledge developed through this section will enable you to perform certain activities. You should read through the information to develop an understanding on the various aspects of the topic before you complete the exercise (s).

Section 3: Exercise

Each session has exercises, which you should complete on time. You will perform the activities in the classroom, at home or at the workplace. The activities included in this section will help you to develop necessary knowledge, skills and attitude that you need for becoming competent in performing the tasks at workplace. The activities should be done under the supervision of your teacher or trainer who will guide you in completing the tasks and also provide feedback to you for improving your performance. To achieve this, prepare a timetable in consultation with your teacher or trainer and strictly adhere to the stipulated norms or standards. Do not hesitate to ask your teacher or trainer to explain anything that you do not understand.

Section 4: Assessment

The review questions included in this section will help you to check your progress.

You must be able to answer all the questions before you proceed to the next session.

INTRODUCTION

Effective security today requires personnel who are familiar with all aspects of a security system. Security Personnel should know how to assess and contain potential threats. They should be able to perform duties in almost every type of **emergency or disaster**. They should be prepared to initiate **emergency plans** and **recovery operations** before help can arrive from the concerned local authority. Local authority includes *Panchayati Raj* institutions, municipalities, a district board, cantonment board, town planning authority or *Zila Parishad* or any other body or authority for rendering essential services or with the control and management of civic services within a specified local area.

Over the years there has been an alarming increase in the occurrence of natural and manmade disasters. Security Officers are required to be well versed in emergency procedures and should be able to work with an organisation to ensure that emergency procedures are implemented successfully. They are also required to work closely and effectively with general public or the community members in the event of any disaster.

This Unit will help you in developing knowledge, skills and abilities required for dealing with the various aspects of emergencies and disasters and also to identify the role of self in responding to the accidents or disasters.

SESSION 1: IDENTIFYING NATURAL AND MANMADE DISASTERS

RELEVANT KNOWLEDGE

Almost every day, newspapers, radio and television channels carry reports on **disaster** striking parts of the world.

The term disaster owes its origin to the French word **"Desastre"** which is a combination of two words '**des**' meaning **bad** and '**aster**' meaning **star**. Thus, the term refers to 'Bad or Evil Star'.

Disaster means a catastrophe, mishap, calamity or grave occurrence in any area, arising from natural or manmade causes, or by accident or negligence which results in substantial loss of life, increased human suffering of such a nature or magnitude, as to be beyond the coping capacity of the community.

MEANING OF DISASTER

A disaster can be defined as "***A serious disruption in the functioning of the community or a society causing wide spread, economic, social or environmental losses which exceed the ability of the affected society to cope using its own resources***".

Disasters are either **natural**, such as floods, droughts, cyclones and earthquakes, or **manmade** such as riots, conflicts, devastating fires, epidemics, industrial accidents, and environmental fallouts.

A disaster results from the combination of (i) **hazard**, (ii) **vulnerability** and (iii) **insufficient capacity of individual or community to reduce the potential chances of risk.**

MEANING OF RISK

Risk is a **"measure of the expected losses due to a hazard event occurring in a given area over a specific time period"**. The level of risk depends upon the (i) Nature of the hazard, (ii) Vulnerability, and (iii) Economic value of the elements. For example, destruction and economic losses caused by the occurrence of earthquake will be more at a place where the density of buildings and population is more.

Risk=Threat X Vulnerability

Any hazard, for instance flood which may be triggered by a certain vulnerability factor, for example environmental degradation, would lead to disaster causing loss to life and property. On the other hand, an earthquake in an uninhabited desert cannot be considered a disaster, as it will not be affecting life and property. An earthquake is disastrous only when it affects people, their properties and activities. Thus, disaster occurs only when hazards and vulnerability meet. But it is also to be noted that with greater capacity of the individual/community to face these disasters, the impact of hazard reduces. Therefore, we need to understand three major components of disaster namely **hazard, vulnerability** and **capacity of the people to cope with the risk**. But first, let us differentiate between hazard and disaster.

MEANING OF HAZARD

Hazard is defined as "***a dangerous condition or event that threatens or has the potential to cause injury to life or damage to property or the environment***." Hazards can be grouped into two broad categories, namely **natural** and **manmade**.

(i) Natural hazards: These are hazards which are caused because of natural phenomena, which could be meteorological (e.g., heavy rains), geological (e.g., landslides) or even biological origin (e.g., gas

leak). Examples of natural disasters are cyclones, earthquake, tsunami, and volcanic eruption which are exclusively of natural origin. Landslides, floods, drought, fires are socio-natural or hybrid disasters since their causes are both natural and manmade. For example flooding may be caused because of heavy rains or blocking of drains and landslides may occur after humans have cut forest trees on a mountain slope. The natural disasters threatening India include earthquakes (usually in the Himalayan region), floods including tsunamis (usually in river deltas, coastal areas) and landslides (particularly in hilly areas during the rainy season).

(ii) Manmade hazards: These are hazards which are due to human negligence or wrong intentions. Manmade hazards include explosions, leakage of toxic waste, pollution, dam failure, wars, civil strife, train crashes, road accidents, industrial accidents, large-scale blazes, cyber attacks and terrorist attacks. The list of such hazards is very long and it has been summarized for you in table 1. Safety hazard is anything that can have an adverse impact on your safety. There are a lot of safety hazards, which you may encounter at home, workplace or public place, for example (i) Use of sharp knives, (ii) Energized electrical wires, (iii) Hazards in deep water, (iv) Machinery pinch points, (v) Being struck by moving equipment, (vi) Falling off an unguarded roof edge.

Table 1: Example of Disasters

S.No.	Type of Hazards	Example of Disasters
1.	**Geological Hazards**	Earthquake
		Tsunami
		Volcanic eruption
		Landslide
		Dam burst

		Mine fire
2.	**Water and Climatic Hazards**	Tropical cyclone
		Tornado, Hurricane
		Floods
		Drought
		Hailstorm
		Cloudburst
		Heat and cold wave
		Snow avalanche
		Sea erosion
3.	**Environmental Hazards**	Environmental pollution
		Deforestation
4.	**Chemical Hazards**	Oil Spill
		Gas leak (e.g., chemical disaster in Bhopal in 1984, which is alleged to have killed more than 3,000 people).
5.	**Industrial Hazards**	Fire accidents
		Effluents
6.	**Nuclear Hazards**	Nuclear explosion
7.	**Biological Hazards**	Human/Animal epidemics
		Pest attacks
		Desertification
		Food poisoning
		Weapons of mass destruction
8.	**Accident Related**	Road accidents
		Train accidents
		Air crash
		Rural/Urban fire
		Bomb blast
		Forest fire
		Building collapse
		Electric accidents
		Festival related disasters
		Mine flooding

MEANING OF EMERGENCY

An **emergency** is "***a sudden, urgent, usually unexpected occurrence requiring immediate action***". In an emergency, immediate response and relief activities are carried out by government, non-government and volunteer agencies. These activities include alleviating a disastrous situation, search and rescue, First Aid, provision of food, clothing, shelter, medicine to those affected, etc. Emergency could also be in anticipation of a hazard turning into disaster and could involve evacuation, provision of food, clothing, shelter, medicine, etc.

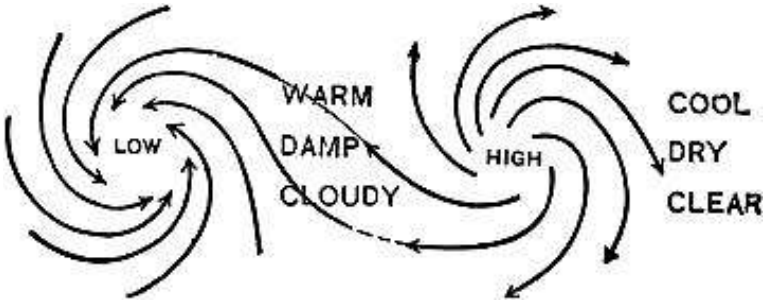
DIFFERENCE BETWEEN DISASTER AND EMERGENCY

Difference between Disaster and Emergency: Both emergency and disasters can begin suddenly, but disasters usually result in a larger impact to the community when compared to emergencies. Though both emergencies and disasters present situations that demand quick action, one can prepare for emergencies but not disasters. Emergency can be of a very small level involving a single person having suffered heart attack, whereas disaster is on a much bigger scale and has the potential to cause large scale destruction of life and property. Emergencies like fire breaking out in a building can be tackled by police and fire departments working in close cooperation. In disasters like floods, wildfires, etc., prompt action by a team of people from the administration, police, fire, and health department, supported by community members including Non-government organizations (NGO) and Voluntary Organizations (VO) is needed on a war footing to lessen the destruction of life and property.

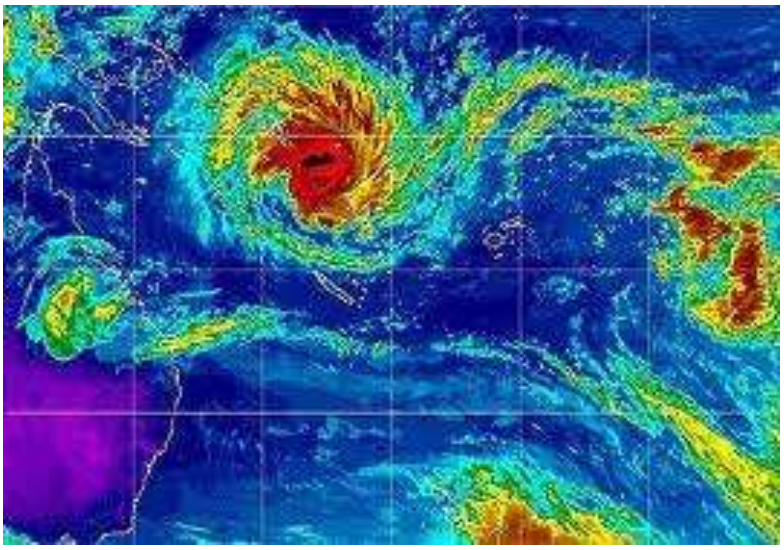
Types of natural disaster: Let us now have a look at the different **types of natural disasters, which include** cyclone, floods, volcanic eruption, landslide, tsunami, torrential rains, earthquake, etc. from the point of view of their cause and effects.

TYPES OF NATURAL DISASTERS

(i) Cyclones: Cyclones are caused by atmospheric disturbances around a low-pressure area distinguished by swift and often destructive air circulation. They are usually accompanied by violent storms and bad weather. Cyclones are classified as: (i) extra tropical cyclones (also called temperate cyclones), and (ii) tropical cyclones. In India, cyclones occur frequently on the west coast of Arabian Sea; and the east coast of Bay of Bengal.



Tropical cyclones form only over warm ocean waters near the equator. To form a cyclone, warm moist air over the ocean rises upward from near the surface. As the warm air rises, it causes an area of lower air pressure below. Air from surrounding areas with higher air pressure pushes into the low pressure area.



Then this new "cool" air becomes warm and moist and rises, too. And this cycle continues. As the warm, moist air rises and cools, the water in the air forms clouds. The whole system of clouds and wind spins and grows and is fed by the ocean's heat and water evaporating from the ocean surface. As the storm system rotates faster and faster, an eye forms in the centre. It is very calm and clear in the eye, with very low air pressure. Higher pressure air from above flows down into the eye. When the winds in the rotating storm reach 63 kmph (kilometers per hour), the storm is called a "tropical storm". And when the wind speeds reach 119 kmph, the storm is officially a "tropical cyclone" or hurricane. These are deadly to all life on the coasts, and cause widespread destruction.

(ii) Earthquake: Earthquake refers to shaking of earth. There are several large plates below the surface of the earth, which move at a very slow speed. As a part of this movement, sometimes, they collide against each other. And, after the collision, they might still continue to push each other. As they continually keep pushing each other, there is a pressure building up across these plates below the surface. And, then, at a certain time, one of the plates might slide over another. This causes an earthquake.

The place where the earthquake originates is known as "focus" and just above the focus is the "epicenter". Seismic energy is usually caused by the brittle failure (fracturing) of rocks under stress. This commonly occurs due to movement along tectonic plate boundaries. The intensity of the earthquake is measured on a "Richter Scale", just like we measure the temperature on Celsius or Fahrenheit scale. The categorization of earthquake on the basis of magnitude on Richter scale is given in table 2.

Table 2: Categorization of Earthquake

Earthquake Intensity	Measurement on Richter Scale
Great	More than 7.0
Moderate	5.0 to 7.0
Slight	Less than 5.0

India has been divided into five different seismic zones with respect to the severity of the earthquakes. Of this, Zone V is seismically the most active region where earthquakes of the magnitude of 8 or more on the Richter scale could occur.

(iii) Floods: Floods are the most frequent natural calamity that India has to face almost every year in varying magnitudes in some or the other parts of the country. Flooding is caused by the inadequate capacity within the banks of the rivers to contain the high flows brought down from the upper catchment due to heavy rainfall. Areas having poor drainage get flooded by accumulation of water from heavy rainfall. It is disastrous to the ecology and human habitations. We have experienced floods sometime in our life and we can well imagine the amount of devastation that the floods cause every year during rainy season. During the floods, there is a loss of precious human life, property, plants, trees, organisms, animals, etc. and after the flood there is human and animal suffering, spread of diseases, lack of shelter and food, etc.

(iv) **Landslide:** Landslide occurs when the stability of a slope changes from a stable to an unstable condition. A landslide could be rock-fall, deep failure of slopes and shallow debris flows, which can occur in offshore /onshore / coastal environments. Landslides and avalanches are among the major hydro-geological hazards that affect large parts of India, especially the Himalayas, the Northeastern hill ranges, the Western

Ghats, the Nilgiris, the Eastern Ghats and the Vindhyas.

(v) Tsunami: The term Tsunami has been coined from the Japanese term "Tsu" meaning "harbour" and "Nami" meaning "waves". It is caused by undersea earthquakes or underwater landslides. The tidal waves caused by the tsunami can reach 15 m or more in height and are disastrous to all life on the sea shore. With satellite technology, tsunami can be predicted and warning can be issued before the tsunami reaches the seashore or becomes devastating.

(vi) Torrential Rains: It simply means very heavy rain, which is liable to cause flooding. It is the rain which comes down 'like a torrent' and may damage life and property.

(vii) Volcanic eruption: A volcano is an opening or rupture, in the Earth's surface or crust which allows hot magma, volcanic ash and gases to escape from below the surface. Volcanic eruptions cause these harmful substances to flow out of a volcano. Volcanic eruptions can cause widespread destruction and the smoke emanating from the volcano can affect the flight schedules and the airlines may have to stop their flights.

HUMAN- INDUCED DISASTERS

Human Induced Disasters: Let's us now look at some of the human-induced disasters.

(i) Accident: It is an unforeseen event or circumstance, often with lack of intention or necessity, leading to a negative outcome, which is painful or fatal e.g., road accident, fire accident, etc.

(ii) Bomb blasts: Bomb blasts are the results of a detonated explosive or inflammatory device causing property damage, death and injuries.

(iii) Fire: Bush fires, forest fires, wild fires and mine fires are generally caused by lightning or human beings. Fires can turn thousands of square kilometers into lifeless stretches. If a fire intensifies enough to produce its own winds and 'weather', it will turn into a firestorm. Casualties resulting from fires, regardless of their source or initial cause, can be aggravated by inadequate emergency preparedness. Such hazards as lack of accessible emergency exits, poorly marked escape routes, medical unpreparedness, improperly maintained fire extinguishers may result in many more deaths and injuries that might occur with such protection.

(iv) Theft or burglary: It is the act of taking of another person's property without that person's permission or consent with the intent to deprive the rightful owner of it. It is also used as a term for crimes against property. Sometimes the thief or burglar causes harm to life during the act of theft or burglary.

(v) Acts of violence: It is the intentional use of physical force or power against another person or against a group or community that either results in or has a high likelihood of resulting in injury, death, psychological harm or deprivation.

(vi) Industrial accidents: Rapid industrialisation has increased the hazard, risk and vulnerability to the industry and the environment. Chemical accidents can occur due to lack of safety measure, technical break down, or due to a human error. It, thereby, initiates a series of uncontrolled physiochemical phenomenon such as runaway chemical reactions, large spills, fires and explosions.

You might have heard about the tragic Gas Tragedy that occurred in Bhopal, the capital of Madhya Pradesh on the night of December 2-3, 1984. It is considered as one of the world's worst industrial

disasters. It started with a leak of methyl isocynate (MIC) gas and other chemicals from the pesticide plant of Union Carbide of India and resulted in the exposure of toxic gases to the hundreds and thousands people. It is estimated that about 3,000 people died within weeks and another 8,000 have since died from gas-related diseases.

Factors leading to the magnitude of the gas leak include (i) Storing MIC in large tanks and filling beyond recommended levels, (ii) Poor maintenance after the plant ceased MIC production at the end of 1984, (iii) Failure of several safety systems (due to poor maintenance), and (iv) Safety systems being switched off to save money, including the MIC tank refrigeration system which could have mitigated (reduced) the disaster's severity. The problem was made worse by the mushrooming of slums in the vicinity of the plant, non-existent catastrophe plans, and shortcomings in health care and socio-economic rehabilitation. All these factors contributed to the vulnerability of the people to the disaster.

EXERCISE

Assignments

1. Visit a library and write in 100 words about two incidents of disaster published in the newspaper or magazine. It may include:

- Natural disaster such as flood, storm, drought, coastal erosion, landslide or disaster arising from storm and heavy rain.
- Industrial disaster such as explosion, fire, pollution and leaking of hazardous materials

from factories, plants and industrial centre that process, produce and store such materials.

- Accident that involve transportation, drainage and transfer of dangerous materials.
- Collapse of high rise buildings and special structures.
- Air disaster.
- Train collision or derailment.
- Fire involving big area or fire in high rise building
- Collapse of hydro dam or water reservoir.
- Nuclear accident and radiology.
- Emanation of toxic gasses at public places.

Incident 1:

Incident 2:

2. Visit an organisation/institution/factory and take note of the equipment that the organisation/institution/ factory has in place for meeting disaster/ emergency situations. Discuss with the concerned person whether the organisation/institution/factory has a contingency plan for meeting the situations arising due to emergency or disaster.

3. Read the expressions written on the illustration and write them in the space given below:

ASSESSMENT

Answer the following questions

A. Short Answer Questions

1. What is disaster?

_____

_____

_____

_____

2. What is emergency?

_____

_____

_____

_____

3. State <u>two</u> differences between disaster and emergency.

_____

_____

_____

_____

4. Write three examples of natural hazards.

_____

_____

_____

_____

5. Write two examples of manmade hazards.

_____

_____

B. Multiple Choice Questions

Tick the most appropriate answer from the choices given below:

1. What does tsunami literally means?

(a) Huge waves
(b) Harbour waves
(c) Tide waves
(d) Serial waves

2. How do earthquakes occur?

(a) Due to vertical explosion of magma in the earth
(b) Due to seasonal changes
(c) Due to gravitational pull of the moon
(d) Due to sudden movement of the earth plates

3. The place where an earthquake originates is known as

(a) Focus
(b) Epicenter
(c) Fault line
(d) Line of fault

4. Securing the scene, preserving life, and treating the wounded in the event of a disaster is the responsibility of

(a) Health Care Professionals
(b) Paramedics
(c) Social Workers
(d) First Responder

C. Short Answer Questions

Given below are the causes and effects of natural disasters. Identify the disaster and write its name in the cell.

Cause and Effect	**Name of Disaster**
Destructive warm moist air over the ocean, which may reach upto 63 kmph. Destroys life, trees, huts, etc. on the coast.	
Large plates on the earth shake, push each other and may slide over another. Large scale destruction of property and life.	
Heavy rains coupled with inadequate capacity of the banks to contain the high flows of the water. Loss of life, property, plants, trees, organisms.	
Hydro-geological hazard that results in avalanches.	
Caused by undersea earthquakes or underwater landslides. Mass scale destruction on the sea shore.	
Hot magma, volcanic ash, and gasses escapes from below the surface of the earth and forms a cater. Widespread destruction and the smoke may disrupt flight schedules.	

CHECKLIST FOR ASSESSMENT ACTIVITY

Use the following checklist to see if you've met all the requirements for assessment activity.

Part A

(a) Differentiated between disaster and hazard.
(b) Differentiated between natural hazards and man made hazards.
(c) Differentiated between disaster and emergency.

Part B

Discussed in class the following:

(a) What is hazard?
(b) What is disaster?
(c) What are the natural and human induced disasters?
(d) Why do we need to study about disaster management?

Performance standards

The performance standard covered by the assessment includes the following, but not limited to:

Performance standards	Yes	No
Enlist the types of hazards		
Enlist natural disasters		
Enlist man made disasters		
Identify the cause of natural and man made disasters		

SESSION 2: IDENTIFYING ELEMENTS OF DISASTER AND EMERGENCY MANAGEMENT

RELEVANT KNOWLEDGE

Let us now try to understand the different aspects of emergency and disaster management. We will also identify the role of various government, non-government organizations and community members in disaster management. In the process you also need to identify your role in the event of an emergency/disaster. But, first let us try to understand the meaning of disaster and emergency management.

MEANING OF DISASTER AND EMERGENCY MANAGEMENT

Disaster management is a continuous and integrated process of planning, organising, coordinating and implementing measures which are necessary for prevention of danger or threat of any disaster, mitigation or reduction of risk of any disaster or its severity. In simple terms, it means dealing effectively with disaster. It includes prompt response to any disastrous situation or disaster, which includes (i) preparedness, (ii) evacuation, (ii) rescue and relief, (iii) recovery, (iv) rehabilitation and (v)reconstruction.

Emergency management is defined as a process to reduce loss of life and property and to protect assets from all types of hazards through a comprehensive, risk based, emergency management programme which include the following: (i) **mitigation**, (ii) **preparedness,** (iii) **response**, and (iv) **recovery**. Mitigation of emergency includes all those activities taken to eliminate or reduce the probability of the event, or reduce its severity or consequences, either prior to or following emergency. It is accomplished by identifying risks and implementing counter measures to reduce the risks. The goal of mitigation is to reduce the risks that a facility and its personnel are exposed to.

Security personnel can be the key resource in the mitigation process, as they are intimately aware of the facility and the threats that the property and people face.

Let us now consider "earthquake" as the disaster and look at the activities to be undertaken before, during and after an earthquake. It will help us to understand how to prepare and respond to situations of disaster.

(A) <u>Preparedness (before a disaster):</u> Preparedness before a earthquake helps in minimising loss of life and property and disruption of critical services. Preparedness includes activities, programmes, and systems developed and implemented prior to a earthquake that are used to support and enhance mitigation of, response to and recovery

from disaster or emergency.

Security personnel can play many roles in the preparedness for an emergency or disaster. It includes security awareness, safety, terrorism awareness, and emergency evacuation procedures. Preparedness activities also include training for emergency situations and ensuring that the equipment and supplies are in place and in proper working conditions.

PREPAREDNESS

Security personnel should have complete knowledge of the layout of the building and routes of entry and exit. They can also identify critical areas that needs to be secured and the locations of hazardous materials. With proper training, security forces can play significant roles in identifying the vulnerabilities and weaknesses of a facility. Patrols by security officers are effective in ensuring that emergency exits are kept clear.

The rescue team should be trained in use of acoustic devices to detect faint noises from the debris of collapsed buildings. The members of the rescue team should also know how to use infrared cameras for locating people under the rubble or bioradar equipment.

The activities that could be undertaken to reduce human and property losses caused by a potential hazard include carrying out awareness campaigns, developing a warning system, training of personnel, strengthening the existing structures, preparing disaster management plans at household and community level, formulation of viable emergency plan, etc. Let us now discuss some of these activities to determine our role as a responsible community member in the whole process of preparedness.

(i) Preparing a Disaster Plan: It is important that a disaster plan should be prepared, especially for disaster prone areas. Knowledge of nearby shelters, emergency numbers and contact information of nearby people is essential as there may be an emergency to evacuate the area and move them to safer or less threatened places. Some questions that need to be addressed for preparing a disaster plan will include the following:

a) How will everybody **get out** of the premises?
b) Who will be responsible for special assistance for **evacuation** of children, elderly and disabled people?
c) Where will everybody **assemble**?
d) How will people **communicate** with each other if groups are separated?
e) What **materials** would be needed for rescue?

An emergency plan contains the following aspects in appropriate details:

(i) Brief introduction of the area (topography, climate, demography, industry)
(ii) Natural and manmade disasters (history and statistics).
(iii) Command area (structure of the government at various levels, powers and responsibilities, role of emergency services, etc.).
(iv) List of emergency and other services (name of agency, address and telephone numbers of the agencies, police, fire services, essential services, water and power supply, medical, transport and railways, post and telegraph, telephone, national cadet corps, etc.).
(v) Activation of operations (warning systems, etc.).

(vi) Establishment of control room.
(vii) Co-ordination with various agencies.
(viii) Arrangements at the scene of disaster (responsibility and accountability of each agency, duties of first officer/responder at scene, duties of control room staff, senior supervisory officer, incident officer, investigating officer, etc.).
(ix) Dissemination of information to agencies/ departments concerned.
(x) Medical centre (collection point for survivors, shelters for survivors, temporary mortuary, identification of victims, etc.).
(xi) Search, rescue and evacuation procedures to be adopted (team, method, etc.).
(xii) Transport and traffic arrangements
(xiii) Management of law and order.
(xiv) Role of media (to broadcast and telecast accurate information, etc.).
(xv) Communication system (public information system, etc.).
(xvi) Housing (number and location of houses, etc.).
(xii) Monitoring and evaluation.

(ii) Maintaining a Contact List: A **contact list** should be prepared and updated regularly. It should include the phone and fax numbers and e-mail addresses of law-enforcement agencies, fire-and-rescue authorities, hospital emergency rooms, the Red Cross, and local emergency management office. The information should be updated monthly and distributed to each member of the emergency-response team. The basic responsibility of the government is to undertake rescue, relief and rehabilitation in the aftermath of a disaster. Let us now look at some of the authorities or departments at various levels – national, state, district, block and village level which are responsible for playing an active role in disaster management.

(iii) Role of Government Agencies in Disaster Management: At the National level, the Central Government provides supplementary physical and financial resources. The various Ministries involved in disaster management are listed in table 3.

Table 3: Ministries of Government of involved in Disaster Management

Disaster	Name of Ministry
Earthquakes and Tsunami	Ministry of Home Affairs/Ministry of Earth Sciences
Floods	Ministry of Home Affairs /Ministry of Water Resources
Cyclones	Ministry of Home Affairs /Ministry of Earth Sciences
Drought	Ministry of Agriculture
Biological Disasters	Ministry of Health and Family Welfare
Chemical Disasters	Ministry of Environment and Forest
Nuclear Disasters	Ministry of Atomic Energy
Air Accidents	Ministry of Civil Aviation
Railway Accidents	Ministry of Railways
Civil Strife	Ministry of Home Affairs

RESPONSE

Disaster Management Authorities and Institutions: Let us now look at some of the Authorities and Institutions directly involved in the disaster management at various levels.

(a) National level

The **National Disaster Management Authority** (NDMA), headed by the Prime Minister of India, is the apex body for disaster management in India. The

setting up of the NDMA and the creation of an enabling environment for institutional mechanisms at the State and District levels is mandated by the Disaster Management Act, 2005. The Authority is required to prepare guidelines, based on which the Nodal Ministry prepare a detailed Action Plan for effective management of disasters. The other authorities and Institutions or Centres are as follows:

1. Central Disaster Management Authority (CDMA).
2. National Center for Disaster Management (NCDM), New Delhi.
3. National Information Center (NIC) of Earthquake Engineering, Indian Institute of Technology, Kanpur, Uttar Pradesh.
4. Disaster Management Institute, Bhopal, Madhya Pradesh.
5. Disaster Mitigation Institute (DMI), Ahmedabad, Gujarat.
6. Environment Protection Training and Research Institute, Hyderabad
7. National Civil Defense College, Nagpur, Maharashtra.

(b) State level

At the State level, a State level Committee headed by the Chief Minister or the Chief Secretary of the State is the overall in-charge of the relief and rehabilitation measures during a disaster. The Relief Commissioner of the Committee or the Secretary, Department of Revenue is in-charge of the relief operations. The States develops relief manual and contingency plan called as **"State Relief Code"** and **"State Contingency Plan"** respectively to deal with the situation in case of emergency or disaster.

(c) District level

At the district level, a **District Disaster Management Committee**, headed by the District Magistrate and comprising officials from the Departments of Health, Irrigation, Veterinary, Water and Sanitation, Police, etc. and representatives from International and National non-government organizations are responsible for oversight of the relief and rescue operations during the disaster. It takes the help of the disaster management teams of Fire Service Department, Police Department and Health Department.

(d) Block level

At the block level, **Block Development Officer (BDO) or *Taluka* Development Officer** is the nodal officer of the disaster management committee.

(e) Village level

At the village level, the Village Disaster Management Committee, headed by a *Sarpanch* or Village Headman is responsible for preparing the Village Disaster Management Plan and coordinating with various agencies for providing training to the members of the local rescue team and managing rescue and relief operations during the disaster. *Panchayati Raj* bodies are the most appropriate local institutions for involving people in natural disaster preparedness. *Panchayati Raj* bodies have a role to play in all phases of disaster management.

(iv) Role of Other Agencies

Besides the government, there are several other agencies or institutions which are involved in preparedness and rescue and relief operations during the disaster. These agencies include paramilitary

forces, civil defence, Home Guards, National Cadet Corps (NCC), member of National Service Scheme (NSS), youth organizations, United Nation (UN) Agencies, International and National Voluntary Groups/Organizations, and Non-government Organizations (NGOs).

(B) <u>During a disaster (disaster occurrence):</u> Activities undertaken at this stage are called emergency response activities. The community members are the 'first responder' and they should take the initiative to ensure that the needs and provisions of victims are met and the suffering is minimized.

Let us now try to understand how we can recognize an earthquake, how people can get hurt during an earthquake, and what evacuation procedures should be carried out during an earthquake.

(i) Recognizing an earthquake

The most common ways to identify the onset of an earthquake would be:

- A feeling of shaking of the ground below you, if you are sitting or standing. The most common feeling is that of giddiness.
- Swinging of overhead hanging stuff, e.g. fans, chandeliers, etc.
- If you are driving a four wheeler, you may feel the shaking of tire.

(ii) How can one get hurt during an earthquake?

During an earthquake, there are many ways by which one can get hurt (many a times, fatally). Let us consider some of them to get a feel of the damage that an earthquake can cause.

- People inside buildings could get hurt critically by fall of objects/walls/ceilings.
- People near the buildings could get hurt by falling debris from damaged buildings, glasses, etc.
- People travelling could get hurt by their vehicles falling off the tracks, bridges, material falling from overhead bridges, etc.
- People could get electrocuted by snapped electrical wires.

Evacuation Procedures for Building Occupants: Now that you have felt that how an earthquake could be disastrous, let us try to understand some of the measures that we need to take in the event of an earthquake.

- All occupants should know where **primary and alternate exits** are located, and be familiar with the various evacuation routes available.
- Floor plans with escape routes, alternate escape routes, exit locations, and designated meeting sites should be available with the occupants of the building.
- When the alarm sounds, occupants of the building should ensure that nearby attendees are kept calm, and are made aware of the ensuing procedure that will be followed.
- Quickly shutdown operating equipment (e.g., Liquid Petroleum Gas cylinders), close doors and exit the building using stairs. Never use lift.
- All occupants should proceed to the designated evacuation **assembly point** and await further instructions.

(C) <u>After a disaster (post-disaster)</u>: After a disaster steps will have to be taken to achieve early recovery and rehabilitation of affected people or communities, immediately after the disaster. These are called as **response and recovery** activities. Response includes activities designed to address the immediate and

short-term effects of the disaster or emergency. This could include handling equipment, ordering evacuations, ordering shelter in place actions, and coordinating evacuations to move personnel to less dangerous locations. Recovery involves activities conducted after the disaster or emergency to return conditions to a level that is acceptable to the entity i.e., restoring facilities to operations. This also includes developing the capacity of the people to cope with the consequences of disaster.

Role of Private Security Personnel in Disaster Management: The Security personnel are expected to initiate an emergency response sequence by activating an alarm and notifying the proper authorities of the emergency. He/she should respond in a defensive manner to protect the property, person or the environment from a safe distance. He/She should respond in an aggressive manner for controlling the hazard only when adequately trained for the purpose and possesses specialized competencies. To deal with the situations of emergency, the Security Personnel must be educated and trained on various aspects of emergencies, which include but not limited to the following:

(i) An understanding of the basic hazards and risk assessment techniques.
(ii) An understanding of how to select and use Personal Protective Equipment (PPE).
(iii) An understanding of the classification and verification of hazardous tools, equipment and materials.
(iv) An ability to function within an assigned role in the incident command system.
(v) An ability to report, perform basic or advance control and containment and/or confinement

operations within the given resources and capability.
(vi) An ability to undertake necessary precautions while entering a damaged building. The precautions will include, but not limited to:

(a) Use of helmet, (b) Working in pairs, (c) Keep calling, (d) Listening for sounds, (e) Not touching or disturbing any damaged walls or blocked doors, (vi) Not moving through doors and windows which are broken and/or projecting, (vii) Treating all naked wires as live wires, (viii) Not igniting fire, (ix) Keeping close to the walls, and (x) Not pulling anything projecting out from the collapsed portions.

EXERCISE

Case Based Problem

Read the scenario given below and answer the questions that follow:

A severe earthquake measuring 6.8 on the Richter Scale rocked Sikkim on Sunday evening resulting in at least 20 deaths and injuries to several others. The epicentre of the earthquake was 64 km from Gangtok causing major damages in the area. Several buildings have also been damaged in Gangtok. The area of Mangan in North Sikkim, the epicentre, was said to be the worst hit. The earthquake struck on Sunday at 6:10 PM and tremors were felt in many parts of Bihar including the state capital, Patna, West Bengal and Uttar Pradesh also. Mild tremors were also felt in Delhi and other parts of North India. The NTPC power plant in Kahalgaon in Bihar has also been shut down because of the earthquake following which North Bihar was under power crisis.

The Central Government rushed teams of the national disaster response forces. About 400 personnel and

equipment were flown to Bagdogra which proceeded on to Gangtok by road. Aftershocks measuring 6.1 and 5.3 on the **Richter Scale** were also felt around Sikkim 20 minutes after the earthquake.

There were also reports of landslides following the earthquake in areas around Sikkim and also Darjeeling. Two major landslides have been reported from Sikkim's capital, Gangtok cutting off the National Highway. Mobile connectivity has also been affected in the earthquake-hit areas.

Severe damage is expected in areas of Nepal adjoining Sikkim. Parts of the wall of the British Embassy in Nepal have collapsed due to the earthquake in Sikkim.

Two Indian Air Force aircraft have been sent from Hindon to Bagdogra while one aircraft has been sent from Palam. One aircraft from Kolkata has left for Bagdogra with personnel of National Disaster Rescue Force along with all equipment. They will be taken from Bagdogra to Gangtok by road which is being facilitated by Border Security Force (BSF) and West Bengal Government.

The Indo-Tibetan Border Police has launched search and rescue operations in Pegong area of north Sikkim which has been "badly affected" with two ITBP buildings also collapsing after the state was rocked by the earthquake.

1. What was the intensity of the earthquake that rocked Sikkim?

_____

_____

_____

_____

2. Where was the epicenter of the earthquake located?

_____

_____

3. List the agencies that were involved in the management of the disaster.

_____

_____

_____

_____

_____

_____

_____

_____

_____

3.

Practical Exercise

Hand seating arrangement: Temporary arrangements can be made for seating an injured person for evacuating him/her from a collapsed building. It can be done by 02 persons, joining hands in the manner shown in the figure to form a seat. Using this seating arrangement, you can shift an injured person to a short distance, for example taking a person to a stretcher or an ambulance.

Practice this hand seating arrangement with your classmates and write about your experience.

_____

_____

ASSESSMENT

A. Short Answer Questions

1. What is disaster management?

_____

_____

_____

2. Name the highest decision making authority for disaster management at the national level?

_____

3. Who heads the National Disaster Management Authority?

_____

4. Who heads the following committees on disaster management?

Committee	Head
State Disaster Management Committee	
District Disaster Management Committee	
Village Disaster Management Committee	

5. List three precautions to be taken while entering a damaged building.

_____

_____

_____

CHECKLIST FOR ASSESSMENT ACTIVITY

Use the following checklist to see if you have met all the requirements for assessment activity.

Part A

(a) Differentiated between disaster and emergency management.

Part B

Discussed in class the following:

(a) What is emergency management?
(b) What is disaster management?
(c) What are the steps involved in disaster management?
(d) What are the different agencies involved in disaster management?

Part C

Performance standards

The performance standards may include, but not limited to:

Performance standards	Yes	No
Identify the emergency route of exit in a given plan of a building		
Make a hand seating arrangement for transporting a victim of disaster		
Enlist the emergency telephone numbers		
Prepare a disaster plan for a hypothetical situation of disaster		
Identify personal protective equipment worn during the disaster		

SESSION 3: DEALING WITH FIRE EMERGENCIES

RELEVANT KNOWLEDGE

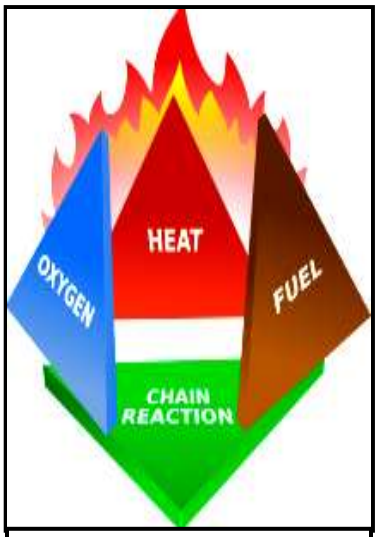
Everything in nature is made up of five basic elements: (i) earth, (ii) water, (iii) fire, (iv) air, and (v) space. Each of the five elements has a certain relationship with the other elements. These relationships form the laws of nature. An element could support or act as an enemy to the other element. For example, air (contains oxygen) support fire, but water can block the spread of fire. Therefore, in order to co-exist fire and water need to be separated. In this session, we will try to understand how to respond to fire emergencies. But before we do that, let us first understand what we mean by fire.

MEANING OF FIRE

Fire is the rapid oxidation of a material in the chemical process of combustion, releasing heat, light and various reaction products. The **flame** is the visible portion of the fire and consists of glowing hot gases. Fire has the potential to cause physical damage through burning.

For a fire, three things are necessary – heat, oxygen and fuel. Fuel (in a non-gaseous state) does not burn directly. When you apply heat to fuel, it produces a gas. When the oxygen in the air combines with this gas, it burns. Remove one of those things (add water to eliminate heat, cover with dirt or sand to eliminate oxygen) and the fire will go out. Therefore the three elements that are necessary for a fire to ignite are:

- Heat
- Oxygen
- Fuel



Fire Tetrahedron

Fires start when a flammable and/or a combustible material, in combination with a sufficient quantity of oxygen gas is exposed to a source of heat that reaches above the flash point for the fuel/ oxidizer mix, and is able to sustain a rate of rapid oxidation that produces a chain reaction. This is commonly called the "*fire tetrahedron*".

Classification of Fires: Most fires that occur will fall into one or more of the following classes:

Class A: Fires involving ordinary combustible materials, such as paper, wood, and textile fibers. Cooling, blanketing, or wetting extinguishing agents are used for extinguishing such fires.

Class B: Fires involving flammable liquids such as gasoline, thinners, oil-based paints and greases. Extinguishers for this type of fire include carbon dioxide, dry chemical and halogenated agent types.

Class C: Fires involving energized electrical equipment. The most common type of extinguisher for this class is carbon dioxide extinguisher.

Class D: Fires involving combustible metals such as magnesium, sodium, potassium, titanium, and aluminum. Special dry powder* extinguishing agents are required for this class of fire, and must be tailored to the specific hazardous metal.

Class K: Fires involving commercial cooking appliances with vegetable oils, animal oils, or fats at high temperatures. A wet potassium acetate, low pH-based agent is used for this class of fire. This is also called as class F fire.

CAUSES OF FIRE

Common Causes of Fire: Common causes of fire can be related to the following:

(i) Open Flames

- Negligence in conducting hot work, such as welding, cutting or grinding.
- Improper use of candles.
- Improper handling of flammable or combustible liquids or flammable gases in or near-to-potential ignition sources.
- Matches and cigarettes that are improperly disposed off or left unattended near combustibles.

(ii) Electrical

- Damaged electrical conductors, plug wires or extension cords.
- Use of faulty, modified or unapproved electrical equipment.
- Insufficient space or clearance between electrical heating equipment and combustibles.
- Short or overloaded circuits.
- Loose electrical connections.
- Lighting.

(iii) Cooking

- Deep frying in pots or pans on stove tops.
- Unattended cooking appliances.
- Combustibles located dangerously close to cooking equipment.

(iv) Spontaneous Ignition

- Improper disposal of materials susceptible to spontaneous combustion, such as oily rags from wood finishing or polishing.

- Accumulation of organic materials, such as green hay, grain or woodchips.
- Accumulation of waste combustible materials near potential sources of ignition.

Dealing with Fire Emergencies: Responding to fire emergencies is a systematic set of actions which are usually practiced during fire drills. A fire officer is responsible for ensuring that a fire drill effectively trains the building's occupants on how to respond in an actual fire. The fire officer is responsible for the same responsibilities during a drill and an actual fire. In large buildings with multiple floors, there may be a fire officer for each floor. You would need to adopt "RACE" i.e. Rescue, Alarm, Confine and Evacuate to deal effectively with fire emergencies.

DEALING WITH FIRE

- **R – Rescue:** Search and rescue is a team effort that needs planning, trained people and coordination amongst the members. When you discover a small fire you can rescue people in immediate danger, but this you should do without endangering yourself. In case of big fires, evacuation should be done and people should calmly exit via safe Fire Exit.
- **A – Alarm:** Sound the alarm by pulling a fire box and call from a safe distance.
- **C – Confine:** Close all doors, windows and other openings.
- **E – Evacuate:** Evacuate the building, but take necessary precautions while entering the building.

Rescue at the time of emergency involves the following operations:

1. Maintenance of law and order, prevention of trespassing, looting, etc.

2. Keeping roads clear from sightseeing persons so that free movement of rescue vehicles is assured.
3. Evacuation of people.
4. Recovery of dead bodies and their disposal.
5. Medical care for the injured.
6. Supply of food and water and restoration of water supply lines.
7. Temporary shelters like tents, metal sheds, etc.
8. Restoring lines of communications and information.
9. Restoring transport routes.

Evacuation: The fire warden is responsible for ensuring that the building is evacuated in a safe and controlled fashion in the quickest manner possible. This includes directing people to the nearest exits, helping people with disabilities, guiding visitors to emergency exits and ensuring that no elevators are used.

The fire officer is responsible for checking that everyone has been evacuated from the building after the fire drill begins. It is the officer's job to check all washrooms and common areas for people who may not have been evacuated. When the building has been checked, the fire officer conducts a head count in the designated meeting area to make sure that everyone is accounted for.

Securing the Area: While leaving the building, the fire officer is responsible for closing the doors and windows. If groups have separated or gathered in places other than designated meeting areas, the fire officer directs them to safe areas. The officer also makes sure that fire lanes and hydrants are clear for emergency services and is available for questioning when emergency personnel arrive on the scene.

Prevention: There is a famous phrase “Prevention is better than Cure”. Always follow this when you are dealing with hazardous substances and fire. The goal of fire prevention is to educate the public to take precautions to prevent potentially harmful fires, and be educated about surviving them. Fire prevention education can take the form of messages, videos, pamphlets, and banners. Effective and important messages and lessons may include the following:

Message 1: Don’t play with fire: Playing with fire causes many unnecessary emergencies and hurts and kills many people.

Message 2: Don't just leave to do something else: One of the most common reasons for fires is how people often leave stoves, ovens, toasters, irons, for ironing clothes, etc. and candles unattended. Handle these electrical equipment safely and put them at the right place after use.

Message 3: Stop, drop and roll: If your clothing catches on fire, the most effective method of extinguishing the fire is to stop, drop to the ground, and roll back and forth to smother the flame. Don't run around because it fans the flames.

Message 4: Get out and stay out: Every year, many people are injured or killed because they re-enter their burning homes. If you are lucky enough to have escaped, stay out.

Training Log: All fires, even those that have been extinguished, must be reported immediately. The fire officer is responsible for filling in the training log in the building's fire safety log book. The training log will include the time and nature of the drill, the length of time that it took to complete the drill and the groups involved in the drill. The fire officer can also make suggestions to improve evacuation time.

Extinguishing Fire: Small fires can be extinguished only if you are trained to use a fire extinguisher under the direction of a trained fire fighting personnel. We will now try to identify some of the fire fighting protective clothing, tools, equipment and materials to get a feel of the requirements for fighting a fire.

Fire fighting protective clothing

Name	Purpose
Fire Protection Suit	To prevent burn injuries
Helmet	To prevent head injury from falling objects
Gloves	To handle hot objects
Gum boots	To walk and move on hot /burning floors
Fireman Masks	To move in smoke filled rooms and environment

Fire Fighting Tools and Equipment

Name	Purpose
Fireman Tools	To remove obstacles and for handling objects.
Cutter	To cut wires and cables.
Fireman Bell	To warn about the fire and for clearing the movement of the fire tender on the road.
Bucket	To put sand or water on fire.
Fire Tender	To transport water and equipment like pump, ladder, etc. for attending to fire
Hose Reel	To deliver water from fire tender or fire hydrant to the fire
Fire Hose Box	To store the fire hose and reel.

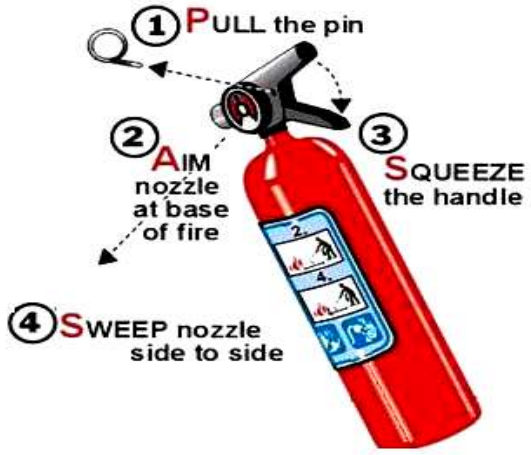
Fire Extinguishers

Name	Specifications and Uses
Water-Carbon Dioxide type Fire Extinguisher	• Type - Upright and trolley mounted • Capacity-9, 50,135,150 litres • Suitable for Extinguishing Fires of Wood, Paper, Cotton and Jute.
Foam type Fire Extinguisher	• Type - Inverted, upright and trolley • Capacity-9, 50, 150 litres • Suitable for Fighting Fire of Petrol, Oil, Paints, Spirits, Chemicals and Flammable Liquid Fires.
Dry Chemical Powder type Fire Extinguisher	• Type-Upright Rolley and Trailer Mounted • Capacity-1,2,5,10,25,50,75,150,300 kg • Suitable for Fighting Fire of Oils, Solvents, Gases, Paints, Varnish, Electrical Wiring, Live Machinery Fire, Flammable Liquid and Gas Fires
Carbon Dioxide type Fire Extinguisher	• Upright and trolley mounted • Capacity-2,3,4,5,6.5,9,22.5, 45 kg • Suitable for fighting fire of all Flammable Liquids Gases, Live and Delicate Machinery Fires, Electrical and Sophisticated Electronic Equipment Fires.

Using a Fire Extinguisher: To extinguish a fire with a portable extinguisher, you must have immediate access to the extinguisher, know how to actuate the unit, and how to apply the extinguishing agent effectively. Prior to fighting any fire with a portable fire extinguisher you must perform a risk assessment that evaluates the fire size, the atmosphere in the vicinity of the fire and the fire evacuation path. Let us now understand the various steps followed for using a fire extinguisher. To remember the sequence of the steps, you may learn it as 'PASS' i.e., Pull, Aim, Squeeze and Sweep.

Step 1: **Pull** the pin or ring of the extinguisher. This will allow you to squeeze the handle in order to discharge the extinguishing agent i.e., water, carbon dioxide, foam, etc.

Step 2: Aim- Aim the nozzle at the base of the fire, but maintain a distance of at least 6 feet away from the fire.



Step 3: Squeeze or Press the handle together. This will release the extinguishing agent.

Step 4: Sweep the nozzle from side to side, aiming at the base of the fire. Continue until the fire is extinguished.

EXERCISE

1. Case Based Problem

Read the scenario given below on a fire disaster and answer the questions that follow:

Scenario

There is a crowd of onlookers around the Sri Krishna Primary School. The school building, hedged by two other buildings, is like a long corridor.

At 10:30 am on Friday, a fierce fire raged here. Over 70 children (boys and girls) were burnt alive in a matter of few minutes. The toll has since risen to 90.

The fire started in the kitchen, where food was being cooked for the children. In Tamil Nadu, a noon meal is provided free of cost to all school students. The school's thatched roofs were recently repaired. The thatching material that was removed was not disposed off. It was stacked outside the kitchen. It was this discarded material that first caught fire.

When the cooks noticed the fire, they jumped over the wall and fled. In minutes, the flames spread. There are two staircases in this building. The thatched roofs fell over the staircase in the rear part of the building blocking that escape route. The staircase in the front part of the building is narrower.

When the fire started, there were 240 children in the building. The watchman was nowhere around. Having locked the front gate, he had gone to have tea. Only a small door outside Principal’s office was open.

The fire service personnel broke the locked gate open and entered the premises a little after 11:00 am. They broke a wall near the gate to widen the exit route.

Fire Officer K Kumar was injured while bringing down the wall. Once they had the way in, 80 firemen brought the children out -- seventy-seven dead and many others critically injured. They were taken to the government hospital in autos, cabs, cars. Every vehicle on the road was used, every hand helped.

The fire was brought under control in two hours. While around 60 bodies were cremated on Saturday, several were yet to be identified on Saturday. Mothers, fathers, uncles, aunts clutched to each other as they went around looking for the last remains of their children. Ambulances took away the identified bodies.

(i) What was the main cause of fire?

_____

_____

_____

(ii) How did the cooks react to the fire? Was the action on their part was right or wrong?

_____

_____

_____

(iii) Was there any watchman around?

_____

_____

_____

(iv) What was the mistake watchman had committed?

_____

_____

_____

(v) How did the fire service personnel entered the school premises?

_____

_____

_____

(vi) How did the fire personnel widen the exit?

_____

_____

_____

(vii) What lessons do you learn from the story?

_____

_____

_____

_____

2. Practice Session

Demonstration by the teacher/trainer on the use of fire extinguishers. Students should practice the use of fire extinguishers and write their experience.

ASSESSMENT

A. Short Answer Questions

Identify 03 materials around you and categorize them in the following groups:

Liquid fuel	Solid fuel	Electronic fuel

B. Fill in the blanks

(i) Match the Class of Fire (Class A, Class B, Class C, Class D, Class K) with their description

_____fires involving ordinary combustible materials, such as paper, wood, and textile fibers.

_____ fires involving commercial cooking appliances with vegetable oils, animal oils, or fats at high temperatures.

_____ fires involving energized electrical equipment.

_____ fires involving combustible metals such as magnesium, sodium, potassium, titanium, and aluminum.

_____fires involving flammable liquids such as gasoline, thinners, oil-based paints and greases.

(ii) A fire _____ is used to alert everyone in the event of fire.

(iii) _____ type fire extinguisher is used for extinguishing fire of wood, paper, textiles and solid materials.

(iv) _____ type fire extinguisher is used for extinguishing electrical appliances fires.

(v) The three elements needed for a fire are _____, heat and oxygen.

(viii) All new types of fire extinguishers are coloured _____.

CHECKLIST FOR ASSESSMENT ACTIVITY

Use the following checklist to see if you've met all the requirements for assessment activity.

Part A

(a) Differentiated between different classes of fire.

Part B

Discussed in class the following:

(a) What is fire?
(b) What are the different classes of fire?
(c) What are the common causes of fire?
(d) What are the steps involved in dealing with fire emergencies?
(e) Why do we need to select a fire extinguisher?

Part C

Performance standards

The performance standards may include, but not limited to:

Performance standards	**Yes**	**No**
Draw a fire tetrahedron and label it		
Classify the various types of fire		
Read the label on the fire equipment		
Identify the firefighting equipment		
Demonstrate the use of fire extinguisher		
Enlist common causes of fire at workplace		

SUGGESTED READING

BOOKS

- Disaster Management in India by Disaster Management Division, Ministry of Home Affairs, Government of India, New Delhi
- Disaster Management by Central Board of Secondary Education, New Delhi
- Disaster Management by G.K. Ghosh, A.P.H. Publishing Corporation
- Disaster Management by B Narayan, A.P.H. Publishing Corporation
- Disaster Management by Nikuj Kumar, Alfa Publications.
  Tsunamis: Threats and Management by Dr. Jagbir Singh, I.K. International.

NEWSLETTER

- Monthly Newsletter of the Disaster Management Unit, UNDP, New Delhi (http://www.undp.org.in/sites/default/files/reports_publication/July2011-DRR-Update.pdf).

WEBSITES

- http://www.differencebetween.com/difference-between-emergency-and-vs-disaster
- http://www.ndma.gov.in/ndma/index.htm (National Disaster Management Authority, Government of India)
- http://ndmindia.nic.in
- http://www.firesafetyequipments.com/Product_Gallery.html
- http://rochelle-joseph.suite101.com/disaster-preparedness-a195580
- http://www.ustudy.in/node/4345
- http://www.tsunami.org