



# INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad-500043

## MECHANICAL ENGINEERING

### TUTORIAL QUESTION BANK

<b>Course Title</b>	<b>DISASTER MANAGEMENT</b>				
<b>Course Code</b>	ACE551				
<b>Programme</b>	B.Tech				
<b>Semester</b>	VI	CSE   IT   ECE   EEE   ME			
<b>Course Type</b>	Open Elective – I				
<b>Regulation</b>	<b>IARE - R16</b>				
<b>Course Structure</b>	<b>Theory</b>			<b>Practical</b>	
	<b>Lectures</b>	<b>Tutorials</b>	<b>Credits</b>	<b>Laboratory</b>	<b>Credits</b>
	3	-	3	-	-
<b>Chief Coordinator</b>	Mr. Gude Ramakrishna, Associate Professor.				
<b>Course Faculty</b>	Mr. Gude Ramakrishna, Associate Professor, CE Mr. S SivaRamakrishna, Assistant Professor, CE Mr. S Selva Prakash, Assistant Professor, CE Mr. G N V Sai Teja, Assistant Professor, CE Ms. N Sri Ramya, Assistant Professor, CE Mr. J Tirupathi, Assistant Professor, CSE				

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### COURSE OBJECTIVES:

<b>The course should enable the students to:</b>	
I	Identify the major disaster types and develop an understanding of modern disaster management.
II	Recognize and develop awareness of the chronological phases of natural disaster response and refugee relief operations.
III	Understand the key concepts of disaster management related to development and the relationship of different disaster management activities.
IV	Categorize the organizations that are involved in natural disaster assistance and relief system.

### COURSE OUTCOMES (COs):

CO 1	Environmental hazards and disasters: meaning of environmental hazards, environmental disasters and environmental stress; concept of environmental hazards,
CO 2	Types of environmental hazards and disasters: Natural hazards and disasters,
CO 3	Endogenous hazards, volcanic eruption, earthquakes, landslides, volcanic hazards/ disasters, causes and distribution of volcanoes, Earthquake hazards, hazardous effects of, earthquakes, earthquake hazards in India, human adjustment, perception and mitigation of earthquake.
CO 4	Exogenous hazards/ disasters, infrequent events, cumulative atmospheric hazards/ disasters; Infrequent events: Cyclones, lightning, hailstorms; Cyclones: Tropical cyclones and local storms, destruction by tropical cyclones and local storms (causes, distribution human adjustment, perception and mitigation); Cumulative atmospheric hazards/ disasters: Floods, droughts, cold waves, heat waves floods; Causes of floods, flood hazards India.
CO 5	Emerging approaches in disaster management i.e pre, disaster stage (preparedness), emergency stage and post disaster stage, rehabilitation.

**COURSE LEARNING OUTCOMES (CLOs):**

ACE551.01	Identify the properties of engineering materials like cement, sand, concrete, ceramics, bitumen, structural steel etc.
ACE551.02	Summarize the classification of engineering materials and uses of materials.
ACE551.03	Understand the manufacturing process of cement, concrete, bitumen, glass, plastics, metals, paints and other engineering materials.
ACE551.04	Classify the steel, glass, varnishes, adhesives, carbon composites.
ACE551.05	Summarize the mechanical behavior and characteristics of different metals.
ACE551.06	Understand the importance of elasticity principle, characteristics and plastic deformation of metals.
ACE551.07	Summarize standards for different materials, stress-strain interpretation.
ACE551.08	Explicit the fundamentals of internal friction, creep, brittle fracture of steel.
ACE551.09	Understand the concept of fatigue of materials, structural integrity assessment procedure.
ACE551.10	Perform the mechanical testing of various metals like iron, steel and non-ferrous metals.
ACE551.11	Summarize elastic deformation and plastic deformation of metals.
ACE551.12	Understand the impact testing, fatigue and creep of materials.
ACE551.13	Summarize fracture toughness of different materials like steel and non-ferrous metals.
ACE551.14	Summarize the testing procedures of bricks and sand.
ACE551.15	Explicit the testing procedures of fresh and hardened concrete.
ACE551.16	Understand the properties of soil by conducting the different tests.
ACE551.17	Explicate the procedures of testing bitumen and bitumen mixes.

## TUTORIAL QUESTION BANK

S No	QUESTIONS	Blooms Taxonomy Level	Course Outcomes	Course Learning Outcomes (CLOs)
<b>UNIT - I</b>				
<b>ENVIRONMENTAL HAZARDS AND DISASTERS</b>				
<b>Part - A (Short Answer Questions)</b>				
1	Expicit a note on environmental hazards.	Remember	CO 1	ACE551.01
2	Distinguish between natural disaster and man-made disasters?	Understand	CO 1	ACE551.01
3	Expicit two impact of disaster has on community.	Remember	CO 1	ACE551.01
4	Expicit briefly about how hazards can become a disaster.	Remember	CO 1	ACE551.01
5	Describe a disaster?	Understand	CO 1	ACE551.01
6	Explicit the environmental stress in the atmosphere.	Understand	CO 1	ACE551.01
7	Expicit the concept of Environmental Hazards.	Remember	CO 1	ACE551.01
8	Describe biological hazards.	Understand	CO 1	ACE551.01
9	Describe flash flood	Remember	CO 1	ACE551.01
10	Discuss about chemical and physical hazards.	Remember	CO 1	ACE551.01
11	Give some examples of stressors	Remember	CO 1	ACE551.01
12	Describe hazard	Remember	CO 1	ACE551.02
13	Discuss the environmental stress in the atmosphere.	Understand	CO 1	ACE551.02
14	Summarize the concept of disaster.	Understand	CO 1	ACE551.02
15	Explore physical hazards with an example	Remember	CO 1	ACE551.02
<b>Part - B (Long Answer Questions)</b>				
1	Describe environmental stress. Expicit a note on the stressors of environment.	Remember	CO 1	ACE551.02
2	Demonstrate natural disaster and man made disaster, what are the effects of disasters on environmental health facilities and services	Remember	CO 1	ACE551.02
3	Expicit an account on different approaches to disaster management and relation with human ecology.	Understand	CO 1	ACE551.02
4	List out the environmental disaster and give example for each	Remember	CO 1	ACE551.02
5	Enumerate the physical ,Psychosocial and mechanical hazards.	Understand	CO 1	ACE551.02
6	Expicit a note on chemical and biological hazards.	Remember	CO 1	ACE551.02
7	Expicit an account on geomorphic (geological) hazards.	Remember	CO 1	ACE551.02
8	Elucidate human ecology and describe how it is related to Disasters.	Understand	CO 1	ACE551.02
9	Expicit down the types of environmental hazards and Disasters?	Understand	CO 1	ACE551.03
10	Describe human Ecology? What are the field of applications in geographical Researchers.	Remember	CO 1	ACE551.03
11	Expicit the air pollution and water pollution in environmental disaster	Understand	CO 1	ACE551.03
12	Express about Ecosystem Approach and perception approach	Understand	CO 1	ACE551.03
13	Explore different key environmental concerns pertaining to disasters,	Remember	CO 1	ACE551.03
14	Evaluate how Sustainable management of natural resources is essential to provide Livelihood and environmental security'..	Understand	CO 1	ACE551.03
<b>Part - C (Problem Solving and Critical Thinking Questions)</b>				
1	Demonstratethe steps involved in risk communication	Understand	CO 1	ACE551.03
2	Summarize, how the occurrence of EL NINO events affects global climate?	Understand	CO 1	ACE551.03
3	Expicit natural disaster and list out the natural disaster	Understand	CO 1	ACE551.03
4	Summarize the concept of first responder with special reference to the role of the government in first response.	Remember	CO 1	ACE551.03
5	Discuss the guiding principles of disaster mitigation and elaborate the problem areas in disaster mitigation.	Remember	CO 1	ACE551.03
6	Discuss the relationship between disaster and development with the help of examples from developed and developing countries.	Understand	CO 1	ACE551.04
7	Expicit the various management guidelines for temporary shelter provision during disasters.	Remember	CO 1	ACE551.04
8	Discuss various methods for rescuing affected persons in a disaster situation.	Understand	CO 1	ACE551.04
9	Discuss the role and functions of a Disaster Manager, health effects of global environmental change	Remember	CO 1	ACE551.04

10	Discuss Community-Based Disaster Risk Reduction Process.	Remember	CO 1	ACE551.04
11	Describe Risk Assessment and underline the methodologies for conducting risk assessment.	Understand	CO 1	ACE551.04
12	Discuss the role of disaster management authorities in disaster management.	Remember	CO 1	ACE551.04
13	Discuss the role and functions of a Disaster Manager	Understand	CO 1	ACE551.04
14	Examine the changing complexion of disaster management in the contemporary context.	Understand	CO 1	ACE551.04
15	Highlight the significance of planning for ensuring disaster prevention	Remember	CO 1	ACE551.04

### UNIT - II

#### TYPES OF ENVIRONMENTAL HAZARDS AND DISASTERS

##### Part – A (Short Answer Questions)

1	Describe a disaster and classify various types of disasters.	Understand	CO 2	ACE551.05
2	Explicit a note on social hazard.	Remember	CO 2	ACE551.05
3	Explicit a short note on effects of cyclones	Remember	CO 2	ACE551.05
4	Explicit civil disorder	Understand	CO 2	ACE551.05
5	Elucidate the types of man-Induced hazards discuss?	Understand	CO 2	ACE551.05
6	Explicit down the various types of natural hazards	Understand	CO 2	ACE551.05
7	Enumerate about planetary and extra-planetary hazard.	Understand	CO 2	ACE551.05
8	Explicit a note on meteorological hazards.	Remember	CO 2	ACE551.05
9	Elucidate earthquake hazard? What causes earthquake.	Understand	CO 2	ACE551.05
10	Explore various harmful effects of earthquakes	Remember	CO 2	ACE551.05
11	Describe extra planetary hazard	Remember	CO 2	ACE551.05
12	Express the causes for earthquakes	Remember	CO 2	ACE551.05
13	Explicit a note on planetary hazard	Remember	CO 2	ACE551.05
14	Explicit short notes on technological disasters	Remember	CO 2	ACE551.05

##### Part - B (Long Answer Questions)

1	Describe short notes on: a) cold waves b) Heatwaves c) Soil Erosion	Remember	CO 2	ACE551.05
2	Explicit a brief note on floods as a serious environmental hazard.	Understand	CO 2	ACE551.05
3	Elucidate the consequences of the phenomenon of drought? Summarize briefly.	Remember	CO 2	ACE551.05
4	Summarize sea level rise. What are its causes and effects?	Understand	CO 2	ACE551.06
5	Explicit a note on global atmospheric changes.	Remember	CO 2	ACE551.06
6	Distinguish between natural disaster and man-made disaster?	Understand	CO 2	ACE551.06
7	Describe a flow chart of planetary and extra planetary hazard.	Understand	CO 2	ACE551.06
8	Explicit a brief note on the extra planetary hazards.	Remember	CO 2	ACE551.06
9	Elucidate the floods and explore various harmful effects of floods.	Understand	CO 2	ACE551.06
10	Explicit down the methods of controlling floods.	Understand	CO 2	ACE551.06
11	Examine the role of corporate social responsibility as an emerging avenue in managing disasters.	Understand	CO 2	ACE551.06
14	Explicit a brief note on floods as a serious environmental hazard.	Remember	CO 2	ACE551.06
15	Express various consequences of drought and summarize briefly.	Understand	CO 2	ACE551.06
16	Describe the consequences of drought when it affects an area.	Understand	CO 2	ACE551.06

##### Part – C (Problem Solving and Critical Thinking)

1	Describe cyber terrorism and Summarize forms and impacts	Understand	CO 2	ACE551.06
2	Explicit a brief note on psychological and social dimensions of disaster	Remember	CO 2	ACE551.07
3	Distinguish the difference between natural disaster and man-made disaster?	Remember	CO 2	ACE551.07
4	Explicit manmade (anthropogenic ) disaster and list out the natural disaster	Understand	CO 2	ACE551.07
5	Explicit terrorism and Explicit down the typology of terrorism	Remember	CO 2	ACE551.07
6	Explore the positive human impact on environment	Remember	CO 2	ACE551.07
7	Explore the negative effects of oil drilling	Understand	CO 2	ACE551.07
8	Enlist top ten terrifying disasters in history and Specimen organization chart for emergency environmental health activities	Remember	CO 2	ACE551.07

### MODULE -III

#### ENDOGENOUS HAZARDS

##### Part - A (Short Answer Questions)

1	Illustrate the effects of the volcanoes on the environment?	Remember	CO 3	ACE551.08
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2	State seismic activity	Understand	CO 3	ACE551.08
3	Describe various geological hazards	Understand	CO 3	ACE551.08
4	Describe volcanic Ash	Remember	CO 3	ACE551.08
5	Explicit Endogenous Hazards?	Remember	CO 3	ACE551.08
6	Describe landslides	Understand	CO 3	ACE551.08
7	Explicit different types of atmospheric hazards.	Remember	CO 3	ACE551.08
8	Describe atmospheric hazards	Understand	CO 3	ACE551.08
9	How earthquake occurs	Understand	CO 3	ACE551.08
10	Explore plate tectonic movements?	Remember	CO 3	ACE551.08
11	List out various materials comes out from volcanic eruptions?	Remember	CO 3	ACE551.08
12	Describe magma	Understand	CO 3	ACE551.08
13	Explore how to prevent natural disasters	Remember	CO 3	ACE551.08
14	Describe how human beings were adjusted to disasters.	Understand	CO 3	ACE551.08
15	Describe Lava	Understand	CO 3	ACE551.08
16	Explicit a short note on earthquakes. What are its causes?	Understand	CO 3	ACE551.08
17	Highlight various mitigation measures to be taken at the time of earthquakes?	Understand	CO 3	ACE551.08
18	Explicit a note on man-made landslides. State what are the mitigation measures at the time of land-slides.	Remember	CO 3	ACE551.08
<b>Part – B (Long Answer Questions)</b>				
1	Explicit a short note on earthquakes. What are its causes?	Understand	CO 3	ACE551.09
2	Illustrate various mitigation measures to be taken at the time of earthquakes?	Understand	CO 3	ACE551.09
3	Explicit a note on man-made landslides. State what are the mitigation measures at the time of land-slides.	Understand	CO 3	ACE551.09
4	Explore various environmental Impacts of Volcanic Eruptions?	Remember	CO 3	ACE551.09
5	State epicenter and focus? Create with a neat diagram? Based on depth how many types of earthquake are classified.	Remember	CO 3	ACE551.09
6	List out various properties and uses of wrought iron?	Remember	CO 3	ACE551.09
7	List out different types of steels with their composition and explicit their properties.	Remember	CO 3	ACE551.09
8	What do you mean by non-ferrous metal? Summarize manufacturing process of aluminium.	Understand	CO 3	ACE551.09
9	What are the important properties of aluminum? Discuss in detail the uses of aluminium.	Understand	CO 3	ACE551.09
11	Describe endogenous hazards ?Summarize with examples in detail.	Understand	CO 3	ACE551.10
12	Illustrate the causes and distribution of volcanoes.	Remember	CO 3	ACE551.10
<b>Part – C (Problem Solving and Critical Thinking)</b>				
1	Describe various causes of earthquakes and explore harmful effects of earthquakes.	Understand	CO 3	ACE551.10
2	Summarize briefly about the effects of earthquakes on the environment.	Remember	CO 3	ACE551.10
3	List out the causes and hazardous effects of Volcanic eruptions?	Understand	CO 3	ACE551.10
4	State different types disasters and give an example from a real incident.	Understand	CO 3	ACE551.10
5	Explicit a brief note on volcanoes. What are the hazards involved?	Remember	CO 3	ACE551.10
6	List out different types of disasters and write a short note.	Understand	CO 3	ACE551.10
<b>MODULE -IV</b>				
<b>EXOGENOUS HAZARDS AND DISASTERS</b>				
<b>Part – A (Short Answer Questions)</b>				
1	Describe different categories of cyclones and explore them.	Understand	CO 4	ACE551.11
2	Explicit a note on the formation of cyclones.	Remember	CO 4	ACE551.11
3	Explicit in short about the structure of cyclone.	Understand	CO 4	ACE551.11
4	Describe a short note on effect of cyclones.	Remember	CO 4	ACE551.11
5	Explicit a short note on the global distribution of cyclones.	Remember	CO 4	ACE551.11
6	Discuss the flood-prone regions in India.	Remember	CO 4	ACE551.11
7	Discuss some of the measures to mitigate cyclones.	Remember	CO 4	ACE551.11
8	Illustrate various causes of lightning and hailstorms?	Remember	CO 4	ACE551.11
9	Describe soil erosion	Understand	CO 4	ACE551.12
10	Describe various flood control measures	Remember	CO 4	ACE551.12

11	Explicit about sedimentation	Understand	CO 4	ACE551.12
12	Describe biological hazards	Remember	CO 4	ACE551.12
13	Describe population explosion as a hazard	Understand	CO 4	ACE551.12
14	Explicit the causes of heat waves	Remember	CO 4	ACE551.12
15	Describe Nuclear Explosion	Understand	CO 4	ACE551.12

**Part – B (Long Answer Questions)**

1	Explicit a brief note on floods as a serious environmental hazard.	Understand	CO 4	ACE551.12
2	Discuss in brief the various floods control measures.	Remember	CO 4	ACE551.13
3	Discuss some of the measures to mitigate floods.	Understand	CO 4	ACE551.13
4	Summarize briefly about consequences of drought.	Remember	CO 4	ACE551.13
5	Explicit a note on the drought control measures adopted across the globe.	Remember	CO 4	ACE551.13
6	Explicit an account on the genetic disorders caused by radiation pollution.	Understand	CO 4	ACE551.13
7	Describe a short note on population explosion and its control.	Remember	CO 4	ACE551.13
8	Explicit briefly about the steps that need to be taken as part of an overall planfor achieving global population stabilization.	Remember	CO 4	ACE551.13
9	Summarize briefly the pattern of global population growth in recent years which is causing alarm to environmental experts.	Understand	CO 4	ACE551.13
10	Describe urbanization. Give the reasons for large scale migration to urban areasand the consequences of rapid urbanization.	Remember	CO 4	ACE551.13
11	List out some ways and methods to destroy cyclones and explain them.	Remember	CO 4	ACE551.14
12	Explicit a note on floods and discuss its types and causes.	Remember	CO 4	ACE551.14
13	Discuss the flood-prone regions in India.	Understand	CO 4	ACE551.14
14	Explore the causes of cold waves what are its effects?	Remember	CO 4	ACE551.14
15	Illustrate the floods hazards of India in the past years	Understand	CO 4	ACE551.14

**Part – C (Problem Solving and Critical Thinking)**

1	Summarize briefly the pattern of global population growth in recent years which is causing alarm to environmental experts.	Understand	CO 4	ACE551.14
2	Explicit a note on Bhopal on gas tragedy.	Remember	CO 4	ACE551.14
3	Explicit a short note on pesticide pollution.	Understand	CO 4	ACE551.14
4	Describe the main causes of nuclear hazards?	Remember	CO 4	ACE551.14
5	Explicit a brief note on nuclear accidents and the Chernobyl disaster.	Remember	CO 4	ACE551.15
6	Describe an account on the genetic disorders caused by radiation pollution.	Understand	CO 4	ACE551.15
7	Explicit a short note on population explosion and its control.	Remember	CO 4	ACE551.15
8	Explicit briefly about the steps that need to be taken as part of an overall planfor achieving global population stabilization.	Remember	CO 4	ACE551.15
9	List out various effects of pesticides on the environment?	Understand	CO 4	ACE551.15
10	Describe urbanization. Give the reasons for large scale migration to urban areasand the consequences of rapid urbanization.	Remember	CO 4	ACE551.15
11	Describe disaster mitigation and discuss the contribution of United Nations agencies in it.	Remember	CO 4	ACE551.15
12	List out and explain the major facets of disaster management in coastal regions	Understand	CO 4	ACE551.15
13	Illustrate the important steps in relief distribution and summarize the different types of damages that occur due to disasters.	Remember	CO 4	ACE551.15
14	State vulnerability and discuss the vulnerability profile of India,	Understand	CO 4	ACE551.15

**MODULE - V**

**TESTING PROCEDURES OF SPECIAL MATERIALS**

**Part - A (Short Answer Questions)**

1	Describe warning systems	Remember	CO 5	ACE551.16
2	Explicit short notes on mitigation planning.	Remember	CO 5	ACE551.16
3	Describe total management cycle	Understand	CO 5	ACE551.16
4	Describe non structural mitigation	Remember`	CO 5	ACE551.16
5	Explicit a note on disaster cycle	Remember	CO 5	ACE551.16
6	State risk mapping	Remember	CO 5	ACE551.16
7	Describe pre disaster	Understand	CO 5	ACE551.16
8	Explore the committee for disaster management	Remember	CO 5	ACE551.16
9	Describe structural mitigation	Understand	CO 5	ACE551.16
10	State mitigation?	Understand	CO 5	ACE551.16
11	Describe first responder in terms of disasters.	Understand	CO 5	ACE551.16
12	Describe post disaster	Remember	CO 5	ACE551.16

13	Describe disaster cycle	Remember	CO 5	ACE551.16
14	Elucidate how mitigation helps in prevention of disasters	Understand	CO 5	ACE551.16
<b>Part - B (Long Answer Questions)</b>				
1	Explicit a brief note on the emergency stage of a disaster.	Remember	CO 5	ACE551.16
2	Explicit an account on the impact of disasters to life and environment.	Understand	CO 5	ACE551.16
3	Discuss the role of technology in disaster management.	Remember	CO 5	ACE551.16
4	Explicit the methods to predict natural disasters.	Understand	CO 5	ACE551.16
5	Describe cyclone? How can people be warned of it beforehand?	Remember	CO 5	ACE551.16
6	Illustrate the various measures that should be taken for disaster management and prevention	Remember	CO 5	ACE551.16
7	Explicit in brief on the post-disaster stage.	Understand	CO 5	ACE551.16
8	Explicit a note on disaster management.	Remember	CO 5	ACE551.16
9	Summarize the phases of disaster management	Remember	CO 5	ACE551.16
10	Enlist the different stages of disaster management. Explicit in detail about pre-disaster stage.	Understand	CO 5	ACE551.16
11	Illustrate an example from a real incident when warning against a cyclone helped the people.	Remember	CO 5	ACE551.17
12	Summarize natural disasters and its mitigation strategies.	Understand	CO 5	ACE551.17
13	State the guidelines for mitigation of disasters.	Remember	CO 5	ACE551.17
14	Summarize in detail the mitigation planning.	Remember	CO 5	ACE551.17
15	Describe the importance of people as the first responders in disaster management.	Understand	CO 5	ACE551.17
<b>Part – C (Problem Solving and Critical Thinking)</b>				
1	Describe briefly the use of village disaster management committee.	Understand	CO 5	ACE551.17
3	List out some guidelines for achieving sustainable development.	Remember	CO 5	ACE551.17
4	Describe various provisions taken for immediate relief measure to disaster affected people?	Remember	CO 5	ACE551.17
5	Describe how do engineered structures help us to withstand like floods, earthquakes, and cyclones?	Remember	CO 5	ACE551.17
6	Explicit the structural mitigations and non- structural mitigations that should be restored to in case of floods.	Remember	CO 5	ACE551.17
7	Elaborate on the various organizations which are involved in the research and mitigation of disasters.	Understand	CO 5	ACE551.17
8	Describe how the community of a village play the most important role in time of disaster as 'first responder'	Remember	CO 5	ACE551.17
9	Describe how a search rescue team assist a village in times of a hazards?	Understand	CO 5	ACE551.17
10	Enlist the various institutions and national centers involved in natural disaster reduction.	Understand	CO 5	ACE551.17
11	Elucidate different skills and techniques adopted by a disaster manager	Remember	CO 5	ACE551.17
12	Describe various major initiatives taken on Disaster Preparedness in India.	Understand	CO 5	ACE551.17
13	Discuss the important steps in relief distribution. Examine the problem areas during recovery phase of disaster management,	Remember	CO 5	ACE551.17
14	Illustrate the relationship between disaster and development with the help of examples from developed and developing countries.	Remember	CO 5	ACE551.17
15	Summarize the different types of damage reports. Identify the different types of rehabilitation.	Remember	CO 5	ACE551.17

**Prepared by:**

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