



**SIDDHARTH GROUP OF INSTITUTIONS:: PUTTUR  
(AUTONOMOUS)**

Siddharth Nagar, Narayanavanam Road – 517583

**QUESTION BANK (DESCRIPTIVE)**

**Subject with Code: F&S (20ME0356)**

**Course & Branch: B.Tech – CE & EEE**

**Year & Sem: IV-B.Tech & I-Sem**

**Regulation: R20**

**UNIT - I**

**INTRODUCTION & FIRE PROCESS**

1		What do you understand by the term direct and indirect fire losses? Explain the terms using the iceberg analogy.	[L1][CO1]	[12M]
2		Explain the term cause of fires commonly understood. Prepare a list of fire causes and use examples to explain and differentiate them.	[L2][CO1]	[12M]
3	a	Discuss the role of public fire brigades in India and the scope of enhancing their role.	[L2][CO1]	[6M]
	b	What are the sources of fire statistics in India?	[L1][CO1]	[6M]
4		Describe the different stages of a typical fire starting from a given fuel. Explain the differences in the growth stages of a liquid or gaseous hydrocarbon fire as compared with a fire involving solid fuel like wood or paper.	[L1][CO1]	[12M]
5		What are the fundamental differences between flaming combustion and smouldering?	[L3][CO1]	[12M]
6		Identify the different ways in which solid fuels generate vapours? Explain the process of pyrolysis in details	[L2][CO1]	[12M]
7		Illustrate the contribution required from heat input for ignition and sustain burning?	[L2][CO1]	[12M]
8		What do you understand by the term premixed burning and buoyant diffusion flames?	[L1][CO1]	[12M]
9		Differentiate between piloted ignition and spontaneous ignition	[L2][CO1]	[12M]
10		Classify types of fuels and explain in detail about stages of fire.	[L2][CO1]	[12M]

**UNIT - II**

**CHEMISTRY OF FIRE & HEAT TRANSFER, PUMPS**

1	a	Discuss the term head loss in a flow through pipes and classify them.	[L2][CO2]	[6M]
	b	Write an equation for head loss due to friction.	[L3][CO2]	[6M]
2		Classify pumps and explain piston pump in detail with neat sketch.	[L2][CO2]	[12M]
3		List out the flow meters used to measure flow in a pipe also explain any one in detail with neat sketch.	[L1][CO2]	[12M]
4		List out the factors that affect the auto ignition temperature of a substance?	[L1][CO2]	[12M]
5	a	Write a note on heat transfer and heat flux.	[L3][CO2]	[6M]
	b	How the heat transformation occurs? Explain their modes.	[L2][CO2]	[6M]
6	a	Explain the working of screw pump with neat sketch	[L2][CO2]	[12M]

	<b>b</b>	Explain the working of gear pump with neat sketch	[L2][CO2]	[6M]
<b>7</b>		Discuss on flammability limit & flammable range.	[L2][CO2]	[12M]
<b>8</b>		Explain the procedure to find flash point & fire point of a fuel.	[L2][CO2]	[12M]
<b>9</b>		Describe in detail about chemical chain reaction in fire.	[L1][CO2]	[12M]
<b>10</b>	<b>a</b>	Discuss on Avogadro's Hypothesis.	[L2][CO2]	[12M]
	<b>b</b>	Define Heat of formation, Heat of reaction & Heat of combustion.	[L1][CO2]	[6M]

**UNIT - III****FIRE SCIENCE FOR BUILDING ENVIRONMENT**

<b>1</b>		Define the term building loads and explain in detail their types.	[L1][CO3]	[12M]
<b>2</b>		Identify the materials used for constructions and their purposes?	[L2][CO3]	[12M]
<b>3</b>		Explain the fire behaviour of common materials used in buildings.	[L2][CO3]	[12M]
<b>4</b>		Explain the procedure to conduct TUNNEL TEST to identify the sample materials category.	[L2][CO3]	[12M]
<b>5</b>		Illustrate the procedure to conduct test on other building materials to identify the category of it.	[L3][CO3]	[12M]
<b>6</b>	<b>a</b>	Discuss the methods followed for fire protection and list the principle of passive fire protection methodology.	[L2][CO4]	[6M]
	<b>b</b>	What is the need for fire testing and what is the testing for resistance to fire?	[L2][CO4]	[6M]
<b>7</b>	<b>a</b>	Explain the purpose of compartmentation in a building. How can the aim of compartmentation be defeated?	[L3][CO4]	[6M]
	<b>b</b>	Name the different standards which prescribe time temperature curve in different countries	[L3][CO4]	[6M]
<b>8</b>		Explain in detail about the potential effects of fire products on people	[L1][CO4]	[12M]
<b>9</b>		What are the considerations in designing escape route and refuge in different scenarios during fire in a building?	[L2][CO4]	[12M]
<b>10</b>		Name important toxic products of building materials and content in a fire accidents with their effects on human.	[L3][CO4]	[12M]

**UNIT - IV****FIRE DETECTORS & ALARMS**

<b>1</b>	<b>a</b>	What is fire alarms and detectors system?	[L1][CO5]	[6M]
	<b>b</b>	Tabulate the types of fire protection hardware used in regular practice?	[L1][CO5]	[6M]
<b>2</b>		List out the detector types based on their effects.	[L1][CO5]	[12M]
<b>3</b>		Classify heat detectors and Explain the working of any one type heat detectors used for fire identification.	[L2][CO5]	[12M]
<b>4</b>		How smoke detectors are used for identification of fire in a system?	[L2][CO5]	[12M]
<b>5</b>		Explain the working of photoelectric type detectors used in fire system.	[L2][CO5]	[12M]
<b>6</b>	<b>a</b>	Illustrate the purpose of fire alarm system in a building.	[L2][CO5]	[6M]

	<b>b</b>	What are basic needs for fire detection and alarm system?	[L1][CO5]	[6M]
<b>7</b>	<b>a</b>	Determine the purpose of ionization type fire detectors and explain their working?	[L3][CO5]	[6M]
	<b>b</b>	Estimate the factors to be considered for the selection of fire detectors?	[L4][CO5]	[6M]
<b>8</b>		Identify the components used in a typical fire alarm system?	[L3][CO5]	[12M]
<b>9</b>		Demonstrate the working of optical flame detectors and gas sensing detectors.	[L2][CO5]	[12M]
<b>10</b>		Describe the working of bimetallic element heat detectors used for fire identification with neat sketch.	[L2][CO5]	[12M]

**UNIT - V****FIRE EXTINGUISHERS & FIXED FIRE PROTECTION SYSTEMS**

<b>1</b>	<b>a</b>	Comment on Why the portable extinguishers called “first aid” appliances?	[L3][CO6]	[6M]
	<b>b</b>	What are the fire fighting fundamentals?	[L1][CO6]	[6M]
<b>2</b>		Describe the different types of fire extinguishes used and their specific purpose.	[L2][CO6]	[12M]
<b>3</b>		What are the different ways in which water as an extinguisher medium is delivered from extinguishers?	[L1][CO6]	[12M]
<b>4</b>		What is the primary content of water,foam and water-mist extinguishers. What are the differences in the discharge nozzle of the three types?	[L1][CO6]	[12M]
<b>5</b>		List the common features of fire extinguishers	[L1][CO6]	[12M]
<b>6</b>	<b>a</b>	Tabulate class of fire and their extinguishers used.	[L1][CO6]	[6M]
	<b>b</b>	How the rating of extinguishers are made?	[L2][CO6]	[6M]
<b>7</b>		Classify and explain the purpose of the primary components of a hydrant system.	[L3][CO6]	[12M]
<b>8</b>		What are the differences in purpose of automatic sprinklers and medium-velocity water spray system	[L1][CO6]	[12M]
<b>9</b>	<b>a</b>	Describe about water mist system to extinguish fire.	[L1][CO6]	[6M]
	<b>b</b>	Explain about carbon dioxide flooding systems to extinguish fire.	[L2][CO6]	[6M]
<b>10</b>	<b>a</b>	What are the important characteristics of a fire fighting foams? How are they important in effective fire fighting	[L2][CO6]	[6M]
	<b>b</b>	What is the need of draining out fire water?	[L2][CO6]	[6M]