


SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)

Siddharth Nagar, Narayanavanam Road – 517583

QUESTION BANK (DESCRIPTIVE)
Subject with Code: Power Plant Engineering (20ME0339)

Course & Branch: B. Tech – ME

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

Regulation: R20

UNIT –I

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|----|---|--|------|-------|-------|
| 1 | a | Discuss about the sources of energy. | [L2] | [CO1] | [6M] |
| | b | Define a power plant. Name the types of power plants. | [L1] | [CO1] | [6M] |
| 2 | a | Enumerate about power plant types. | [L1] | [CO1] | [6M] |
| | b | State the advantages and disadvantages of power plants. | [L1] | [CO1] | [6M] |
| 3 | | Explain the layout of steam power plant with neat sketch. | [L2] | [CO1] | [12M] |
| 4 | | Draw the layout of hydel power plant and explain. | [L1] | [CO1] | [12M] |
| 5 | | Describe the layout of diesel power plant with neat sketch. | [L2] | [CO1] | [12M] |
| 6 | | Outline the factors affecting power plant design. | [L2] | [CO1] | [12M] |
| 7 | | A 60 MW power station has an annual peak load of 50 MW. The power station supplies loads having maximum demands of 20 MW, 17 MW, 10 MW and 9 MW. The annual load factor is 0.45.
Find: (i) Average load.
(ii) Energy supplied per year.
(iii) Diversity factor.
(iv) Demand factor | [L3] | [CO1] | [12M] |
| 8 | a | Define demand factor and diversity factor. | [L1] | [CO1] | [6M] |
| | b | What is meant by load curve? Explain its importance in power generation. | [L1] | [CO1] | [6M] |
| 9 | | Discuss about the harmful effects of greenhouse gases. | [L2] | [CO1] | [12M] |
| 10 | a | Identify the pollution effects from hydro-electric plants. | [L3] | [CO1] | [6M] |
| | b | List the advantages of combined operation of power plants. | [L1] | [CO1] | [6M] |

UNIT –II

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| 1 | | Discuss the factors to be considered for the selection of a site for setting up a steam power plant. | [L2] | [CO2] | [12M] |
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2	a	What are the advantages & disadvantages of thermal power plants?	[L1]	[CO2]	[6M]
	b	What are the requirements of pulverized mill?	[L1]	[CO2]	[6M]
3		Explain the pulverized fuel burning systems.	[L2]	[CO2]	[12M]
4		Organize types of equipment used for transferring coal.	[L4]	[CO2]	[12M]
5	a	Summarize types of coal.	[L2]	[CO2]	[6M]
	b	What are the properties of coal?	[L1]	[CO2]	[6M]
6		Explain with a neat diagram the process of coal handling from coal mines to combustion chamber.	[L2]	[CO2]	[12M]
7	a	Discuss about over feed fuel bed.	[L2]	[CO2]	[6M]
	b	Describe about underfeed fuel bed.	[L2]	[CO2]	[6M]
8	a	Illustrate the working of a chain grate stoker	[L2]	[CO2]	[6M]
	b	Explain the working of a spreader stoker	[L2]	[CO2]	[6M]
9		Explain about cyclone furnace, its design and construction.	[L2]	[CO2]	[12M]
10		Demonstrate ash handling systems.	[L2]	[CO2]	[12M]

UNIT-III

1	a	What is an IC engine? Explain its applications.	[L1,L2]	[CO3]	[6M]
	b	How would you classify IC engines? Brief them.	[L2]	[CO3]	[6M]
2		Explain the working of a diesel power plant with a neat sketch.	[L2]	[CO3]	[12M]
3	a	Discuss the functions of a diesel engine's fuel system.	[L2]	[CO3]	[6M]
	b	What is meant by super charging and mention the advantages?	[L1]	[CO3]	[6M]
4	a	Describe a simple open cycle gas turbine plant with a simple line diagram.	[L2]	[CO3]	[6M]
	b	Compare a closed cycle gas turbines with open cycle gas turbine.	[L4]	[CO3]	[6M]
5		Construct a line diagram of combined steam and gas turbine power plants and explain.	[L6]	[CO3]	[12M]
6	a	How does inter cooling help in improving thermal efficiency of the gas power plant?	[L2]	[CO3]	[6M]
	b	Explain the process of reheating and regeneration.	[L2]	[CO3]	[6M]
7		List out the advantages and disadvantages of combined cycle power plant.	[L1]	[CO3]	[12M]

- 8 a Classify the gas turbines. Write the major field of application of gas turbines. [L4] [CO3] [6M]
 b Name the Gas turbine fuels. Discuss the important properties to be considered for selecting gas turbine fuels? [L1,L2] [CO3] [6M]
- 9 Explain different types of Fuel supply system. [L2] [CO3] [12M]
- 10 Summarize the important components of an I.C. engine. [L2] [CO3] [12M]

UNIT-IV

- 1 What is meant by Hydropower? Explain Hydrological cycle with a neat sketch. [L1,L2] [CO4] [12M]
- 2 Explain the need for flow measurement and the methods for flow measurement. [L2] [CO4] [12M]
- 3 a Define drainage area and its characteristics. [L1] [CO4] [6M]
 b Discuss hydrograph and flow duration curve and their use for hydro plants. [L2] [CO4] [6M]
- 4 What are the factors to be considered for site selection of hydroelectric power plant? [L1] [CO4] [12M]
- 5 Classify the dams and explain them. [L4] [CO4] [12M]
- 6 a Discuss about Storage and Pondage in hydro power plant. [L2] [CO4] [6M]
 b Classify Hydroelectric power plants. [L4] [CO4] [6M]
7. a Illustrate high head power plant with a neat sketch. [L2] [CO4] [6M]
 b Compare base load plant with peak load plant. [L4] [CO4] [6M]
8. a List out the hydroelectric power plant auxiliaries. [L1] [CO4] [6M]
 b How to select prime movers for hydroelectric power plant? [L2] [CO4] [6M]
9. Discuss a pumped storage power plant with neat diagram. [L2] [CO4] [12M]
10. Explain governing mechanism of a Pelton turbine with a neat sketch [L2] [CO4] [12M]

UNIT-V

- 1 a What is nuclear fuel and list the advantages of nuclear energy? [L1] [CO5] [6M]
 b Explain nuclear fission process. [L2] [CO5] [6M]
- 2 a Discuss true chain reaction. [L2] [CO5] [6M]
 b Enumerate the requirements of fission process. [L1] [CO5] [6M]

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| 3 | Explain a nuclear reactor with neat diagram. | [L2] | [CO5] | [12M] |
| 4 | a Define critical mass, breeding and fertile materials. | [L1] | [CO5] | [6M] |
| | b Describe boiling water reactor with neat diagram. | [L2] | [CO5] | [6M] |
| 5 | Explain with a neat diagram Pressurized water reactor. | [L2] | [CO5] | [12M] |
| 6 | Discuss sodium-graphite reactor with a line diagram. | [L2] | [CO5] | [12M] |
| 7 | Draw a fast breeder reactor and explain. | [L1] | [CO5] | [12M] |
| 8 | a Summarize the radiation hazards on living beings. | [L2] | [CO6] | [6M] |
| | b Define shielding and its purpose. | [L1] | [CO6] | [6M] |
| 9 | a Define radioactive waste. Necessity of its disposal. | [L1] | [CO6] | [6M] |
| | b Describe radioactive waste disposal methods. | [L2] | [CO6] | [6M] |
| 10 | List out all the advantages and disadvantages of a nuclear power plant. | [L1] | [CO6] | [12M] |

Prepared by: **Dr. C. Sreedhar**