Course Code: 16ME333 **R16**

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY :: PUTTUR**

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QUESTION BANK (DESCRIPTIVE)

Subject with Code: **POWER PLANT ENGINEERING(16ME333)** Course: **B. Tech**

Branch: **Mechanical Engineering**

Year & Sem: **IV-B. Tech** & **II-Sem** Regulation: **R16**

**UNIT –I**

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| 1 | a | Discuss about the resources for power development in India? | L2 | CO1 | 5M |
| | b | What is the present position of power in India? | L1 | CO1 | 5M |
| 2 | | Explain the layout of steam power plant with neat sketch | L2 | CO1 | 10M |
| 3 | | Draw the layout of hydel power plant and explain. | L2 | CO1 | 10M |
| 4 | | Describe the layout of diesel power plant with neat sketch | L2 | CO1 | 10M |
| 5 | | With a neat sketch explain the layout of MHD power plant | L2 | CO1 | 10M |
| 6 | | What is a nuclear power plant explain its layout with neat sketch | L1 | CO1 | 10M |
| 7 | | Explain the layout of gas turbine power plant. | L2 | CO1 | 10M |
| 8 | a | Differentiate demand factor and diversity factor. | L4 | CO1 | 5M |
| | b | What is meant by load curve? Explain its importance in power generation | L1 | CO1 | 5M |
| 9 | | Discuss the harmful effects of carbon dioxide, carbon monoxide, compounds of Sulphur, and oxides of nitrogen. | L2 | CO1 | 10M |
| 10 | | Enumerate the ways of controlling atmospheres pollution. | L4 | CO1 | 10M |
| 11 | | Discuss the factors to be considered for plant selection for a site. | L2 | CO1 | 10M |
| 12 | | How does thermal power plants pollute air? | L2 | CO1 | 10M |
| 13 | a | Identify the pollution effects from hydro-electric plants. | L3 | CO1 | 5M |
| | b | Deduce the advantages of combined operation of power plants. | L5 | CO1 | 5M |

**UNIT –II**

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| 1 | a | Describe high pressure boilers and their advantages | L2 | CO2 | 5M |
| | b | Explain Super Critical boilers and their advantages | L2 | CO2 | 5M |

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| 2 | | Interpret the analysis of power plant cycles | L3 | CO2 | 10M |
| 3 | | Organize types of equipment used for transferring coal? | L3 | CO2 | 10M |
| 4 | a | What are the types of coal? Brief them | L1 | CO2 | 5M |
| | b | What are the properties of coal? | L1 | CO2 | 5M |
| 5 | | Explain with a neat diagram the process of coal handling from coal mines to combustion chamber. | L2 | CO2 | 10M |
| 6 | a | Discuss over feed fuel beds | L2 | CO2 | 5M |
| | b | Describe underfeed fuel beds | L2 | CO2 | 5M |
| 7 | a | Illustrate the working of a chain grate stoker | L2 | CO2 | 5M |
| | b | Explain the working of a spreader stoker | L2 | CO2 | 5M |
| 8 | | Write briefly about cyclone furnace, design and construction. | L5 | CO2 | 10M |
| 9 | | What is cooling tower? Explain about cooling ponds, natural draught cooling and mechanical draught cooling towers. | L1 | CO2 | 10M |
| 10 | a | Analyze the pollutants and how they are measured | L4 | CO2 | 5M |
| | b | Illustrate the working of an electrostatic precipitator | L2 | CO2 | 5M |

**UNIT-III**

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| 1 | a | What is an IC engine? Explain its applications. | L1 | CO3 | 5M |
| | b | How would you classify IC engines? Brief them | L2 | CO3 | 5M |
| 2 | | Explain the working of a diesel power plant with a neat sketch. | L2 | CO3 | 10M |
| 3 | a | Discuss about fuel system and lubrication system of diesel engine. | L2 | CO3 | 5M |
| | b | What is meant by super charging and mention the advantages? | L1 | CO3 | 5M |
| 4 | a | Describe a simple open cycle gas turbine plant with a simple line diagram. | L2 | CO3 | 5M |
| | b | Compare a closed cycle gas turbines with open cycle gas turbine. | L4 | CO3 | 5M |
| 5 | | Construct a line diagram of combined steam and gas turbine power plants and explain. | L5 | CO3 | 10M |
| 6 | a | How does inter cooling help in improving thermal efficiency of the gas power plant? | L1 | CO3 | 5M |
| | b | Explain the process of reheating and regeneration. | L2 | CO3 | 5M |
| 7 | | List out the advantages and disadvantages of combined cycle power plant. | L1 | CO3 | 10M |

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| 8 | a | Classify the gas turbines? Write the major field of application of gas turbines? | L4 | CO3 | 5M |
| | b | List out few fuels for Gas turbine and why these fuels are used for gas turbine? | L1 | CO3 | 5M |
| 9 | | Explain different types of Fuel supply system? | L2 | CO3 | 10M |
| 10 | | Illustrate the constructional details of an I C engine. Explain briefly about important components? | L2 | CO3 | 10M |

**UNIT-IV**

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| 1 | | What is meant by Hydropower? Explain Hydrological cycle with a neat sketch. | L1 | CO4 | 10M |
| 2 | | Explain the need for flow measurement and the methods for flow measurement. | L2 | CO4 | 10M |
| 3 | a | Define drainage area and its characteristics. | L1 | CO4 | 5M |
| | b | Discuss hydrograph and flow duration curve and their use for hydro plants. | L2 | CO4 | 5M |
| 4. | | Classify the dams and explain them. | L4 | CO4 | 10M |
| 5. | a | Differentiate between storage and pondage. | L4 | CO4 | 5M |
| | b | Classify Hydroelectric power plants | L4 | CO4 | 5M |
| 6. | | Discuss different types of spill ways. | L2 | CO4 | 10M |
| 7. | a | Illustrate high head power plant with a neat sketch. | L2 | CO4 | 5M |
| | b | Compare base load plant with peak load plant. | L4 | CO4 | 5M |
| 8. | a | List out the hydroelectric power plant auxiliaries. | L1 | CO4 | 5M |
| | b | How to select prime movers for hydroelectric power plant. | L1 | CO4 | 5M |
| 9. | | Discuss a pumped storage power plant with neat diagram. | L2 | CO4 | 10M |
| 10. | | Explain governing mechanism of turbines with a neat sketch | L2 | CO4 | 10M |

**UNIT-V**

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| 1 | a | What is nuclear fuel and list the advantages of nuclear energy? | L1 | CO5 | 5M |
| | b | Explain nuclear fission process | L2 | CO5 | 5M |
| 2 | a | Discuss true chain reaction. | L2 | CO5 | 5M |
| | b | Enumerate the requirements of fission process | L1 | CO5 | 5M |
| 3 | | Explain a nuclear reactor with neat diagram | L2 | CO5 | 10M |

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

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