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Power plant engineering IMP question

Unit: 01

1. Explain energy scenario in India
2. State classification of power plant in detail
3. Explain basic component of hydroelectric power plant
4. Explain with neat sketch hydroelectric power plant
5. State advantages and disadvantages of hydroelectric power plant
6. Which factor to be consider while selection of sit for hydroelectric power plant
7. State classification of hydraulic power plant
8. Explain basic component or system of diesel power plant
9. Explain working of diesel power plant
10. State advantages and disadvantages diesel power plant
11. Which factor to be consider while selection of sit for diesel engine power plant
12. State any four application of diesel power plant
13. Explain diesel generating set with neat sketch

Unit: 02

1. State different types of high pressure boiler
2. State advantages of high pressure boiler (any six)
3. Explain feature of high pressure boiler
4. Explain with neat sketch of Lamont boiler with advantages
5. Explain with neat sketch of Benson boiler with advantages
6. Draw neat sketch of Loffler boiler
7. Explain with neat sketch of Loffler boiler with advantages
8. Explain with neat sketch of Benson Schmidt Hartman with advantages
9. Explain fluidize bed combustion boiler. Explain its principle with neat sketch
10. State advantages of FBC in detail
11. State different type of FBC system/boiler .Explain pressurize FBC system in detail
12. Explain general arrangement of FBC system/boiler
13. State difference between water tube and fire tube boiler
14. State difference between convention and non conventional (force through) boiler
15. Explain boiler regulation ACT. State it’s important
16. Explain maintenance procedure of high pressure boiler

Unit: 03

1. State classification of steam power plant in detail
2. Explain general layout of steam power plant
3. State advantages and disadvantages of steam power plant

4. State types of fuel handling system in steam power plant
5. State requirement of fuel handling system
6. Explain coal handling system in steam power plant in detail
7. Explain basic component of electrostatic precipitator with neat sketch
8. State types of control system in steam power plant
9. Explain feed water temperature control system with neat sketch
10. State classification of gas turbine power plant
11. Explain open and close cycle gas turbine at constant pressure
12. State difference between open and close cycle gas turbine
13. Explain basic component of gas power plant
14. Explain basic method to improve efficiency of gas turbine power plant (**very important**)
15. State advantages and disadvantages of gas power plant
16. Explain maintenance procedure of gas power plant

Unit: 04

1. State the need of waste heat recovery system in power plant
2. State and explain different method of heat recovery from power plant
3. Explain any method of waste heat recovery system
4. Explain waste heat recovery system in green house
5. What is mean by **cogeneration?** State the need of cogeneration
6. Explain working principle of cogeneration in detail with neat sketch
7. What is mean by topping cycle? Explain any one type of topping cycle
8. State advantages of cogeneration in power plant
9. What is mean by **trigeneration**? State the need of trigeneration
10. Explain working principle of trigeneration in detail with neat sketch

Unit: 05

1. Explain working principle of nuclear power plant
2. State and explain different component of nuclear power plant
3. State advantages and disadvantages of nuclear power plant
4. State difference between steam and nuclear power plant
5. State difference between fission and fusion reaction
6. State any four fuel used in nuclear power plant
7. Explain component of nuclear reactor with neat sketch
8. State classification of nuclear reactor
9. Explain boiling water reactor with neat sketch
10. Explain pressurized water reactor with neat sketch
11. State difference between boiling water reactor and pressurized water reactor
12. Explain candu type reactor with neat sketch. State advantages of candu type reactor
13. State any four desirable properties of moderator

14. State any four desirable properties of coolant
15. State the function of ATOMIC ENERGY REGULATION BORD (AERB)
16. State the factor which are consider while selection of nuclear power plant

Unit: 06

1. State any six factor which affect choice of power plant for electricity generation
2. Define 1) demand 2) demand factor 3) load factor 4) diversity factor 5) Plant use factor 6) utilization factor
3. State and explain different type of cost use in cost analysis of plant
4. State unit of energy cost
5. How the generation cost per KWh is determine
6. Numerical on plant
7. A generating station has a maximum demand of 50,000 kW. Calculate the cost per unit generated from the following data : Capital cost = Rs 95 × 106 ; Annual load factor = 40% Annual cost of fuel and oil = Rs 9 × 106 ; Taxes, wages and salaries etc. = Rs 7·5 × 106 Interest and depreciation = 12%
8. A generating station has an installed capacity of 50,000 kW and delivers 220 × 106 units per annum. If the annual fixed charges are Rs 160 per kW installed capacity and running charges are 4 paise per kWh, determine the cost per unit generated.
9. A generating station has the following data : Installed capacity = 300 MW ; Capacity factor = 50% ; Annual load factor = 60% Annual cost of fuel, oil etc. = Rs 9 × 107 ; capital cost = Rs 109 ; annual interest and depreciation = 10%. Calculate (i) the minimum reserve capacity of the station and (ii) the cost per kWh generated.