

B. Power Engineering 4th Year, 1st Semester Supplementary Examination, 2017

POWER PLANT SYSTEMS AND MATERIAL HANDLING

Time: Three Hours

Full Marks: 100

Answer Question. No. 1 and any five from the rest

1. Answer the following questions briefly (Any five).

Marks: 5X 5=25

- i) What are the different principles of Material handling?
- ii) What is the purpose of providing 'Booster Pump' in Boiler Feed Pump?
- iii) Write down regarding the different sources of seal oil to the seals of generator of a thermal power plant?
- iv) Where is the 'Deaerator' located in feed water circuit in thermal power plant? What are the different functions of Deaerator?
- v) Explain the performance indicators of Feed Water Regenerative Heaters.
- vi) What is the difference between Scanner air fan and Seal air fan?
- vii) Write down the different types of conveyor belt system.

2. a) What are the different methods to increase the NPSH to Boiler Feed Pump (BFP)?

b) What are the methods used to counterbalance the axial thrust of a BFP?

c) Explain briefly the function of Hydraulic coupling system along with scoop tube mechanism in Boiler Feed Pump.

Marks: 5+5+5

3. a) What is the purpose of using seal oil in generator system?

b) What are the different components of seal oil system? Explain the function of different components of seal oil systems.

c) What are different abnormalities generally found in the seal oil system?

Marks: 2+10+3

4. a) How the classification of pulverizers is done in power plant?

b) What are the advantages and disadvantages of tube mill over bowl mill?

c) Mention the different components of Bowl Mill.

d) What are the factors that affect the mill performance?

Marks: 3+3+5+4

5. a) What are the advantages of having HP-LP bypass system in a power plant?
b) Draw a schematic diagram of HP-LP bypass system of modern power plant showing steam path & water path
c) What are the functions of turbine oil system? Write down the different components and their functions in turbine lub oil system? Marks: 5+5+5
6. a) What is the purpose of air preheater (APH)? What are the different types of APH?
b) What are the different components of regenerative air preheater?
c) Write short notes on i) APH sealing arrangement, ii) Heating surface elements. Marks: 5+5+5
7. a) What are the different types of Fans used in power plant?
b) Show the secondary air pressure and flue gas pressure distribution along the different section of furnace up to the chimney.
c) What is the recommended boiler pressure inside the furnace?
d) What are the different methods employed to control the secondary air flow in FD Fan? Marks: 4+4+2+5
8. a) Draw and discuss the regenerative feed water system of thermal power plant showing feed water line, extraction steam line and drip line.
b) What are the different zones in feed water heaters? Explain their functions.
c) What is the effect on the next high pressure heater, if a heater is bypassed for long time? Marks: 5+5+5
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