

Faculty of Engineering & Technology
Eighth Semester B.E. (Power Engg.) Examination
THERMAL POWER-PLANT OPERATION AND
PERFORMANCE
Sections—A & B

Time—Three Hours]

[Maximum Marks—80

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
- (2) Answer **THREE** questions from Section A and **THREE** questions from Section B.
- (3) Due credit will be given to neatness and adequate dimensions.
- (4) Assume suitable data wherever necessary.
- (5) Illustrate your answers wherever necessary with the help of neat sketches.

SECTION—A

1. (a) List out various purging permissives with their significance. 5
- (b) Explain in brief the duties and responsibilities of power plant operation engineer. 5
- (c) Write the stepwise procedure for filling of boiler. 4
2. (a) Explain how the draft is controlled in the furnace. 3

- (b) Write stepwise procedure for boiler light-up in cold condition. 10
3. (a) Explain the significance of coal mill permissives and write the steps for taking coal mill in service. 8
- (b) Why blow-down is given in boiler and how it is done ? 5
4. (a) Draw the neat sketch of HP-LP bypass system and explain the charging procedure during cold start-up of unit. 8
- (b) Briefly explain the vacuum pulling procedure in condenser. 5
5. (a) Explain various factors affecting the FD fan performance. 6
- (b) List out boiler protections and explain the significance of each. 7

SECTION-B

6. (a) Draw the sketch of B.F.P. unit and explain stepwise procedure for taking 1st BFP in service. 7
- (b) What is NPSH ? How it affects the pump performance ? 5
- (c) What will happen if turning/barring gear fails during turbine shut down ? 2
7. (a) Write the pre-start checks for lube oil system and how it is charged ? 5
- (b) Write in brief cold rolling procedure upto rated speed after steam parameters built-up. 8
8. (a) Explain briefly capability curve for generator operation. 5
- (b) Write stepwise procedure for generator synchronization to grid. 8

9. (a) Explain the operator action in following cases :
— Reheater temperature going high
— Condenser vacuum falling
— Coal mill DP high
— AC failure. 10
- (b) Briefly explain with sketch the droop in governing system. 3
10. Write short notes on any **THREE** :
(i) Turbine protection system
(ii) Drum level control
(iii) Generator transformer performance monitoring
(iv) Plant Heat Rate
(v) Optimization turbine cycle performance. 13