727

April 2023

Time – Three hours
(Maximum Marks: 100)

N.B. 1. Answer all questions under Part-A. Each question carries 3 marks.

2. Answer all the questions either (A) or (B) in Part-B. Each question carries 14 marks.

PART – A

1. Define: dryness fraction.

2. Write short notes on Molliers diagram.

3. What is the function of safety valve? Where it is located in a boiler?

4. List any three clauses of Indian boiler act.

5. What is the necessity of compounding?

6. How to you classify the condensers?

7. What is meant by uranium enrichment?

8. What are the requirements of nuclear fuels?

9. State the merits of multistage compression process.

10. What are the classifications of gas turbines?

[Turn over.....

PART - B

11. (a) How do you find out the dryness fraction of steam by using bucket calorimeter? Explain with neat sketch.

(Or)

(b) One kg of dry saturated steam at 227°C expands isothermally to 4 bar. Determine (i) Change in entropy, (ii) Change in enthalpy, (iii) change in internal energy and (iv) heat transferred. Find also the work done for the non flow process.

12. (a) Explain the working of a B.H.E.L high pressure boiler with line sketch.

(Or)

(b) Explain the internal treatment and external treatment given to the boiler feed water.

13. (a) Explain the construction and working of electrostatic precipitator with neat sketch. State its advantages and applications.

(Or)

(b) Explain the pressure compounding in a steam turbine with a neat sketch.

14. (a) Explain the working of nuclear power plant with layout diagram.

(Or)

(b) Explain the working of fast breeder reactor with a neat sketch. State its merits and demerits.

15. (a) Derive an expression for power required to drive the compressor when the air is compressed adiabatically and isothermally.

(Or)

(b) Explain the working of a closed cycle gas turbine with a line sketch. Also state its advantages and disadvantages.