Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 80670

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2016.

Fifth Semester

Electrical and Electronics Engineering

ME 6701 — POWER PLANT ENGINEERING

(Common to Seventh Semester Mechanical Engineering (Sandwich and Mechanical Engineering))

(Regulations 2013)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What do you understand by the term boiler draught?
2. Define steam rate and heat rate.
3. What is reheating and regeneration of gas turbine?
4. Name the various "gas power cycles".
5. What is critical mass of nuclear fuel?
6. Why shielding is necessary in nuclear power plants?
7. What is biogas? Give the advantages.
8. List the difference between Francis and Kaplan turbine.
9. What is main objective of tariff?
10. Define plant use factor.

PART B — (5 × 16 = 80 marks)

11. (a) Draw a general layout of steam power plant with neat diagram and Explain the working of different circuits. (16)

Or

(b) Explain the following with neat diagram :

(i) Benson boiler. (8)

(ii) Anyone type of cogeneration power plant. (8)

12. (a) Discuss the essential components of the diesel power plant with neat layout. (16)

Or

(b) (i) Derive an expression for the work ratio using Brayton cycle. (8)

(ii) Discuss the working of anyone type of combined cycle power plant. (8)

13. (a) (i) Explain CANDU(Canadian-Deuterium-Uranium) reactor with neat diagram also mention its merits and demerits. (10)

(ii) Discuss about the safety measures adopted in modern nuclear plants. (6)

Or

(b) Explain the construction and working of nuclear power plant with a layout. (16)

14. (a) (i) Explain the construction and working of fuel cell also mention its merits and demerits. (12)

(ii) List the advantages and disadvantages of wind Energy system. (4)

Or

(b) Explain the layout of hydroelectric power plant with neat diagram. (16)

15. (a) Explain the methods to control pollution in thermal and nuclear power plants. (16)

Or

(b) (i) Explain site selection criterion of hydro power plant. (8)

(ii) A Peak load on the thermal power plant is 75 MW. The loads having maximum demands of 35 MW, 20 MW, 15 MW and 18MW are connected to the power plant. The capacity of the plant is 90 MW and annual load factor is 0.53. Calculate the average load on power plant, energy supplied per year, demand factor and diversity factor. (8)
