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

Question Paper Code : 91852

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2019
Fifth/Seventh Semester
Mechanical Engineering
ME 6701 – POWER PLANT ENGINEERING
(Common to Mechanical Engineering (Sandwich)/Electrical and Electronics Engineering)
(Regulations 2013)
(Also common to PTME 6701 – Power Plant Engineering for B.E. (Part-Time)
Sixth Semester – Mechanical Engineering/Second Semester – Electrical and Electronics Engineering – Regulations 2014)

Time : Three Hours | Maximum : 100 Marks

Answer ALL questions

PART – A **(10×2=20 Marks)**

1. What do you understand by externally irreversible and internally irreversible Rankine cycle ?
2. Why the thermal efficiency of a condensing steam power plant is less in a warm region than in a cold region ?
3. Enlist the advantages and disadvantages of diesel engine power plants.
4. State the advantages of combined cycle power generation.
5. What are the requirements to sustain fission process ?
6. How do nuclear power plants effect the environment ?
7. List the types of conventional energy sources and non-conventional energy sources.
8. What is the function of surge tank in hydroelectric power plant ?
9. Define demand factor and load factor.
10. List the factors affecting power plant design.

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PART – B (5×13=65 Marks)

11. a) Draw the layout of steam power plant and explain its construction and working principle.

(OR)

b) Describe the various steps involved in coal handling.

12. a) Explain the construction and operation of the components of gas turbine power plant with neat sketches.

(OR)

b) Draw the schematic representation of a diesel engine power plant and explain its auxiliary systems.

13. a) Explain construction and working of pressurized water reactor with neat sketch.

(OR)

b) What is CANDU-type reactor ? Explain with a sketch its main features and state its advantages and disadvantages.

14. a) What is tide ? Explain the principle of tidal power plant and make a sketch of high tide and low tide arrangements. State the advantages and disadvantages of tidal power plant.

(OR)

b) Explain the construction and principle of operation of geo-thermal power plant with neat sketch.

15. a) Describe the economics in plant selection.

(OR)

b) Describe the pollution control methods for coal and nuclear power plants.

PART – C (1×15=15 Marks)

16. a) A steam power station has an installed capacity of 120 MW and a maximum demand of 100 MW. The coal consumption is 0.4 kg per kWh and cost of coal is Rs. 80 per tonne. The annual expenses on salary bill of staff and other overhead charges excluding cost of coal are Rs. 50×10^5. The power station works at a load factor of 0.5 and the capital cost of the power station is Rs. 4×10^5. If the rate of interest and depreciation is 10% determine the cost of generating per kWh.

(OR)

b) Explain the working of a fuel cell and list out its advantages over other non-conventional systems of power generation.

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