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B.Tech. EXAMINATION, May 2019

(Seventh Semester)

(B. Scheme) (Re-appear Only)

(ME)

ME407B

POWERPLANTS ENGINEERING

Time : 3 *Hours*] [*Maximum Marks :* 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit.

Unit I

1. (a) Write a note on energy and its various sources. **8**

(b) Derive expression for thermal efficiency of Rankine cycle. **7**

2. A 60 MW power station has an annual peak load of 50 MW. The power station supplies loads having maximum demands of 20 MW, 17 MW, 10 MW and 9 MW. The annual load factor is 0.45. Find :

(a) average load

(b) energy supplied per year

(c) diversity factor

(d) demand factor. **15**

Unit II

3. (a) Explain constructional details and working of Loeffler Boiler. **8**

(b) Explain the in plant handling of coal. **7**

4. (a) Explain a gas turbine plant. **8**

(b) Explain the combination of gas power plant with thermal power plant and its benefits. **7**

Unit III

5. (a) Explain the terms rainfall. Runoff, hydrographs and flow duration curves. **8**

(b) Explain the process of selection of hydraulic turbines. **7**

6. (a) Explain the process of nuclear fission and fusion. **8**

(b) Explain the constructional details and working of Pressurised Water Reactor. **7**

Unit IV

7. (a) Explain how solar energy is estimated. **8**

(b) Write a short note on OTEC. **7**

8. Explain the principle of MHD power generation. Also explain with the help of neat diagram construction and working of MHD generator. **15**