

9. Write short note on the following :

- (i) Solar energy collector
- (ii) OTEC
- (iii) Thermionic power generation
- (iv) Tidal power plants

20

Roll No.

24479
B. Tech. 7th Semester (ME)
(Common with Special Chance)
Examination – December, 2019
POWER PLANT ENGG.

Paper : ME-407-F

Time : Three Hours] [Maximum Marks : 100

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

Note : Attempt *five* questions in all. Question No. 1 is *compulsory*. Attempt any *one* question from each Sections.

1. Explain the following : 5 × 4 = 20
- (a) Site selection for hydroelectric power plant
 - (b) Electrostatic precipitator
 - (c) Waste disposal in nuclear power plants
 - (d) Fuel cell

SECTION – A

2. (a) Discuss various investigations to be carried out while selecting the site for hydropower plant. 10

(b) Write short note on the following : 10

- (i) Catchment Area
- (ii) Storage Reservoir

3. (a) Describe the Rankine cycle and show how it differs from Carnot cycle? 10
- (b) What is the difference between run-off river plants and storage plants? How the performance of a run-off power plant can be increased by introducing a pondage? 10

SECTION - B

4. (a) Explain the methods used to increase the thermal efficiency of steam power plants. 10
- (b) Write short note on the following : 10
- (i) Feeding and burning of pulverized fuel
 - (ii) Mechanical dust collector

5. (a) Name the various method of ash handling. Why ash and dust handling is more difficult than coal handling? 10

(b) The annual load duration curve of a station varies uniformly from 64000 kW to zero. The load is supplied by two stations whose cost equations are given as :

$$C_1 = \text{Rs. } (84000 + 84 \text{ kW} + 0.0116 \text{ kWh})$$

$$C_2 = \text{Rs. } (50000 + 44 \text{ kW} + 0.02985 \text{ kWh})$$

Find the minimum cost of generation in paise/kWh for the system. 10

SECTION - C

6. How 'CANDU' type reactor are differ from PWR ? Draw a neat sketch of CANDU type reactor and give its advantages and disadvantages over other types. 20

7. (a) A central power station has annual factors as follows : 12

Load factor = 60%; Capacity factor = 40%; Use factor = 45%

Power station has a maximum demand of 15,000 kilo-watt.

Determine :

- (i) Annual energy production
- (ii) Reserve capacity over and above peak load
- (iii) Hours per year not in service

(b) What is meant by tariffs ? What are various types of tariffs in common use ? 8

SECTION - D

8. (a) Which are the non-conventional sources of energy and why they are seriously thought throughout the world ? 10

(b) What do you understand by MHD ? Explain the working principle of MHD with neat sketches. 10