9. Write short note on the following : 20

(i) Solar energy collector

(ii) OTEC

(iii) Thermionic power generation

(iv) Tidal power plants

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 = Rs. (84000 + 84 kW + 0.0116 kWh)

C_2 = Rs. (50000 + 44 kW + 0.02985kWh)

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