



Registration No:

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M.TECH

AR-18

M.TECH 1ST SEMESTER EXAMINATIONS(BACK), NOV/DEC 2019

TE-MTEPE1042

THERMAL AND NUCLEAR POWER PLANT

Time: 3 Hours

Max Marks : 70

The figures in the right hand margin indicate marks.

PART-A

(10 X 2=20 MARKS)

1. Answer the following questions.

- Explain the properties of a good moderator.
- Why is the thermal efficiency of a condensing steam plant less in a warm region less than in a cold region?
- Define breeding in reactor and fertile materials.
- Define load factor and capacity factor.
- What do you mean by radioactive decay?
- Explain neutron scattering.
- Why more than two reheats used not practically feasibility?
- Draw T-S diagram of Rankine cycle.
- What is Co-generation?
- What is an HTGR? Why is it called magnox?

PART-B

(5 X 10=50 MARKS)

Answer any five questions from the following.

Q.2.

- What are the different types of Circulation used in a thermal power plant? Explain one with neat diagram?
- A textile factory requires 10 ton/h of steam at 37 bar and 345⁰C for process heating at 3 bar saturated and 1000 KW of power for which a back pressure turbine of 70% internal efficiency is to be used. Find the steam condition at the exit of the turbine. (The enthalpy of steam at 3 bar saturated condition is 2725.3 kj/kg and at 37bar 345⁰C, the enthalpy is 3085.3 kj/kg).

Q.3.

- What do you mean by once through systems and write its contribution towards environment aspects of power generation?
- Explain the operation of an elastic precipitator.

Q.4.

- Calculate the overall efficiency of Rankine cycle working with steam.
- With neat sketch describe different types of Reheater used for boilers.

Q.5.

- Briefly explain the Feed water treatment process used in thermal power plant?
- Describe different methods of controlling the super-heater temperature.

Q.6.

- Explain the working principle of PWR and BWR.
- Discuss detail about Neutron Life cycle and Neutron flux.

Q.7.

- what do you mean by co-generation system? Briefly explain pass-out and condensing turbine?
- Explain the function of cladding? What are the factors suitable for selection of a cladding?

Q.8. Write short notes on

- Heavy water metal cooled reactor
- Water tube boiler