

Registration No:

--	--	--	--	--	--	--	--	--	--

Total Number of Pages : 01

M.TECH

M.TECH 1ST SEMESTER REGULAR EXAMINATIONS, DECEMBER 2017

THERMAL AND NUCLEAR POWER PLANT

Branch: TE, Subject Code:MTEPE1052

Time: 3 Hours

Max Marks : 70

The figures in the right hand margin indicate marks.

PART-A**(2X10=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?
- What is a deaerator and where it is used?
- Define breeding ratio and circulation ratio.
- Define boiler blow down. What is the percentage of blow down?
- Explain neutron scattering.
- Why more than two reheats used not practically feasibility?
- Define breeding in reactor and fertile materials.
- Define load factor and capacity factor.
- What do you mean by radioactive decay?

PART-B**(5 X 10=50 MARKS)****Answer any five questions from the following.**

- Describe the factors useful for the site selection for thermal power station.
 - How reheat cycle is more efficient compare to Rankine Cycle? Explain.
- What do you mean by co-generation system? Briefly explain pass-out and condensing turbine
 - Explain radio activity.
- Explain the different types of reactors.
 - Explain PWR and BWR.
- Discuss detail about Neutron Life cycle and Neutron flux.
 - Explain the operation of an elastic precipitator.
- Discuss the mechanism of solid fuel combustion.
 - The ultimate analysis of a fuel oil is given to be: carbon 83.7%, hydrogen 12.7%, sulphur 0.7%, nitrogen 1.7%, & oxygen 1.2%. The combustion air has a dry bulb temperature of 27°C and a wet bulb temperature of 21°C. With 30% excess air and assuming complete combustion, find (a) the total volume of combustion products at 200°C and 1.013bar, and (b) the dry flue gas analysis based on CO₂, O₂ and N₂.
- A typical modern gas turbine used in combined cycle application would have an exhaust temperature of around 600°C and a thermal efficiency of about 34%. The stack temperature is 120°C when the fuel was natural gas has a very low sulphur content. A single pressure steam cycle might give around 32% thermal efficiency. Assume ambient temperature is 15°C.calculate the overall efficiency.
 - Derive the Formula you have used for above problem.
- Explain the following terms.
 - Coal liquefaction Vs Coal Gasification
 - Role of Economizer and Reheater