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B.E. / B.TECH. DEGREE EXAMINATIONS, DEC 2019

Seventh and Fifth Semester

ME16701 – POWER PLANT ENGINEERING*(Common to EE and ME)***(Regulation 2016)****Time: Three Hours****Maximum : 100 Marks***(Use of approved Steam table and Mollier Diagram may be permitted)*

Answer ALL questions

PART A - (10 X 2 = 20 Marks)

	CO	RBT
1. Define dryness fraction of system.	1	U
2. Mention the types of feed water heater in a steam power plant.	1	R
3. State the fuels used in the gas turbine power plants.	2	R
4. What is intercooling and why it is done?	2	U
5. Mention the various types of fast breeders.	2	R
6. What is a gas cooled nuclear reactor?	2	U
7. What are the different types of surge tank?	3	R
8. Define the term binding energy.	3	U
9. Mention the types of nuclear wastes.	4	R
10. Define plant use factor.	4	U

PART B - (5 X16 = 80 Marks)

11. (a) (i) Draw a neat diagram of Lamont boiler and explain its working. (8) 1 U
(ii) Draw a line diagram of fluidized bed combustion system where the steam turbine is used as a prime mover and explain its working. (8) 1 U

(OR)

- (b) (i) Explain the different types of draught system with sketches. (8) 1 U
(ii) Steam at 480^0 C, 90 bar is supplied to a Rankine cycle. It is reheated to 12 bar and 480^0 C. The minimum pressure is 0.07 bar. Find the work out put and cycle efficiency with and without considering pump work.

12. (a) (i) Draw and discuss the lay out of diesel engine power plant. (8) 2 R
 (ii) With an aid of a block diagram, explain the working principles (8) 2 R
 of IGCC.

(OR)

- (b) (i) Discuss briefly the methods employed for improvement of (8) 2 U
 thermal efficiency of open gas turbine power plant.
 (ii) List out advantages of gas turbine power plant. (8) 2 U

13. (a) (i) Explain the function of reflectors and cladding. (8) 2 U
 (ii) Explain the necessity of pressurizer in a PWR power plant. (8) 2 U

(OR)

- (b) (i) Explain CANDU reactor with neat diagram. (8) 2 U
 (ii) Explain nuclear fission and chain reactor. (8) 2 U

14. (a) (i) Write on the factors that should be considered while selecting (8) 3 U
 the site for a hydroelectric plant.
 (ii) What is pumped storage plant? Explain the sketch. (8) 3 U

(OR)

- (b) (i) Explain with the neat diagram of wind electric generation (8) 3 U
 power plant.
 (ii) What are the advantages and disadvantages of wind power (8) 3 U
 plant?

15. (a) (i) A peak load on the thermal power plant is 75 MW. The load (8) 4 AP
 having maximum demands of 35 MW, 20 MW, 15 MW, 18 MW
 are connected to the power plant. The capacity of the plant is
 90 MW and annual load factor is 0.53. Calculate the average
 load on power plant, energy supplied per year, demand factor
 and diversity factor.

- (ii) What are the fixed and operating costs of steam power plant? (8) 4 U

(OR)

- (b) (i) Write short notes on nuclear waste disposal. (8) 4 U
 (ii) Explain the analysis of pollution from thermal power plant. (8) 4 U