Ex/PG/PE/T/114A/136/2011

MASTER OF POWER ENGINEERING EXAMINATION, 2011

(1st Semester)

Power Generation Methodology

Time : Three hours Full Marks : 100	
	Answer Five of the following questions 20x5=100
1. a)	Draw a general layout of a thermal power plant and explain the working of different circuits. 10
b)	Explain and calculate the quantity of coal, feed water and combustion air required for a thermal power station of "2 x 250" MW capacity per hour. 10
2. a)	Draw the 'T-S' diagram of Pankine cycle using dry saturated steam and developed the equation for the Pankine cycle efficiency. 10
b)	What are the effects of temperature and pressure of supply steam and condenser pressure on Pankine cycle efficiency? What are the limitations of these factors to increase the efficiency? 10
3. a)	Describe the working of a simple constant pressure open- cycle gas turbine plant giving a neat sketch. How does actual

cycle differ from the theoritical.

10

- b) What are the different arrangements used for the disposal of bled steam condensate in steam turbine? List out merits and demerits of each over others.
- 4. a) Explain the different site-selection criteria of hydro-electric power plant. 10
 - b) Showing the general arrangement of a storage type hydroelectric power plant explain the working functions of its different components. 10
- 5. a) What do you understand by control rod and moderator in nuclear power plant. Explain the working functions and material used for that purposes.
 - b) Draw the neat diagram of CANDU type reactor and give its advantages and disadvantages over the other types. 10
 - c) What are fissile materials? 2
- 6. a) What are different renewable energy sources?
 - b) From the 'Betz theory'established the expression for maximum wind power can be converted to useful work.10

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c) How geo-thermal energy can be converted to electeric power? 6

- 8. Write short notes on the followings : (any **four**) 5x4=20
 - a) Pump storage plant
 - b) Pressurised heavy water reactor
 - c) Geo-thermal system
 - d) High pressure boiler
 - e) Base load and Peak load plant
 - f) Chain reaction