

Registration No. : 

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Total number of printed pages – 3

**B. Tech**  
**FEEE 6401**

**Eighth Semester Regular Examination – 2015**  
**POWER STATION ENGINEERING AND ECONOMY**  
**BRANCH (S) : EEE, ELECTRICAL**

**QUESTION CODE : J 378**

**Full Marks – 70**

**Time : 3 Hours**

*Answer Question No. 1 which is compulsory and any five from the rest.  
The figures in the right-hand margin indicate marks.*



1. Answer the following questions :

2×10

- (a) If the mass curve steeply rises then what will be the value of flow ?
- (b) Write the name of few reactor fuels used in nuclear power plant.
- (c) Differentiate a thermal reactor from a fast reactor.
- (d) What is the effect of load factor and diversity factor on cost per kWh ?
- (e) Write the importance of spillways and tail race in hydropower plant.
- (f) Why moderator materials are used in nuclear power plant and name the three moderators commonly used ?
- (g) Explain the working principle of nuclear power plant.
- (h) Name the parts of nuclear power plant which reduces energy of fast neutrons to thermal neutron.
- (i) Classify nuclear reactors on the basis of
  - (I) types of coolant used
  - (II) moderator used.
- (j) What is plant use factor ?

**P.T.O.**

2. Explain Breeder Reactor and CANDU reactor with suitable diagram. 10
3. The following data pertain to a power plant :
- Installed capacity = 200 MW; Capital cost = Rs 4000 x 10<sup>6</sup>; Annual cost of fuel, taxes and salaries = Rs 600 x 10<sup>6</sup> ; Rate of interest = 5% of the capital; Rate of depreciation = 6% of the capital; Annual load factor = 65%; Capacity factor = 55%; Energy used in running the plant auxiliaries=4% of total units generated. Determine : 5+5
- (a) the reserve capacity
- (b) the cost of power generation.
4. (a) Explain with suitable diagram for Pelton wheel turbine in hydropower plant. 5
- (b) Briefly explain how to select the site for a hydroelectric power plant. 5
5. (a) Draw and explain two important reaction turbine used in hydro power plant. 5
- (b) Write the function of : 5
- (i) Economizer
- (ii) Superheaters
- (iii) De-Superheater
- (iv) Re-heater
- (v) Air-pre-heater.



6. (a) Explain the importance of pressure regulation and speed regulation in hydro power plant. 5
- (b) Explain the functions and characteristic features of a PWR in detail with the help of neat sketch. 5
7. (a) Sketch a BWR system and explain the working of it's reactor. 5
- (b) With the help of a sketch show all the important parts of nuclear reactor. Describe briefly the functions of each part. 5
8. Write short notes any **two** of the following : 5×2
- (a) Draft tube
- (b) Dam
- (c) Heavy water reactor
- (d) Governor in thermal power plant.

