Code: EE4T3

II B.Tech - II Semester – Regular/Supplementary Examinations – April 2017

ELECTRICAL POWER GENERATION
(ELECTRICAL & ELECTRONICS ENGINEERING)

Duration: 3 hours   Max. Marks: 70

PART – A

Answer **all** the questions.   All questions carry equal marks

11 x 2 = 22

1.
   a) What is a pumped storage plant? What is its purpose?
   b) How is power developed from a given catchment area estimated?
   c) Describe the working of a electrostatic precipitator (ESP)?
   d) Explain principle of operation and purpose of cooling towers.
   e) What are the hazards of radiation in a nuclear power plant and how they are minimized?
   f) Explain the principle of operation of solar photo voltaic panel.
   g) What is load factor?
   h) What is two - part tariff?
   i) What is purpose of sectionalization of bus - bars in a substation?
   j) Discuss advantages of GIS (Gas insulated Substation).

k) Describe general layout of a nuclear power plant.

PART – B

Answer any **THREE** questions.   All questions carry equal marks.

$$3 \times 16 = 48 \text{ M}$$

2. a) What are the important factors to be considered for selection of site for a hydro electric power plant?   10 M

   b) A hydro-electric power generating station is supplied from reservoir of capacity 5×10^6 cubic meters at a head of 200m. Find the total energy available in kWh if the overall efficiency is 75%.   6 M

3. a) Describe the operation of a boiler and safety precautions to be taken in its operations.   10 M

   b) A steam power station has an overall efficiency of 20% and 0.6 kg of coal is burnt per kWh of electrical energy generated. Calculate the calorific value of fuel.   6 M

4. a) Explain a concept of chain reaction in a nuclear power plant and how is it controlled?   8 M

   b) Explain how wind energy is used for power generation? Describe various types of generators that may be used for wind power generation.   8 M

5. a) Define the following: 8 M
   i) Load duration curve and integrated load duration curve.
   ii) Generation cost and its classification.
   iii) Based load and peak load.
   iv) Block and stepped tariff.

   b) A consumer has a maximum demand of 200 kW at 40% load factor. If the tariff is Rs. 100 per kW of maximum demand plus 10 paise per kWh, find the overall cost per kWh. 8 M

6. a) Draw and explain the single line diagram of gas insulated substation. 8 M

   b) Describe main and transfer bus system of an Air Insulated system? 8 M