Registration no: | | | | | | | | | | |

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B.Tech
FEEE6401

8th Semester Regular / Back Examination 2016-17

POWER STATION ENGINEERING AND ECONOMY

BRANCH:EEE,ELECTRICAL

Time: 3 Hours

Max Marks: 70

Q.CODE:Z225

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

Q1 **Answer the following questions:** **(2 x 10)**

a) What are a hydrograph and a flow duration curve?
b) What is hydrological cycle? And write the purpose of develop a hydro project.
c) Why economizer is used in thermal power plant.
d) Write the name of two different kinds of air preheater. Among these two types air preheater which is known as storage type heat exchangers?
e) What is moderator? Write the name of some moderator normally used in reactor.
f) What is the importance of reflector in nuclear reactor?
g) How BWR differs from PWR?
h) How load duration curve is different from load curve?
i) How heterogeneous reactor different from homogenous reactor?
j) What are the disadvantages of hydroelectric power plant?

Q2 a) How demand factor different from diversity factor. **(2)**

b) To develop a hydroelectric power plant, the following data are given below: **(8)**
Available head=27 m, Catchment area =430 sq. km,
Rainfall=150 cm/year, Percentage of total rainfall utilized=65%,
Penstock efficiency=95%, Turbine efficiency=80%,
Generator efficiency=86% and Load factor =0.45.
(a)Calculate the power developed.
(b)Suggest suitable turbines for the plant.

Q3 a) Briefly describe about wet type of cooling tower. **(5)**

b) What is draft tube? Write and explain different types of draft tube. **(5)**

Q4 a) Write and explain the different factors affecting the site selection for a hydroelectric power plant. **(5)**

b) What is run-off? Write the name of factors affecting run-off. What are the **(5)**

methods used to measure the run-off?

Q5 **a)** **Briefly explains different types of turbine used in hydro power plant based on the direction of flow of water through runner.** **(5)**

b) **Write and explain different parts of nuclear reactor.** **(5)**

Q6 **a)** **Briefly explains about electrostatic precipitator.** **(5)**

b) **Draw the suitable diagram and explain the heavy water reactor (HWR).** **(5)**

Q7 **Calculate the cost of generation per kWh for a power station having the following data:** **(10)**
Installed capacity of the plant=200 MW
Capital cost =Rs 400 crores
Rate of interest and depreciation=12%
Annual cost of fuel, salaries and taxation=Rs 5 crores
Load factor=50%
Also estimate the saving in cost per kWh if the annual load factor is raised to 60%.

Q8 **Write short answer on any TWO:** **(5 x 2)**

a) **Feed water heater.**

b) **Impulse turbine in hydro power plant.**

c) **Mass curve**

d) **Re-heaters.**