Roll No.											

PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING

TEST - 1

Even Semester: 2018-19 | **Date**: 06 March 2019

Course Code: EEE 310 | **Time**: 1 Hour

Course Name: Electric Power Generation | **Max Marks**: 40

Programme & Sem: B.Tech (DE) & VI Sem | **Weightage**: 20%

Instructions:

(i) ***Question paper consists of 3 parts.***
(ii) ***Scientific calculators are allowed.***
(iii) ***Answer all the questions.***

Part A

Answer **both** the Questions. **Each** question carries **four** marks. (2Qx4M=8)

1. Describe the site selection factors for a hydro-electric power plant.
2. Differentiate between ID and FD fans.

Part B

Answer **both** the Questions. **Each** question carries **six** marks. (2Qx6M=12)

3. Describe briefly the four main flow circuits of a Thermal power plant.
4. Explain the different classifications of hydro power plants.

Part C

Answer **both** the Questions. **Each** question carries **ten** marks. (2Qx10M=20)

5. Describe the working of a hydro power plant with a rough sketch.
6. If bituminous coal with calorific value of 16000 Btu/kg is being used in a steam power plant whose efficiency is 30%. The electrical output of the plant is 0.5 MW when the coal used per day is 10000 kg. Find the efficiency of the turbine.

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PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING

TEST - 2

Even Semester: 2018-19 | **Date**: 16 April 2019

Course Code: EEE 310 | **Time**: 1 Hour

Course Name: Electric Power Generation | **Max Marks**: 40

Program & Sem: B.Tech & VI Sem (DE) | **Weightage**: 20%

Instructions:

(i) ***Question paper consists of 3 parts.***
(ii) ***Scientific calculators are allowed.***
(iii) ***Answer all the questions.***

Part A

Answer **both** the Questions. **Each** question carries **four** marks. (2Qx4M=8)

1. In what ways is a Nuclear Power plant better than a thermal power plant of the same capacity?
2. Define the following terms:
   (a) Plant Load Factor
   (b) Diversity Factor

Part B

Answer **both** the Questions. **Each** question carries **six** marks. (2Qx6M=12)

3. Nuclear power generation is considered dangerous. In this respect, explain the various factors which needs to be taken care of when selecting a site for Nuclear power generation.
4. Find the mass defect, Binding energy in MeV, binding energy per nucleon, of ordinary Helium for which atomic mass is 4.002603 amu. Given that mass (proton) = 1.007277 amu, mass (neutron) = 1.008665 amu, mass (electron) = 0.00055 amu.

Part C

Answer **both** the Questions. **Each** question carries **ten** marks. (2Qx10M=20)

5. Describe the working of a Fast Breeder Reactor with diagram. Also, state how is it better than the other nuclear reactors.

6. A generating station has a maximum demand of 100MW. Load factor is 65%, plant capacity is
   50%, plant use factor is 75%. Determine the following:
   i) Daily energy produced
   ii) Reserve capacity of the plant.
   iii) Maximum energy that can be produced daily if all the plants are in operation.
   iv) Maximum energy that can be produced daily if the plants are operated in full load.

Roll No												

GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS

PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING

END TERM FINAL EXAMINATION

Even Semester: 2018-19 | **Date**: 21 May 2019

Course Code: EEE 310 | **Time**: 3 Hours

Course Name: Electric Power Generation | **Max Marks**: 80

Program & Sem: B.Tech & VI Sem | **Weightage**: 40%

Instructions:

(i) Question paper consists of 3 parts.
(ii) Scientific calculators are allowed.
(iii) Answer all the questions.

Part A

Answer **all** the Questions. **Each** question carries **five** marks. (4Qx5M=20M)

1. Match the following pairs:-

	Set-A	Set-B
(i)	Generation Voltage level	(a) 400 V, 230 V
(ii)	Non-conventional sources	(b) 220 kV - 400 kV
(iii)	Transmission voltage level	(c) Exhaustible
(iv)	Conventional sources	(d) Inexhaustible
(v)	Consumers voltage level	(e) 11 kV-25 kV

2. State whether the following statements is TRUE/FALSE:
   (i) A BWR type reactor based nuclear plant has a heat exchanger.
   (ii) Substations are mainly used to convert AC voltage at different levels.
   (iii) It is possible and economic to generate voltage in the order of hundreds of kV.
   (iv) Surge tank helps prevent the hydroelectric plant from the water hammer effect.
   (v) FD fans are used to create negative pressure.

3. Choose the correct answer from the given options:

   (i) Which Nuclear reaction is utilised in a nuclear power plant?

   a) Nuclear Fission
   b) Nuclear Fusion

c) Both

d) None

(ii) Utilisation factor is defined as:

a) $\frac{P_{avg}}{P_{\max}}$

b) $\frac{P_{\max}}{P_{avg}}$

c) $\frac{P_c}{P_{\max}}$

d) $\frac{P_{\max}}{P_c}$

(iii) The head of medium-head hydropower plants is of the range:

a) <15 m

b) 250-500 m

c) 15-70 m

d) 100-200 m

(iv) The general formula for tariff is given by:

a) $T = akWh + bkW + c$

b) $T = akVA + bkW$

c) $T = akW + bkVar + c$

d) $T = akWh + bkW - c$

(v) The daily energy produced in a thermal power plant station is 720MWh at a load factor of 0.6. What is the maximum demand of the station?

a) 50 MW

b) 30 MW

c) 72 MW

d) 720 MW

4. Fill in the blanks:

(i) In steam power plants exhaust steam from turbine goes to _____

(ii) A _____ reactor is heavy water cooled and moderated reactor.

(iii) A _____ based tariff imposes penalty on low pf users.

(iv) Load factor is always _____ than 1.

(v) A capacitor _____ lagging Vars.

Part B

Answer **all** the Questions. **Each** question carries **ten** marks. (3Qx10M=30M)

5. The load curve of a generator is shown in the figure below. The installed capacity of the generator is 200 MW.

Find:

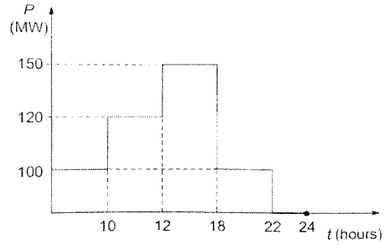
(i) P_{max} and P_{avg}

(ii) Load Factor

(iii) Plant Capacity Factor

(iv) Plant Usage Factor

(v) Reserve Factor



6. Write a short note on Pumped Storage Plants. Quote its advantages (atleast 4) and disadvantages (atleast 2).

7. Define power factor. Mention the need of a high power factor. Describe in details any two methods of power factor improvement.

Part C

Answer **both** the Questions. **Each** question carries **fifteen** marks. (2Qx15M=30M)

8. Load factor of a consumer is 35 % and the monthly consumption is 504kWh. If the rate of electricity is Rs 180 per kW of maximum demand plus Rs 2.00 per kWh, find:

(a) Monthly bill and average cost per kWh

(b) Overall cost per kWh if the consumption is increased by 20% with same load factor.

(c) Overall cost per kWh if the consumption remains same but load factor is increased to 40 %

9. (i) Define substation. What are the major tasks of a substation?

(ii) Write a small note on **one** of these:

- Geo-Thermal energy generation
- Fuel Cell
- Grounding in power systems