Roll No: | | | | | | | | | | | |

PRESIDENCY UNIVERSITY

GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS

Presidency University Act, 2013 of the Karnataka Act No. 41 of 2013 | Established under Section 2(f) of UGC Act, 1956
Approved by AICTE, New Delhi | Approved By BCI
Bengaluru

Mid Term Examinations - October 2026

Date: 08/10/2026 **Time:** 11:45 AM - 01:15 PM

Course Code: EEE2507 **Course Name:** Electrical Power Generation and Economics

Semester: Third Semester **Max. Marks:** 50 **Weightage:** 50%

CO - Levels	CO1	CO2	CO3
Marks	22	40	28

PART A: Answer Following Questions. 10 M

Q.N.	Questions	M	CO	BT
1	A fuel cell operates at a voltage of 0.7 V and supplies a current of 100 A. Calculate the electrical power produced by the fuel cell. If it operates continuously for 5 hours, calculate the energy generated.	2	CO1	BT3
2	Explain why a nuclear power plant must be located away from densely populated areas.	2	CO3	BT2
3	State the main functions of a control rod and a moderator in a nuclear reactor.	2	CO3	BT1
4	A thermal power plant uses an economizer to preheat the boiler feedwater before it enters the boiler. Explain the function of the economizer and the purpose of preheating the feedwater.	2	CO3	BT2
5	A thermal power plant has a boiler efficiency of 85%, a turbine efficiency of 40%, and an alternator efficiency of 95%. Calculate the overall plant efficiency ($\eta 0$).	2	CO3	BT3

PART B : Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
6	A remote facility requires a clean and reliable source of electrical power. A fuel cell is selected to meet the power demand. Apply the operating principle of a fuel cell to explain the generation of electrical power with a neat diagram.	10	CO1	BT3
7	A gas-fired power plant receives 1000 MJ of fuel energy. If the overall efficiency of the plant is 40%, calculate the electrical energy generated in kWh. Also, calculate the electrical energy generated when the overall plant efficiency is increased to 50%.	10	CO1	BT3

PART C: Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
8	A pumped-storage hydroelectric plant supplies a peak load of 120 MW for 5 hours. If the overall efficiency of the pumping and generating cycle is 80%, calculate: i) Energy supplied during peak hours and ii) Energy required for pumping.	10	CO2	BT3
9	A hydro power plant operates under varying water flow and electrical load conditions. Employ suitable control and safety measures to ensure safe and reliable plant operation.	10	CO2	BT3

PART D: Answer Any 1 Following Questions. 10 M

PTO (Please Turn Over)

Q.N.	Questions	M	CO	BT
10	A pumped-storage hydroelectric plant is used to meet the peak load of 150 MW for 4 hours. The overall efficiency of the pumping and generating cycle is 75%. Calculate: **i)** Energy supplied during peak hours and **ii)** Energy required for pumping.	10	CO2	BT3
11	A power utility plans to establish a nuclear power plant to meet the increasing demand for continuous electrical power. Employ the principle of nuclear power generation to represent the energy conversion process with a neat block diagram.	10	CO2	BT3

PART E: Answer Any 1 Following Questions. 10 M				
Q.N.	**Questions**	**M**	**CO**	**BT**
12	A thermal power plant of *100* MW capacity uses coal of *25* MJ/kg calorific value. If the thermal efficiency of the power plant is *40%* and generator efficiency is *90%* , what will be the approximate coal consumption per hr when the plant runs at full load?	10	CO3	BT3
13	A thermal power plant requires a continuous supply of high-pressure steam to drive its turbine. Employ the appropriate boiler process for effective steam generation and power production.	10	CO3	BT3