Name: Enrolment No:	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2022

Course: Hydro and small power Generation **Semester: III**
Program: B.Tech. – Renewable and Sustainable Energy Engg **Time: 03 hrs.**
Course Code: EPEG 2015 **Max. Marks: 100**
Instructions: All the questions are to be attended. The corresponding marks are mentioned.

SECTION A (5Q x 4M = 20Marks)

S. No.		Marks	CO
Q 1	Describe the Eutrophication in big Hydro plants	04	CO1
Q 2	Briefly write a not on Hydro energy potential in India	04	CO1
Q 3	Write a note about Pumped Storage	04	CO1
Q 4	Describe the application suitability (depending on speed) of various hydro turbine.	04	CO2
Q 5	Describe the "Spill way" and "Penstock" in Hydro plant.	04	CO2
	SECTION B (4Q x 10M = 40 Marks)		
Q 6	Describe various type of mechanical governors used in Hydro turbine.	10	CO2
Q 7	Explain the governing control of an i) Impulse turbine ii) Reaction turbine	10	CO3
Q 8	Draw a equivalent circuit of a synchronous generator	10	CO4
Q 9	Describe the conditions for connecting the power generated by two different hydro generators.	10	CO4
	SECTION-C (2Q x 20M = 40 Marks)		
Q 10	Illustrate the schematic diagram and explain the governing mechanism of a micro–Hydro power plant.	20	CO3
Q 11	It is desired to build a hydro-electric power station across a river having a discharge of 30000 liter/second. At a head of 10m. Assume the turbine efficiency 80% and speed ratio Ku as 0.83. Determine the following- a) Is it possible to use two turbines with a speed not less than 120 rpm and specific speed not more than 350 rpm. b) Specify the type of runner that can be used. Also calculate the diameter of runner. OR Explain the concept of Life Cycle Cost of a large Hydroelectric plant. Does it have any adverse effect on environment?	20	CO5