Name: **Enrolment No:**	UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
Online End Term Examination, June 2021

Course: RET & Co-Gen **Semester: VIII**
Program: B. Tech (EL+PSE) **Time 03 hrs.**
Course Code: EPEG 4005 **Max. Marks: 100**

Instructions:

SECTION A

Q. No.	CO	Short Type Answers (Attempt all questions)	Marks
			5 × 6=30
1	CO1	What are the conclusions on alternate energy strategies?	**5**
2	CO4	1. A plant producing both, electrical power & process heat simultaneously is? a) Cogenital plant b) Cogenerial plant c) Cogeneration plant d) Conglomerate plant 2. In a back pressure turbine _____ a) pressure at the exhaust from the turbine is the saturation pressure corresponding to the temperature desired in the process b) pressure at the entrance of the turbine is the saturation pressure corresponding to the temperature desired in the process c) pressure at the exhaust from the turbine is the saturation pressure corresponding to the pressure desired in the process d) none of the mentioned 3. In a by-product power cycle? a) the power is produced initially b) power production is in the middle stages of the cycle c) power production is after the cycle has ended d) none of the mentioned 4. In a by-product power cycle? a) the power is produced initially b) power production is in the middle stages of the cycle c) power production is after the cycle has ended d) none of the mentioned 5. Back pressure turbines are usually _____ with respect to their power output. a) large b) small	**5**

		c) very large d) very small	
3	CO4	1. In terms of cost per MW compared to condensing sets of the same power, the back pressure turbines are? a) more expensive b) cheaper c) costly d) none of the mentioned 2. Which of these is not an application of back pressure turbine? a) desalination of sea water b) filtration of water c) process industries d) petrochemical installations 3. Back pressure turbine is placed between _____ a) Turbine & Pump b) Boiler & Pump c) Turbine & Heat Exchanger d) Boiler & Turbine 4. Which of the following is a good medium for constant temperature heating? a) Water b) Steam c) Coolant d) Diesel 5. The cogeneration plant efficiency nCO if WT, Qi, QH represents turbine work, heat input, heat output respectively is given by? a) nCO = (WT + Qi) / QH b) nCO = (WT – Qi) / QH c) nCO = (WT + QH) / Qi d) nCO = (WT + QH) / Qi	**5**
4	CO2	Write down the advantages and disadvantages of concentrating collectors over flat-plate type collectors.	**5**
5	CO3	What is topping cycles and bottoming cycles? Answer with proper examples.	**5**
6	CO3	List the circumstances under which cogeneration will become attractive.	**5**
SECTION B : Long Answers (Attempt all questions)			
			10 × 5=50
7	CO1	Discuss briefly the possibilities of utilizing the following methods of power generation: a) Solar Energy b) MHD (Magneto Hydrodynamics) c) Fuel Cells	**10**

8	CO4	Explain how cogeneration is advantageous over conventional power plant. OR Explain with a neat diagram the working principle of Solar Cooker and Solar Chimney.	**10**
9	CO2	With the help of a neat sketch, describe a solar heating system using water heating solar collectors. What are the advantages and disadvantages of the system?	**5+5**
10	CO3	Discuss the advantages and disadvantages of horizontal and vertical axis windmill. What methods are used to overcome the fluctuating power generation of windmill?	**10**
11	CO4	Calculate the angle made by beam radiation with the normal to flat collector on December 1, at 9.00 AM, solar time for a location at 28^0 35' N. The collector is tilted at an angle of latitude plus 10^0, with the horizontal and is pointing due South.	**10**
SECTION C : Essay Answers (Attempt all questions)			
			1 × 20=20
12	CO3 CO3	1. Explain with diagrams cogeneration systems using the back pressure turbine, extraction-condensing turbine and double extraction back pressure turbine. 2. What are the different approaches of thermal electric conversion system from solar energy? Or, 1. What are the factors affecting Bio digestion or Generation of Gas. 2. Explain the types of pyrolysis process mentioning its various zones based on temperature. 3. What are the advantages and disadvantages of biological conversion of solar energy? 4. Give a brief note on prospects of Geo-thermal energy in context to India.	**20**