



Name:	
Enrolment No:	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2021

Programme Name: M. Tech-REE+ES and Sustainability	Semester : I
Course Name : Alternate Energy Technologies	Time : 03 Hrs.
Course Code : EPEC-7020	Max. Marks: 100

Instructions: (i) Attempt all the sections.

SECTION-A (20 Marks)

Each Question will carry 4 Marks
Instruction: Write briefly (5-6 lines)

S. No	Differentiate open loop and closed loop magneto-hydro dynamic generator (MHDG) in brief/ salient points.	CO1 (4)
Q 1	Analyze the operating principle of magneto hydro dynamic generator.	CO1 (4)
Q 2	Why renewable energy system are preferable compared to conventional sources of energy e.g diesel, petrol, coal and etc.	CO2 (4)
Q 3	Briefly define Ohmic and activation losses in fuel cell operation.	CO2 (4)
Q 4	Analyze the advantages and limitations of tidal energy	CO3 (4)
Q 5	Explain advantages and disadvantages of wave energy.	CO4 (4)

SECTION-B (40 Marks)

Each question will carry 10 marks
Instruction: Attempt all the questions

Q 1	What kind of energy does MHD power generator use and write the advantages of an MHD power generation?	CO1 (10)
Q 2	Analyze the future perspective of fuel cell operation in transportation and agriculture applications. Write one example/case study/current scenario of each application.	CO2 (10)
Q 3	A typical tidal project has an installed capacity of 2176 MW in 64 units each of 34 MW rated output . The embankment is 6.4 km long and the head at rated output is 5.52 m. The turbine and generator efficiency is 93% each. Assume the density of sea water as 1025 kg/m ³ . If generation is 5 hours twice a day, calculate the basin capacity. *Assuming that the power decreases linearly.	CO3 (10)
Q 4	Define briefly with schematic diagram, (a) Stand-alone power generation system e.g. solar PV system (b) Hybrid/grid connected power generation system e.g. Fuel cell + Solar PV system	CO2 (5+5)

SECTION-C**(40 Marks)****Each Question carries 20 Marks.****Instruction: Write long answer.**

Q 1	<u>Attempts both the parts:</u> (a) Differentiate fuel cell and battery system (b) Write the advantages of Hydrogen fuel and limitations for storage also.	CO3 (10+10)
Q-2	<u>Attempt both the parts:</u> (a) Define the following: (i) Spring tide (ii) Neap tide (b) Explain the various methods of tidal power generation methods. What are the limitations of each method? OR Explain the basic reason to form of tides and explain following tide cycles, (i) The half day cycle (ii) A 14 day cycle (iii) A half year cycle	CO4 (10+10)
