Name: **Enrolment No:**	

UPES

End Semester Examination, May 2024

Course: Energy Storage System **Semester: II**
Program: M.Tech. – Renewable Energy **Time: 03 hrs.**
Course Code: EPEC7079 **Max. Marks: 100**
Instructions: Attempt all the questions.

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

S. No.		Marks	CO
Q 1	Illustrate the services provided by an ESS in a power distribution system.	4	CO1
Q 2	Classify the various energy storage technologies.	4	CO1
Q 3	Describe the key characteristics of a good energy storage	4	CO1
Q 4	Appraise India's stand on various Hydrogen energy technologies	4	CO2
Q 5	Justify the statement "Iron flow batteries have an advantage over utility-scale Li-ion storage systems".	4	CO2
	SECTION B **(4Q x 10M= 40 Marks)**		
Q 6	Appraise the various Mechanical Energy Storage devices like PHS, CAES, FESS, LAES	10	CO1
Q 7	Evaluate various Energy storage options concerning cost.	10	CO2
Q 8	Compare the power output and energy consumption for various electrical energy storage technologies & batteries.	10	CO3
Q 9	Elucidate the overview of Sensible heat energy storage systems. **OR** Appraise the characteristics of the Thermo-Chemical Energy system. Also, illustrates advantages and disadvantages.	10	CO3
	SECTION-C **(2Q x 20M=40 Marks)**		
Q 10	Compare the various phase change materials for use as thermal energy storage.	20	CO3
Q 11	Evaluate the use of thermal storage for HVAC application in a cold storage warehouse. **OR** Draw a schematic for a cold thermal storage system in a commercial building and evaluate the advantages and Disadvantages.	20	CO4