Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fourth Semester B.Tech (Minor) Degree Examination July 2021 (2019 admisssion)

Course Code: EET284

Course Name: Energy Systems

Max. Marks: 100 Duration: 3 Hours

PART A

(Answer all questions; each question carries 3 marks) Marks

1		The luminous efficiency of a lamp is 10 Lumens/Watt, and its luminous intensity is 800 Cd. What is the power of the lamp?	(3)
2		What are primary and secondary energy sources?	(3)
3		Explain the I-V characteristics of a Solar cell.	(3)
4		Explain the term Ocean Thermal Energy Conversion.	(3)
5		In what situations does energy storage become necessary?	(3)
6		Enumerate the most critical applications for Flywheel energy storage.	(3)
7		Write three important features of ISO 50001.	(3)
8		Write the significance of Star rating.	(3)
9		What are the advantages of Simple pay back method?	(3)
10		What are the characteristics of energy projects?	(3)

PART B

(Answer one full question from each module, each question carries 14 marks)

Module -1

11	a)	List out the essential features of a LED lamp and CFL Lamps.	(6)
	b)	Compare Energy Scenario of India and the world.	(8)
12	a)	Discuss the Energy Conservation Act 2001.	(8)
	b)	Illustrate the concepts of Green building.	(6)

Module -2

13	a)	Explain the working principles of Solar Thermal System with neat diagrams	(7)
	b)	Determine the power in the wind if the wind speed is 10m/s and the blade length is 20m. Take air density is 1.23Kg\m.	(7)
14	a)	What are the advantages and significant hurdles to Tidal energy development?	(7)
	b)	Explain with the help of a schematic, Biomass energy conversion.	(7)

Module -3

15	a)	Describe the basic structure of Flywheel energy storage.	(7)
	b)	Explain the working of any one Secondary cell with the help of diagrams	(7)
16	a)	What are the main limitations of compressed air energy storage	(7)
	b)	Discuss the working of Fuel Cell and also mention the advantages	(7)

Module -4

17	a)	Explain the working of two Energy auditing instruments?	(6)
	b)	What is the meaning of Energy Management, and explain the steps of an Energy audit?	(8)
18	a)	What are the types of Energy audits?	(6)
	b)	Explain the functions of BEE.	(8)

Module -5

19	a)	Calculate Simple pay back period for a boiler that cost Rs.95.00 lakhs to purchase and Rs.5 lakhs per year on an average to operate and maintain and is expected to annually save Rs.35 lakhs.	(8)
	b)	Wrte notes on One part, Two part and Three part tariff.	(6)
20	a)	A consumer has a maximum demand of 300 kW at 50% load factor. Find the overall cost per kWh if the tariff is Rs. 80 per kW of maximum demand plus 20 paise per kWh.	(10)
	b)	Internal Rate of Return of a project is the discount rate which makes its Net Present Value equal to zero. Explain	(4)

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