

**APJ ABDULKALAM TECHNOLOGICAL UNIVERSITY
08 PALAKKAD CLUSTER**

Q. P. Code :ES0819052 B-I

(Pages: 2)

Name:

Reg. No:.....

SECOND SEMESTER M.TECH. DEGREE EXAMINATION JUNE 2019

Branch: Electrical & Electronics Engineering Specialization: Energy Systems

08EE6052(B)ADVANCED SOLAR THERMAL AND PV SYSTEMS

Time:3 hours

Max.marks: 60

Answer all six questions.

Modules 1 to 6:Part 'a' of each question is compulsory and answer either part 'b' or part 'c' of each question.

Q.no.	Module 1	Marks
1.a	State any four positive implications the use of SET (Solar Energy Technology)	3
	Answer b or c	
b	Sketch the schematic section of Abbot silver disc Pyrheliometer and explain its working principles.	6
c	State and the generic issues of solar energy technologies.	6
Q.no.	Module 2	Marks
2.a	Illustrate about the concept of photovoltaic effect.	3
	Answer b or c	
b	Briefly explain the PV cell characteristics with necessary curves.	6
c	List out the current projects of solar energy in India. Explain.	6
Q.no.	Module 3	Marks
3.a	Describe the concept of flat plate collectors.	3
	Answer b or c	
b	Explain the working concept of Evacuated Tube solar Collectors (ETC) with diagram.	6

- | | | |
|--|---|---|
| | c Draw and explain briefly about the construction and working of hot air collector. | 6 |
|--|---|---|

Q.no.	Module 4	Marks
--------------	-----------------	--------------

- | | | |
|-----|---|---|
| 4.a | What are the factors to be considered for solar industrial process? | 3 |
|-----|---|---|

Answer b or c

- | | | |
|---|--|---|
| b | Draw and explain any three common configurations of water heaters. | 6 |
| c | Explain the concepts of water heating in space heating and cooling systems with relevant sketches. | 6 |

Q.no.	Module 5	Marks
--------------	-----------------	--------------

- | | | |
|-----|---|---|
| 5.a | List out any five applications of PV systems. | 4 |
|-----|---|---|

Answer b or c

- | | | |
|---|--|---|
| b | What is the need of voltage regulation for solar panel? Draw the relevant circuit and explain. | 8 |
| c | Explain the construction and working principle of solar power plant with neat diagram. | 8 |

Q.no.	Module 6	Marks
--------------	-----------------	--------------

- | | | |
|-----|--|---|
| 6.a | Draw the f-chart of air systems & write down the equation. | 4 |
|-----|--|---|

Answer b or c

- | | | |
|---|---|---|
| b | Draw the schematic diagram ϕ, f -chart of closed loop solar systems and explain. | 8 |
| c | Describe the evaluation of carbon credits of solar energy systems. | 8 |