

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
**FIRST SEMESTER M.TECH DEGREE EXAMINATION, DECEMBER 2019**

**(Mechanical Engineering)**

**(Thermal Engineering)**

**03ME6041 Energy Conversion and Conservation**

**Max. Marks: 60**

**Time: 3Hrs**

**PART-A (5 x 4 =20 Marks)**

1. Give the working principle of solar cell. Sketch its I-V characteristics
2. Write a note on performance indices of a solar collector.
3. What are the assumptions used for the optimization of thermal efficiency of a system?
4. Write note on Time value of Money.

**PART B (10 x 4 =40 marks)**

5. Explain the Loss Mechanisms in MHD (10)

**OR**

6. What is a fuel cell? With neat sketches, explain the working of fuel cell (10)

7. What are the different methods of energy extraction from biomass? Explain any two methods in detail. (10)

**OR**

8. With proper sketches, explain the working of a solar refrigerator system. (10)

9. What is energy efficiency? Explain the categorization of Energy Conservation Opportunities. (10)

**OR**

10. What is energy auditing? What are the different types of audit? Briefly explain the data collected in Energy auditing. (10)

11. Explain and compare the Simple payback period method and Net Present Value Method. (10)

**OR**

12. A proposed project requires an initial investment of Rs. 20,000/- The cash flows generated by the project are shown below:

Year	Cash Flow (₹)
0	—20,000.00
1	+ 6000.00
2	+5500.00
3	+5000.00
4	+4500.00
5	+4000.00
6	+4000.00

Find out the internal rate of return for the project.

(10)

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