

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
SEVENTH SEMESTER B.TECH DEGREE EXAMINATION(R&S), DECEMBER 2019

Course Code: ME403

Course Name: ADVANCED ENERGY ENGINEERING

Max. Marks: 100

Duration: 3 Hours

PART A

Answer any three full questions, each carries 10 marks.

Marks

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|---|----|---|------|
| 1 | a) | Sketch the layout of a diesel power plant. Explain the layout. | (6) |
| | b) | Discuss the renewable energy potential of India. | (4) |
| 2 | | Give the schematic layout of a gas turbine power plant and explain it's working with the help of Brayton cycle. | (10) |
| 3 | a) | Discuss the various types of concentrating collectors | (6) |
| | b) | Explain the working of a flat plate collector with a neat sketch. | (4) |
| 4 | a) | List out the advantages and disadvantages of photovoltaic cells. | (6) |
| | b) | Explain with a neat sketch solar pond electric power plant. | (4) |

PART B

Answer any three full questions, each carries 10 marks.

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| 5 | a) | What are advantages and disadvantages of wind energy? | (6) |
| | b) | What do you mean by (1) Yaw control (2) Rated wind speed with respect to wind turbines? | (4) |
| 6 | a) | Discuss site selection for wind power plants? | (6) |
| | b) | How are wind turbines classified? | (4) |
| 7 | a) | What are the advantages of using biomass as an energy source? | (6) |
| | b) | Which are the main sources of Biomass? | (4) |
| 8 | a) | With a neat sketch explain the working of a fixed dome type biogas plant. | (6) |
| | b) | Write a short note on gasification of biomass? | (4) |

PART C

Answer any four full questions, each carries 10 marks.

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| 9 | a) | Discuss micro hydro power plants. | (6) |
| | b) | Explain the components of a Tidal power plants. | (4) |
| 10 | a) | With a schematic layout describe hot dry rock system of geothermal energy? | (6) |

- b) What are the disadvantages of using geothermal energy? (4)
- 11 a) With the help of a schematic diagram explain the closed cycle MHD? (6)
- b) What are the chemical reactions involved in hydrogen-oxygen fuel cells? (4)
- 12 a) What is thermal pollution? List the harmful effects of thermal pollution. (6)
- b) What are eutrophication? Why is it undesirable? (4)
- 13 a) What is biodiversity? (4)
- b) What is cause for the loss of biodiversity and how is biodiversity protected? (6)
- 14 a) Describe the actions to be taken for sustainability of energy. (6)
- b) What do you mean by sustainable energy? (4)
