

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fifth semester B.Tech degree examinations (S) September 2020

Course Code: EE367**Course Name: New and Renewable Energy Systems**

Max. Marks: 100

Duration: 3 Hours

PART A*Answer all questions, each carries 5 marks.*

Marks

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| 1 | What is the present status of various modes of renewable power generations in India? Explain. | (5) |
| 2 | Differentiate between Pyranometer and Pyrhelimeter. | (5) |
| 3 | Explain the practical equivalent circuit of a solar cell. | (5) |
| 4 | With the help of a block diagram explain the working of a hybrid OTEC. | (5) |
| 5 | List out the advantages and disadvantages of wind energy conversion systems. | (5) |
| 6 | Classify wind power plants based on principle of operation. | (5) |
| 7 | With neat figure explain the working of a KVIC biogas plant. | (5) |
| 8 | What are the factors that affect biogas generation | (5) |

PART B*Answer any two full questions, each carries 10 marks.*

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| 9 | a) Elucidate the necessity of energy storage in the context of renewable sources of energy | (5) |
| | b) Compare between conventional and non-conventional energy resources | (5) |
| 10 | a) Explain the following terms related to solar geometry
(i) Hour Angle (ii) Altitude Angle (iii) Zenith Angle (iv) Surface azimuth angle | (4) |
| | b) Explain the working of a central tower collector with a neat diagram | (6) |
| 11 | a) Explain sizing and necessity with reference to energy storage | (5) |
| | b) Explain construction of solar flat plate collector with a neat diagram | (5) |

PART C*Answer any two full questions, each carries 10 marks.*

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| 12 | a) Explain any two application of solar PV systems with block diagrams. | (6) |
| | b) With a neat diagram explain the Grid connected PV systems | (4) |
| 13 | a) List out the advantages and disadvantages of a tidal power plant | (4) |
| | b) Explain the site-selection criteria for OTEC plants | (3) |

- (c) What is biofouling with reference to OTEC power plants (3)
- 14 a) With a neat diagram explain solar cell characteristics. (4)
- b) Classify tidal power plants based on the type of basin used. (6)

PART D

Answer any two full questions, each carries 10 marks.

- 15 a) Derive the expression for power in the wind turbine. (6)
- b) Explain yaw control mechanism. (4)
- 16 a) What are different technologies used in biomass to energy conversion (6)
- b) Explain the working principle of a fuel cell. (4)
- 17 a) Explain the importance of biomass programme in India (4)
- b) With a neat diagram explain the construction of a propeller type wind power system (6)
