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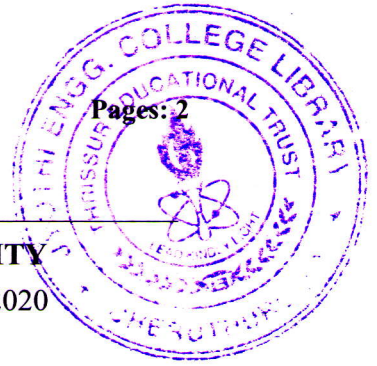
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Reg No.: \_\_\_\_\_

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

- 1 What is the present status of various modes of renewable power generations in India? Explain. (5)
- 2 Differentiate between Pyranometer and Pyrheliometer. (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.*

- 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 (4)  
(i) Hour Angle (ii) Altitude Angle (iii) Zenith Angle (iv) Surface azimuth angle  
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.*

- 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)

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