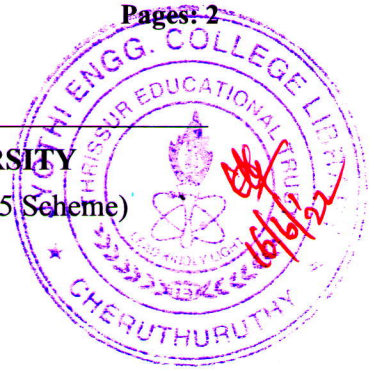


Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
Eighth Semester B.Tech Degree Examination June 2022 (2015 Scheme)



Course Code: BT362

Course Name: Sustainable Energy Processes

Max. Marks: 100

Duration: 3 Hours

PART A

Answer any two full questions, each carries 15 marks.

Marks

- | | | |
|------|---|------|
| 1 a) | 'India plans on reaching 175GW of renewable energy by 2022'- Explain with help of statistical data how India should proceed to achieve this goal. | (6) |
| b) | Enlist the various problems associated with the burning of fossil fuels. | (5) |
| c) | Explain the types of energy sources based on availability. | (4) |
| 2 a) | What are the various techniques used in solar collectors to minimise heat loss? | (5) |
| b) | Explain power generation using solar ponds with help of schematic diagrams? Enlist the advantages of this system. | (10) |
| 3 a) | Describe about any 4 types of solar photovoltaic cells. | (8) |
| b) | Cite any 3 forms of energy and the examples of various power generation systems where it is used. | (7) |

PART B

Answer any two full questions, each carries 15 marks.

- | | | |
|------|---|-----|
| 4 a) | Turbulence, inconsistency in wind speed and direction can result in operational difficulties in HAWTs. Explain the various components and mechanisms in HAWT which can help avert this problem. | (5) |
| b) | Describe the drag and lift forces experienced by an aerofoil in wind turbine blades. | (5) |
| c) | Compare the working of darieus and savonius VAWT. | (5) |
| 5 a) | Explain the principle and working of fixed dome and moving dome biogas plants. | (8) |
| b) | Explain transesterification in the context of production of biofuels. List out the advantages and disadvantages of biofuels. | (7) |
| 6 a) | Explain fixed bed downdraft and fixed bed updraft gasifiers with a diagram. | (8) |
| b) | Explain the different criterions that are considered while selecting site for constructing a windmill. | (7) |

PART C

Answer any two full questions, each carries 20 marks.

- 7 a) Enlist the advantages and disadvantages of tidal power. (4)
b) Explain the components of a tidal powerplant with help of diagrams. (6)
c) Describe the various sources of geothermal energy. (10)
- 8 a) Explain about magneto hydrodynamic power generation. (10)
b) Explain the architecture and working of hybrid electric vehicles. (10)
- 9 a) Explain the principle and working of alkaline fuel cell with diagram. (10)
b) Describe with a schematic diagram the ocean thermal electric conversion. (10)
