

M.E. MECHANICAL ENGINEERING FIRST YEAR FIRST SEMESTER EXAM 2018

RENEWABLE ENERGY

Time: Three hours

Marks: 100

(Answer any FIVE questions)

*Different parts of the same question should be answered together.
All symbols carry their usual meanings unless otherwise mentioned.*

1. a) What is renewable energy? Distinguish between non-renewable and renewable energy sources with example. 6
- b) What is tidal power? What are the advantages and disadvantages of tidal power? 6
- c) Briefly discuss about the different type of tidal power generators. 8
2. a) What is wave power? Derive the expression of wave power estimation. 10
- b) Briefly explain the working principles of any two types of wave power conversion technology. 10
3. a) Draw a layout of small hydro power plant (SHP) showing its major different component. 10
- b) Discuss the site selection criteria of a SHP. 10
4. a) What is wind power? What are the advantages and disadvantages of wind power? 6
- b) Draw a schematic of small wind turbine generator unit and show its major components. 6
- c) Briefly classify the different types of fuel cells. 8
5. a) Discuss about the different factors affecting Bio-methanation process. 10
- b) What is gasification process? What are factors affects gasification process? 10
6. a) Explain the working principle of solar flat plate collector and show its major components. 8
- b) Briefly discuss different type of solar thermal power plants. 12
7. Write short notes on: (any **TWO**) 2 X 10 20
 - a) Solar PV
 - b) Anaerobic digestion process
 - c) Thermo-chemical conversion of biomass
 - d) OTEC