

B.TECH SEM – VII (2007 COURSE) (ELECTRICAL ENGG.) :

WINTER - 2017

SUBJECT: ELECTIVE-I: RENEWABLE ENERGY SOURCES

Day: **Wednesday**

Date: **24/01/2018**

Time: **02.30 PM TO 05.30 PM**

Max. Marks: **80**

W-2017-2575

N.B.:

- 1) **Q.No.1 and Q.No.5 are COMPULSORY.** Out of the remaining attempt **ANY TWO** questions from section-I and section-II.
- 2) Answer to both the sections should be written in **SEPARATE** answer book.
- 3) Draw a neat and labeled diagram **WHEREVER** necessary.
- 4) Figures to the right indicate **FULL** marks.
- 5) Assume suitable data, if necessary.

SECTION-I

- Q.1**
- a) Explain solar cell with suitable diagram. Also explain its characteristics. **(05)**
 - b) Classify renewable energy sources and give example of each. **(05)**
 - c) Explain advantages and disadvantages of any one renewable energy source. **(04)**
- Q.2**
- a) Explain concept of Clean Development Mechanism. **(07)**
 - b) What are main objectives in Kyoto Protocol? **(06)**
- Q.3**
- a) Explain multi-junction solar cell with suitable diagram. **(07)**
 - b) Draw and explain an equivalent circuit of PV system and discuss any one design. **(06)**
- Q.4**
- a) Explain pitch control in wind turbine operation at very high wind speeds. **(07)**
 - b) What are the issues faced by power system engineer while connecting wind energy to grid? **(06)**

SECTION-II

- Q.5**
- a) Explain how energy is extracted from ocean. **(05)**
 - b) Explain how fly wheel acts as energy storage system. **(04)**
 - c) What is meaning of dynamic reactive power support and why it is required? **(05)**
- Q.6**
- a) What are various sources and energy contents in biomass energy? **(07)**
 - b) How energy can be generated from municipal solid waste? **(06)**
- Q.7**
- a) What are different types of batteries? What are advantages and disadvantages of battery as energy storage device? **(07)**
 - b) Explain the concept of hybrid system and discuss economics related to hybrid system. **(06)**
- Q.8**
- a) What is effect of harmonics in power system? **(07)**
 - b) Explain effect of utility restricting on integration of renewable energy sources. **(06)**