

- (b) Explain the working of single basin tidal power plant. **7.5**

6. (a) What is a fuel cell ? Explain working of fuel cell with a neat sketch. **7.5**

- (b) Explain the principle of geothermal energy with a neat diagram. **7.5**

Unit IV

7. (a) What are grid interconnection issues with RES ? Explain. **7.5**

- (b) What are different maximum power point-tracking method ? Explain any *one* method. **7.5**

8. (a) Explain protection requirements of RES. **7.5**

- (b) What is voltage and frequency control in a weak grid ? **7.5**

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Roll No.

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M. Tech. EXAMINATION, Dec. 2017

(Third Semester)

(Main & Re-appear)

EE(PS)

MPS-603-B

SUSTAINABLE SOURCES OF ENERGY

Time : 3 Hours]

[Maximum Marks : 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. (a) What is meant by renewable energy sources ? Describe in brief these energy sources with special reference to Indian context. **9**
(b) Explain the significance of energy consumption as a measure of prosperity. **6**
2. (a) What is solar photovoltaic conversion ? Explain the working principle and give performance features of a PV panel. **7.5**
(b) Define the following :
 - (i) Hour angle
 - (ii) Declination angle
 - (iii) Latitude angle
 - (iv) Zenith angle
 - (v) Altitude angle. **7.5**

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Unit II

3. (a) With usual notations derive the expression for the power that can be derived from windmill. Comment on the factors, which have a significant effect on the power generated. **7.5**
(b) Explain working of WECS for generation of electric energy with neat schematic. **7.5**
4. (a) State the essential features of portable site for a wind farm : **7.5**
(b) Explain the terms :
 - (i) Yaw control
 - (ii) Pitch control
 - (iii) Teethering control. **7.5**

Unit III

5. (a) Give brief classification of biogas plants. What are the factors affecting biodigestion ? **7.5**

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P.T.O.