

**CERTIFICATE IN ENERGY TECHNOLOGY
AND MANAGEMENT (CETM)**

Term-End Examination

00622

December, 2016

**OEY-002 : RENEWABLE ENERGY
TECHNOLOGIES AND THEIR USES**

Time : 3 hours

Maximum Marks : 70

Note : Attempt any five questions. All questions carry equal marks.

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1. (a) What is the difference between diffuse, direct and global solar radiation ? 7
- (b) Explain the construction and working principle of a flat plate solar water heater. 7
2. (a) What do you understand by "efficiency of a solar cell" ? Also draw the voltage – current characteristic of a solar cell. 3+4=7
- (b) (i) For what applications can solar PV modules be used without using a battery and an inverter ? 4
- (ii) What are the typical wattages of PV modules available in the market ? 3

3. (a) How does a biogas plant work ? What are the reactions that take place in a biogas plant ? 3+4=7
- (b) Define the following for bio-oil : 7
- (i) pH Value
- (ii) Flash Point
- (iii) Pour Point
4. (a) Compare various techniques used in drying. 7
- (b) (i) What is a solar dryer ? Give its classification. 5
- (ii) What are the main applications of a solar dryer ? 2
5. (a) How is climate classified ? Explain. 7
- (b) Define "Green Building". Also, write the advantages of green buildings. 7
6. (a) Discuss the factors which affect the generation of biogas. 7
- (b) Draw a neat sketch of a box type solar cooker. What are the components which are used in a box type solar cooker ? 7

7. Write short notes on any *two* of the following : **2×7=14**

- (a) Solar PV System for Pumping
 - (b) Natural Circulation Solar Dryer
 - (c) Solar Passive System
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