

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

Term-End Examination

00025 December, 2014

**OEY-001 : ENERGY RESOURCES AND
CONVERSION PROCESSES**

Time : 3 hours

Maximum Marks : 70

***Note :** Answer any **seven** questions. All questions carry equal marks. Use of scientific calculator is permitted.*

1. Define the following : *5×2=10*
- (a) Energy
 - (b) Power factor
 - (c) High grade energy
 - (d) Alkalinity
 - (e) Geothermal energy
2. Discuss in detail low, medium and high temperature solar collectors. *10*

3. 20 kg biomass was kept in the oven for drying. After drying its weight was found as 15 kg. The dried biomass (after grinding) was kept in muffle furnace for volatile matter removal. After volatile matter removal biomass weight was observed as 10 kg. Finally it was again kept in muffle furnace for conversion in ash. Ash was found as 2 kg. Calculate percentage of moisture content (wet basis and dry basis), percentage of volatile matter, percentage of ash and percentage of fixed carbon. 10
4. Explain the principle of tidal energy and enlist its advantages and disadvantages. 10
5. Define energy conversion efficiency. Also state the second law of thermodynamics and mention its significance through fuel input as in coal. A boiler has an hourly input of 30 kWh. Energy equivalent to 15 kWh is extracted and is utilised for heating water. What is the energy conversion efficiency? 10
6. How is coal classified? Discuss in detail the characteristics of semi-bituminous coal and anthracite. 10
7. Discuss in detail nuclear fuels and nuclear power. 10
8. Explain in detail the classification of biomass resources. 10
9. Define Biofuels and explain 1st and 2nd generation Biofuels. 10