

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

Term-End Examination

00832

December, 2017

**OEY-003 : ENERGY MANAGEMENT :
AUDIT AND CONSERVATION**

Time : 3 hours

Maximum Marks : 70

*Note : Attempt any **five** questions. All questions carry equal marks. Assume suitable missing data, if any. Use of scientific calculator is permitted.*

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1. (a) What are the principles and the needs of energy audit ? 7
 - (b) Explain in brief, the energy conservation measures in Vanaspati industries. 7
 2. (a) Discuss the basic steps for developing electrical energy balance by taking an example. 7
 - (b) In a steam heat exchanger, furnace oil enters at 50 kg/hr and 30°C and leaves at 90°C. The specific heat of furnace oil is 0.22 kcal/kg°C. If the latent heat of steam is 540 kcal/kg, find out the amount of steam (in kg/hr) required to heat the oil. 7

3. (a) Explain the energy conservation measures in the transport sector. 7
- (b) Explain energy conservation by energy-efficient devices. 7
4. (a) Discuss optimal mix of renewable energy technologies. 7
- (b) Name the various pressure and flow measuring instruments and explain any one of them in brief. 7
5. (a) Explain the future energy scenario in rural areas with IREP plan. 7
- (b) What is meant by Power Factor and how can it be improved ? 7
6. (a) Discuss the various energy conservation measures in a pharmaceutical industry. 7
- (b) Explain the electrical and thermal energy balance of a steel industry. 7
7. Write short notes on any **four** of the following : $4 \times 3 \frac{1}{2} = 14$
- (a) Infrared Thermometers
- (b) Tachometer
- (c) Ultrasonic Leak Detector
- (d) Energy Management
- (e) Conservation in Air-conditioning (AC) Units
- (f) Waste Heat Recovery