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OEY-001

00814

CERTIFICATE IN ENERGY TECHNOLOGY AND MANAGEMENT (CETM)

Term-End Examination

June , 2012

OEY-001 : ENERGY RESOURCES AND CONVERSION PROCESSES

Time : 3 hours *Maximum Marks : 70*

Note : *There are **two** sections in this question paper. **Section-A** and **Section-B**. Section **A** is **compulsory**. Attempt **any eight** questions from **section B**.*

SECTION - A

(All questions are compulsory)

1. Choose the ***correct answer*** from the given alternatives : **7x1=7**

(a) Chemical energy is converted into thermal energy :

(i) Furnace

(ii) Diesel Engine

(iii) Fuel cell

(b) Thermal Energy is converted into mechanical energy :

(i) Heat exchanger

(ii) Steam turbine

(iii) Thermo-couple.

(c) The working fluids used in solar water heaters are :

(i) Water

(ii) Air

(iii) Glycol/water mixture

(iv) All of them

(d) Name the type of energy used by the spinning plate in a microwave oven :

(i) Electromagnetic energy

(ii) Mechanical Energy

(iii) Thermal Energy

(e) The resistance of a heater element is 50 ohm and supply voltage is 220V. The current flowing in the heater element is :

(i) 4A (ii) 4.2A

(iii) 4.4A (iv) 4.8A

(f) Combustion elements in the fuel are :

(i) Carbon and Hydrogen

(ii) Carbon, Hydrogen and Sulphur

(iii) Carbon, Hydrogen and Nitrogen

(iv) Carbon, Hydrogen and Ash.

(g) An energy conversion Device has the efficiency 75% and the power output is 150MW. The useful power output is :

(i) 100 MW (ii) 110 MW

(iii) 112.5 MW (iv) 115 MW

2. Fill in the blanks. 7x1=7

(a) Fuel + _____ = Products of combustion + _____ .

(b) There are two types of solar water heating systems. They are called _____ and _____ .

(c) Solar cells are connected in _____ to increase open circuit voltage.

(d) The unit of Energy consumed in electricity is _____ .

(e) The energy stored in the coal is _____ .

(f) The energy stored in the Uranium is _____ energy.

(g) Heat energy is converted into electricity by _____ .

SECTION - B

(Answer *any eight* questions)

3. Earth surface receives about 1.2×10^{17}W of power from the sun. Calculate the energy supplied by the sun in one hour. 7

4. Describe in brief the fossil fuels. Write down advantages and disadvantages of fossil fuels. 7

5. Describe the advantages of renewable energy. 7

6. Discuss various process parameters affecting the biogas production. 7

7. Name the components of electric generating wind machines. 7

8. Describe energy conversion processes in an automobile. 7

9. Describe main constituents of wood. 7

10. Define charcoal and write its main characteristics . 7

11. State advantages and disadvantages of liquid fuels. 7

12. Explain the environmental impact of renewable energy. 7