TED (15) – 5024 Reg. No. .....

(REVISION — 2015) Signature .....

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2018

ALTERNATIVE ENERGY SOURCES & MANAGEMENT

[*Time* : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I Answer *all* questions in one or two sentences. Each question carries 2 marks.

1. What do you mean by a secondary energy source ?
2. What is cogeneration ?
3. Define solar constant.
4. What do you mean by hydrogenation ?
5. Why is it necessary to add seed material to the gas in an MHD system ? (5 × 2 = 10)

PART — B

(Maximum marks : 30)

II Answer any *five* of the following questions. Each question carries 6 marks.

1. Briefly explain the need for alternative energy sources.
2. Briefly explain a combined cycle system.
3. Explain the construction and working of a flat plate collector with the help of a sketch.
4. Briefly explain the process of solar pumping with a neat sketch.
5. Explain the construction and working of vertical axis wind mills with diagrams.
6. Illustrate the working of a biomass digester.
7. Illustrate the working of an alkaline H_2-O_2 fuel cell. (5 × 6 = 30)

Marks

PART — C

(Maximum marks : 60)

(Answer *one* full question from each unit. Each full question carries 15 marks.)

UNIT — I

III (a) Briefly explain the major sources of energy. 8

(b) Explain the concept of energy management. Discuss (i) Analysis of input and (ii) Reuse and Recycling as energy management techniques. 7

OR

IV (a) Describe the present distribution of energy consumption in India. 8

(b) Explain energy audit along with its classifications. 7

UNIT — II

V (a) Explain the following solar radiation geometry terms with the help of diagrams.

(i) Hour angle (ii) Altitude angle

(iii) Zenith angle (iv) Solar azimuth angle 8

(b) Illustrate the process of solar cooking with the help of a diagram. 7

OR

VI (a) Illustrate the working of a solar pond electric power plant. 8

(b) Illustrate the use of solar energy as industrial process heat. 7

UNIT — III

VII (a) What are the major considerations in selecting a site for wind mill ? 8

(b) Illustrate the application of wind energy in water pumping. 7

OR

VIII (a) Briefly explain the process of bio-diesel production with suitable diagrams. 8

(b) What are the various methods of obtaining energy from biomass ? Draw a diagram showing energy conversion. 7

UNIT — IV

IX (a) Explain the working of a closed cycle MHD power plant with a sketch. 8

(b) Briefly describe a typical geothermal field with the help of a neat sketch. 7

OR

X (a) Illustrate the working of a vapour dominated geothermal power plant. 8

(b) List the advantages and limitations of fuel cells. 7

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