



C09-M-606C

**3786**

**BOARD DIPLOMA EXAMINATION, (C-09)**

**MARCH/APRIL—2014**

**DME—SIXTH SEMESTER EXAMINATION**

**ENERGY SOURCES AND POWER PLANT ENGINEERING**

*Time : 3 hours ]*

*[ Total Marks : 80*

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**PART—A**

3×10=30

**Instructions** : (1) Answer **all** questions.

(2) Each question carries **three** marks.

1. Define the renewal energy. List out any three of its type.
2. State any three advantages of photovoltaic cell.
3. What is wind energy conversion?
4. What is the principle of MHD generator?
5. List out the different types of biogas plants.
6. State the method of starting biogas plant.
7. Write any three advantages of tidal power plant.
8. State the principle of electrostatic dust collector.
9. State the importance of water treatment in steam power plant.
10. Distinguish between nuclear fission and fusion.

**PART—B**

10×5=50

**Instructions** : (1) Answer **any five** questions.

(2) Each question carries **ten** marks.

11. (a) Define the term 'solar constant'.  
(b) Explain the instruments used to measure the solar radiation.

- \* 12. Explain the various factors for site selection for windmill.
13. (a) State the advantages and limitations of MHD generator.  
(b) State the applications of fuel cell.
14. Explain with neat sketch, the construction and working of float-type biogas digester.
15. (a) How can power be produced in single-basin tidal system?  
(b) What are the limitations of single-basin tidal system?  
(c) How are these overcome in double-basin tidal system?
16. List out different types of dust collectors. Describe the working of cyclone-type dust collector.
17. The observations recorded during the trial on steam condenser are given below :

Condenser vacuum	= 685 mm of Hg
Barometer reading	= 765 mm of Hg
Mean condensate temperature	= 34 °C
Hot well temperature	= 28 °C
Condensate formed per hour	= 1750 kg
Circulating cooling inlet temperature	= 18 °C
Circulating cooling outlet temperature	= 30 °C
Quantity of cooling water	= 1300 kg/min

Determine the following :

- (a) Vacuum efficiency  
(b) Under-cooling of condensate  
(c) Condenser efficiency  
(d) Condition of steam as it enters the condenser  
(e) Mass of air present per kg of uncondensed steam

- \* 18. (a) Explain thermal and biological shields. 5  
(b) Explain 'solar still' with neat sketch. 5

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