

7458

BOARD DIPLOMA EXAMINATION, (C-20)

MAY—2023

DME - FOURTH SEMESTER EXAMINATION

ENERGY SOURCES AND POWER PLANT ENGINEERING

Time : 3 Hours ]

[ Total Marks : 80

**PART—A**

3×10=30

- Instructions :** (1) Answer **all** questions.  
(2) Each question carries **three** marks.  
(3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1. State the need of using renewable energy sources.
2. List out the various types of renewable sources of energy.
3. State the alternate fuels that can be used in IC engines.
4. Define solar constant and state its value.
5. State any three advantages and three limitations of wind energy.
6. What is fuel cell? State its advantages.
7. List out the material used for biogas generation.
8. List out the main components of tidal power plant.
9. What is the purpose of condenser and feed pump in thermal power plant?
10. Write any three differences between thermal power plant and nuclear power plant.

- Instructions :** (1) Answer **all** questions.  
(2) Each question carries **eight** marks.  
(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

**11.** (a) Explain the working principle of solar pond with a sketch.

**(OR)**

(b) Explain the wind turbine (wind mill for electric power generation) with a sketch.

**12.** (a) Explain natural circulation solar water heater with a neat sketch.

**(OR)**

(b) Explain the construction details and working of horizontal Axis Windmill with a sketch.

**13.** (a) Explain the working principle of Bacon's high pressure fuel cell with a neat sketch.

**(OR)**

(b) Explain the working of MHD generator with a sketch. State its advantages.

**14.** (a) Explain the construction and working of float type biogas digester with a legible sketch.

**(OR)**

(b) What is tidal energy? Explain working of tidal power plant (tidal power generation) with a sketch.

**15.** (a) List out coal handling equipments. Explain any two coal handling equipments with neat sketches.

**(OR)**

(b) Describe the construction and working of BWR with a sketch.

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## PART—C

10×1=10

- Instructions :** (1) Answer the following question.  
(2) The question carries **ten** marks.  
(3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

- 16.** Why Ash disposing system is important besides the other systems in a steam power plant? Briefly explain Ash handling systems with legible sketches.

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