

**DIPLOMA - VIEP - MECHANICAL
ENGINEERING (DMEVI)**

Term-End Examination

June, 2017

00507

BIMEE-029 : POWER PLANT ENGINEERING

Time : 2 hours

Maximum Marks : 70

Note : Attempt any **five** questions. All questions carry equal marks. Use of scientific calculator is permitted.

1. (a) What are the different types of fuels ?
Explain how coal is formed. 7
- (b) What are the requirements of a good coal handling plant ? 7

2. (a) What factors should be taken into consideration while selecting the site for steam power plants ? 7
- (b) How are boilers classified ? Explain the unique features of high pressure boilers. 7

3. (a) What is a cooling tower ? How are cooling towers classified ? Explain any one with a neat sketch. 7
- (b) A boiler generates 5400 kg of steam per hour at a pressure of 7.5 bar with feed water at 41.5°C. The dryness fraction of steam at exit is 0.98. The amount of coal burnt per hour is 670 kg with calorific value of 31000 kJ/kg.
- Determine : 7
- (i) Boiler efficiency
- (ii) Equivalent evaporation
4. (a) Define the term 'steam nozzle'. Explain the various types of nozzles. 7
- (b) Describe steam condenser and state its functions and advantages. 7
5. (a) What is the function of a steam turbine ? Explain the impulse steam turbine with a sketch. 7
- (b) List the advantages, disadvantages and applications of steam turbines. 7

6. (a) Enumerate and explain the essential elements of a hydro power plant. 7
- (b) Enumerate and explain the essential components of a nuclear reactor. 7
7. (a) What factors should be considered while selecting materials for various reactor components ? 7
- (b) Explain the working of a thermostatically controlled cooling system in a diesel power plant. 7
8. Write short notes on any *four* of the following : $4 \times 3 \frac{1}{2} = 14$
- (a) Reheat Factor
- (b) Air Pump
- (c) Nozzle Efficiency
- (d) Turbine Losses
- (e) Diffuser
- (f) Dalton's Law of Partial Pressure
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