

01095

**DIPLOMA IN ELECTRICAL AND
MECHANICAL ENGINEERING**

Term-End Examination

June, 2012

BME-058 : POWER PLANT ENGINEERING

Time : 3 hours

Maximum Marks : 70

Note : Answer any seven questions.

1. How can the efficiency of Brayton cycle be improved by : 10
 - (a) Intercooling
 - (b) Reheating
 - (c) Regeneration.

2. (a) With neat sketches, discuss the theory of operation of : 8
 - (i) Pelton turbine and
 - (ii) Francis turbine.

- (b) What are the advantages of using an axial flow compressor in place of centrifugal compressors in gas turbine plants ? 2

3. Discuss the following methods of superheat temperature control : 10
- (a) Excess Air Control
 - (b) Flue Gas Recirculation
 - (c) Control of Combination Superheaters.
4. (a) What are the advantages and disadvantages of bin system of pulverised fuel firing? 4
- (b) What is the function of condenser in thermal plants? 2
- (c) Why are condensers in thermal plants maintained under vacuum ? 4
5. (a) Discuss the methods of determining the depreciation cost of power plant. 8
- (b) What are the basic energy sources available for power generation ? 2
6. (a) What is the effect of increase in boiler pressure and decrease in condenser pressure on the Rankine cycle efficiency ? 6
- (b) Outline the functions of the following in thermal power plants : 4
- (i) Superheater
 - (ii) Air preheater
7. (a) What do you understand by binding energy and mass defect ? 7
- (b) Compare nuclear power station with steam power station. 3

8. (a) What are the different methods of fuel injection used in diesel power plants ? 2
- (b) Sketch and explain the injection system most commonly used in diesel plants. 8
9. (a) How are water turbines classified ? 2
- (b) What are the advantages of hydro plants compared with thermal plants ? 4
- (c) Discuss the merits and demerits of hyperbolic cooling towers. 4
10. (a) Outline one method of speed regulation used in steam turbines. 6
- (b) What precautions are to be taken during the running of steam turbines ? 4
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