

Code: EE3T3

**II B.Tech - I Semester–Regular/Supplementary Examinations –
November 2017**

**THERMAL AND HYDRO PRIME MOVERS
(ELECTRICAL AND ELECTRONICS ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

PART – A

Answer *all* the questions. All questions carry equal marks

11x 2 = 22 M

1. a) How steam boilers are classified?
- b) What do you understand by impulse and reaction forces in steam turbines?
- c) State the advantages of closed cycle gas turbine over open cycle gas turbine.
- d) Draw a simple line diagram for a simple open cycle gas turbine plant.
- e) Draw the layout of diesel power plant.
- f) State the applications of a diesel power plant.
- g) List the functions of guide vanes in the case of Francis and Kaplan turbines.
- h) Explain the function of draft tube in the case of reaction turbines.
- i) List the various efficiencies used to express the performance of hydraulic turbines.
- j) Compare single acting and double acting pumps.

k) List the advantages and limitations of reciprocating pumps.

PART – B

Answer any **THREE** questions. All questions carry equal marks. 3 x 16 = 48 M

2. a) Describe the working principle of Lamont boiler with a neat sketch. 6 M
- b) Explain the difference between pressure compounding and velocity compounding with the help of neat sketches. 6 M
- c) Compare the merits and demerits of surface condensers over jet condensers. 4 M
3. a) What is the working principle of closed cycle gas turbine with neat sketch? 8 M
- b) Write about the methods to improve thermal efficiency of a gas turbine. 8 M
4. a) What is the working principle of diesel engine with neat sketch? 8 M
- b) Explain the essential components in diesel electric power plant. 8 M

5. a) Define a turbine and bring out the differences between reaction turbine and impulse turbine in a tabular form.

8 M

b) How is flow controlled and regulated in Impulse turbines?
Explain with a neat sketch.

8 M

6. a) Explain the working principle of a double acting reciprocating pump.

8 M

b) Explain the working of a centrifugal pump with a neat diagram.

8 M