

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/  
COMMERCIAL PRACTICE, NOVEMBER - 2022**

**POWER PLANT ENGINEERING**

[Maximum marks: 100]

(Time: 3 Hours)

**PART – A**

**Maximum marks : 10**

I (Answer *all* the questions in one or two sentences. Each question carries 2 marks)

1. Define the term (a) Combustion (b) stoichiometric air.
2. Define HCV and LCV.
3. Define the terms (a) condenser efficiency (b) vacuum efficiency
4. List the methods of compounding used in steam turbine.
5. Name the fuel materials used in nuclear power plant. (5 x 2 = 10)

**PART – B**

**Maximum marks : 30**

II (Answer any *five* of the following questions. Each question carries 6 marks)

1. Define the following properties of fuel (a) Flash point (b) Fire point (c) Pour point. What is the use of finding flash and fire points.
2. What are the requirements of good fuel? Explain.
3. Differentiate between Jet condenser and Surface condenser.
4. Differentiate between Gas turbine and Steam turbine.
5. List the types of gas turbines with neat sketch of block diagram and *T-S* diagram.
6. Classify the nuclear reactors with examples.
7. Explain Solar Grain drier with suitable figure. (5 x 6 = 30)

**PART – C**

**Maximum marks : 60**

(Answer one full question from each unit. Each full question carries 15 marks)

**UNIT –I**

- III.(a) Explain the working of a Bomb calorimeter with a neat sketch. (8)

(b) Explain the working of a reaction turbine with a neat sketch. (7)

OR

IV.(a) Explain the 3T factors affecting combustion. (8)

(b) The chemical analysis by mass of a fuel is C = 86.1%, H = 3.9%, O<sub>2</sub> = 1.4%, ash = 8.6%. Determine the amount of air required for combustion of fuel. (7)

#### UNIT-II

V.(a) With the help of  $p-v$  and  $T-s$  diagrams explain Rankine cycle. (8)

(b) With the help of a line diagram explain the working of condensing steam power plant. (7)

OR

VI.(a) Draw the schematic diagram of Carnot cycle and explain various Process. (8)

(b) What is the purpose of Air pump in condenser? Differentiate forced draft and induced draft. (7)

#### UNIT-III

VII.(a) Explain the working of diesel electric power plant with a neat sketch. (8)

(b) List the applications and limitations of gas turbine. (7)

OR

VIII.(a) Explain the principle and working of Rocket propulsion. (8)

(b) Explain the working of Ram jet engine. (7)

#### UNIT-IV

IX. (a) Draw and explain Geo thermal power plant. (8)

(b) Describe the working of a Biogas plant with diagram. (7)

OR

X. (a) With the help of a figure explain the working of PWR power plant. (8)

(b) What is fission and fusion reaction. (7)

\*\*\*\*\*