

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/  
MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2018

**POWER PLANT ENGINEERING**

[Time : 3 hours

(Maximum marks : 100)

[Note : – Use of steam table and mollier chart are permitted.]

PART — A

(Maximum marks : 10)

Marks

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

1. Define pour point of liquid.
2. What is turbine bleeding ?
3. List out the functions of steam condenser.
4. List out the fuels used in gas turbines.
5. Name the fuel materials used in nuclear power plant.

(5×2 = 10)

PART — B

(Maximum marks : 30)

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

1. Explain working of barometric jet condenser.
2. Distinguish between nuclear fusion and fission.
3. Explain the working of Parson's reaction turbine with sketches.
4. List the requirements of a good fuel.
5. Classify steam condenser.
6. Explain the constant pressure open gas turbine.
7. Illustrate the working of solar grain drier.

(5×6 = 30)

## PART — C

(Maximum marks : 60)

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

## UNIT — I

- III (a) Explain with a sketch Junkers gas calorimeter to determine the calorific value of gaseous fuel. 8
- (b) List out the merits and demerits of liquid fuels over solid fuels. 7

OR

- IV (a) Calculate the higher calorific value and lower calorific value of a coal specimen from the following data Mass of coal burnt = 1g, Quantity of water in calorimeter = 2.5kg, Increase in temperature of water = 2.6°C, Water equivalent of apparatus = 390g, Hydrogen content in fuel is 6% and  $C_w = 4.2 \text{ kJ/kg}$ . 8
- (b) Compare between forced and induced draught. 7

## UNIT — II

- V (a) Illustrate the line diagram of a condensing steam power plant. 8
- (b) Calculate the vacuum efficiency from the following data. Vacuum at steam inlet to condenser = 700 mm of Hg, Barometer reading = 760 mm of Hg, Hot well temperature = 30°C. 7

OR

- VI (a) Draw the schematic diagram of steam power plant operating in Carnot cycle and explain various process. 8
- (b) The inlet and outlet temperatures of cooling water to a condenser are 29°C and 36°C respectively. If the vacuum in the condenser is 705 mm of Hg with barometer reading 760 mm, find the condenser efficiency. 7

## UNIT — III

- VII (a) With the aid of sketch explain the working of a hydroelectric power plant. 8
- (b) State the application of gas turbine. 7

OR

- VIII (a) Sketch the flow diagram and T-S diagram. Explain the working of constant pressure gas turbine closed loop. 8
- (b) Explain the working of Ram jet engine. 7

## UNIT — IV

- IX (a) List the various types of nuclear reactors and explain the main products of a reactor. 8
- (b) Describe the working of a Biogas plant with diagram. 7

OR

- X (a) Explain the working of a horizontal windmill with a sketch. 8
- (b) Draw a Nuclear power plant, name its main parts. 7