Roll No. | | | | | | | | | | | | |

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(EE) (2012 Onwards) (Sem.–4)

# POWER PLANT ENGINEERING

Subject Code : BTEE-406

M.Code : 57110

Time : 3 Hrs. Max. Marks : 60

**INSTRUCTIONS TO CANDIDATES :**

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

## SECTION-A

**Q1. Answer briefly :**

a) Name the various types of boilers used in a steam power plant.

b) Define Dalton's law of partial pressure.

c) What are super heaters and reheaters?

d) What is the role of an economizer in a steam power plant?

e) What do you mean by a flow duration curve?

f) Define Fusion Reaction.

g) What are the various elements of a gas turbine plant?

h) Differentiate between two stroke and four stroke diesel engines.

i) What do you mean by combined operation of different power plants?

j) Discuss the role of an electrostatic precipitator in a power plant.

## SECTION-B

Q2 Draw a typical layout of a steam power plant. Explain the main features of layout.

Q3 A hydro plant operates under an effective head of 100 m and a discharge of 200 $m^3$/sec. If the efficiency of turbine alternator set is 0.9, find the power developed.

Q4 A 500 MW nuclear reactor uses natural uranium as fuel. Assuming an overall efficiency of 34% and a load factor of 100% find the fuel used in a year.

Q5 Discuss with the help of suitable diagram, the operation of gas turbines in Open and Closed cycles.

Q6 Discuss the various types of pollution caused by steam and nuclear power plants. How this pollution can be reduced?

## SECTION-C

Q7 A hydro electric station is designed to operate at a mean head of 210 m and fed by a reservoir having a catchment area of 1000 $km^2$ with an annual rainfall of 130 cm of which 75% is available for power generation. The expected load factor is 75%. Allowing a head loss of 5 m and assuming efficiency of turbine and generator to be 0.85 and 0.9, calculate suitable MW rating of the station. Also comment on the type of turbine to be used.

Q8 Draw the layout of a diesel power plant. Explain the role of various components associated with the plant.

Q9 Explain briefly :

a) Advantages of combined operation of power plants.

b) Classification of hydro plants.



**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**