Code No: 127GP **R15**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year I Semester Examinations, May/June - 2019
POWER PLANT ENGINEERING
(Mechanical Engineering)

Time: 3 Hours **Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

1.a) What are the different types of coal. [2]
b) What is the significance of pulverized fuel burning? [3]
c) What is the importance of cooling in I.C. Engine plant? [2]
d) Explain different fuel cells and their usage. [3]
e) Give details of Hydrograph. [2]
f) What is HAWT? [3]
g) What are the different fuels are used in Nuclear plants? [2]
h) What for enrichment of nuclear fuel is done? [3]
i) What is demand factor and its importance? [2]
j) What are the effects of effluents on the environment and human health? [3]

PART – B

(50 Marks)

2.a) With the help of line diagram, explain the mechanical ash handling system.
b) Explain in detail with schematic diagram and chemical formulae, the working of underfeed feeders. [5+5]

OR

3.a) Explain the principle of pulverized fuel burning system.
b) Explain the working of over feed stoker with principle. [5+5]

4.a) Draw the diesel power plant layout and indicate all auxiliaries and the working details.
b) Draw the line diagram and explain any one type or fuel cells and its limitations. [5+5]

OR

5.a) What is meant by supercharging and why it will be used in diesel power plants?
b) Using the schematic diagram, explain the working of MHD generator. [5+5]

6.a) How are Hydro electric power plants are classified? Explain them in detail.
b) Draw the line diagram and explain the working of solar pond electric power plant. [5+5]

OR

7.a) Explain the significance of hydrological cycle.
b) Draw the line diagram and explain the working of wind power plant and explain its limitations. [5+5]

8.a) Compare and contrast fusion and fission reactions.

b) Draw the Nuclear reactor cross section and explain its working giving all details of components. [5+5]

OR

9.a) Draw the line diagram and explain the working of a Breeder reactor.

b) Explain the function of moderator and control rods and their usage and limitations.[5+5]

10.a) What are effluents from power plants and their effects?

b) The annual peak load on a 30 MW power station is 25MW. The power station supplies load haring maximum demands of 10 MW, 8.5 MW, 5 MW, 4.5 MW. The annual load factor is 0.45. Calculate Average load, Diversity factor, Energy supplied per year and demand factor. [5+5]

OR

11.a) What are the pollution standards are existing in India now? Give the complete details.

b) A generating station supplies the load as following. 15MW, 12MW, 8.5 MW, 6MW and 0.45MW. The station has a maximum demand of 22MW. The annual load factor of the station is 0.48. Calculate the number of units supplied annually, the diversity factor and the demand factor. [5+5]

---ooOoo---