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## B.Tech. (EE) PT (Sem.-4) POWER PLANT ENGINEERING Subject Code : BTEE-406 M.Code : 72449

# 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**

### Answer briefly :

- 1. Discuss the function of a steam nozzle.
- 2. How the efficiency of a steam turbine can be calculated?
- 3. Discuss the role of a ash handling plant in a thermal power station.
- 4. What do you mean by hydrological cycle?
- 5. Define binding energy.
- 6. Define mass defect.
- 7. What are the various elements of a gas turbine plant?
- 8. Give any two differences between two stroke and four stroke diesel engines.
- 9. What are the advantages of combined operation of different power plants?
- 10 What is the function of an electrostatic precipitator in a power plant?

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#### **SECTION-B**

- 11. Draw a typical layout of a steam power plant. Explain the main features of layout?
- 12. What is a hydrograph? How can a flow duration curve be obtained from a hydrograph?
- 13. With the help of a suitable diagram explain the working of a Pressurized Water Reactor (PWR).
- 14. Differentiate between Open and Closed gas turbine cycles. Discuss the methods for improving the efficiency of gas turbine plants.
- 15. What are the advantages of diesel plants over thermal plants? Why diesel plants are not used for high capacity?
- 16. Explain briefly :
  - (a) Combined operation of power plants
  - (b) Pollution from nuclear and thermal power plants
- 17. A hydro-electric station has to operate with a mean head of 30 metres and is supplied from a reservoir lake at the rate of 6.93 m<sup>3</sup> per second. Calculate the power generated in kW. Assume density of water 1,000kg/m<sup>3</sup>, load factor of station is 80%, mechanical efficiency of water turbine 90%. Neglect head loss in pipes, penstocks etc.
- 18 (a) Show that a mass defect of 1 amu is equivalent to about 931 MeVof energy.
  - (b) Draw the layout of a diesel power plant and explain it in detail.

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.

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