**R18**

# ANURAG Engineering College
## (An Autonomous Institution)
### II B.Tech I Semester Supplementary Examinations, Jan/Feb-2024
### POWER SYSTEMS – I
### (ELECTRICAL AND ELECTRONICS ENGINEERING)

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

## Section – A (Short Answer type questions)     (25 Marks)
### Answer All Questions

| | | Course Outcome | B.T Level | Marks |
|---|---|---|---|---|
| 1. | What is the function of an economizer? | CO1 | L1 | 2M |
| 2. | Explain the characteristic features of a PWR. | CO1 | L2 | 3M |
| 3. | State the essential elements of a hydroelectric power plant. | CO2 | L1 | 2M |
| 4. | What is a Turbine? Classify the turbines. | CO2 | L2 | 3M |
| 5. | List out the equipment in a transformer substation. | CO3 | L1 | 2M |
| 6. | What are the important considerations while laying an underground substation? | CO3 | L1 | 3M |
| 7. | What are the voltage levels at which primary ac distribution is employed? | CO4 | L1 | 2M |
| 8. | Write a short note on 3 wire dc distribution system. | CO4 | L2 | 3M |
| 9. | What is the objective of Tariff? | CO5 | L1 | 2M |
| 10. | How is the load duration curve constructed? | CO5 | L2 | 3M |

## Section B (Essay Questions)
### Answer all questions, each question carries equal marks.     (5 X 10M = 50M)

| | | | | |
|---|---|---|---|---|
| 11. A) | Explain about a coal fired thermal power station. | CO1 | L3 | 10M |
| | **OR** | | | |
| B) | Briefly discuss on PWR, BWR and FBR | CO1 | L3 | 10M |
| 12. A) | An hydroelectric station has to operate with a mean head of 50m.It makes use of water collected over a catchment area of 200km² over which the average annual rainfall is 420c.m with a 30 % loss due to evaporation. Assuming the turbine efficiency 85% and the alternator efficiency as 80% . Calculate the average power that can be generated? | CO2 | L3 | 10M |
| | **OR** | | | |
| B) | Draw the block diagram of a gas power plant and explain about each component. | CO2 | L3 | 10M |
| 13. A) | Explain single bus bar system with sectionalisation. | CO3 | L3 | 10M |
| | **OR** | | | |
| B) | Draw the key diagram of a 11 kV/400 V indoor substation and explain. | CO3 | L3 | 10M |
| 14. A) | Explain uniformly loaded dc distributer fed at one end. | CO4 | L3 | 10M |
| | **OR** | | | |
| B) | A single phase a.c. distributor AB 300 metres long is fed from end A and is loaded as under : <br> i) 100 A at 0·707 p.f. lagging 200 m from point A <br> ii) 200 A at 0·8 p.f. lagging 300 m from point A <br> The load resistance and reactance of the distributor is 0·2 Ω and 0·1 Ω per kilometre. Calculate the total voltage drop in the distributor. The load power factors refer to the voltage at the far end. | CO4 | L3 | 10M |

15. A) The peak load on a power plant is 60MW. The loads having maximum demands of 30 MW, 20MW, 10MW, and 14 MW are connected to the power plant. The capacity of the power plant is 80 MW and the annual load factor is 0.50. Estimate     CO5     L3     10M
i) the average load on the power plant,
ii) the energy supplied per year,
iii) the demand factor,
iv) the diversity factor.

**OR**

B) Explain about two-part tariff and three-part tariff methods.     CO5     L3     10M