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

Time: 3 Hours   **Max. Marks: 60**

Section – A (Short Answer type questions)   (10 Marks)
Answer All Questions

		Course Outcome	B.T Level	Marks
1.	What is a fuel cell?	CO1	L2	1M
2.	Mention some energy storage devices?	CO1	L1	1M
3.	What is load duration curve?	CO2	L2	1M
4.	What is the difference between base load plants and peak load plants?	CO2	L2	1M
5.	What is skin effect?	CO3	L2	1M
6.	How can the potential difference across the string of suspension insulators be equalized?	CO3	L2	1M
7.	Mention some equipment used in substation.	CO4	L2	1M
8.	What is the main difference between indoor and outdoor substation.	CO4	L1	1M
9.	What is the importance of load power factors in a.c. distribution?	CO5	L2	1M
10.	How does a.c. distribution differ from d.c. distribution?	CO5	L2	1M

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

			Course Outcome	B.T Level	Marks
11.	A)	Explain the operation of a nuclear power plant with the help of a neat diagram.	CO1	L2	10M
		OR			
	B)	i)Write short notes on tidal energy.	CO1	L2	5M
		ii) Write short notes on solar energy.			5M
12.	A)	i)Define the term maximum demand, connected load, demand factor and load factor.	CO2	L2	5M
		ii)The maximum demand of a power station is 200 MW. If the annual load factor is 0.55, calculate the total energy generated in a year.		L3	5M
		OR			
	B)	Estimate the generating cost per kWh delivered from a generating station from the following data : Plant capacity = 50 MW ;Annual load factor = 40% Capital cost = 1·2 crores ; annual cost of wages, taxation etc. = Rs 4 lakhs ; cost of fuel, lubrication, maintenance etc. = 1·0 paise/kWh generated. Interest 5% per annum, depreciation 6% per annum of initial value.	CO2	L3	10M
13.	A)	i) Define self GMD and mutual GMD.	CO3	L2	5 M
		ii) A single phase line has two parallel conductors 2 metres apart. The diameter of each conductor is 1·2 cm. Calculate the loop inductance per km of the line		L3	5 M
		OR			

B) A 200 km, 3-phase transmission line has its conductors placed at the corners of an equilateral triangle of 2·5 m side. The radius of each conductor is 1 cm. Calculate : i) line to neutral capacitance of the line, ii) charging current per phase if the line is maintained at 66 kV, 50 Hz.	CO3	L3	10M

14. A) Explain the different types of bus bar arrangements used in a substation. — CO4 — L3 — 10M

OR

B) Draw a comparison between gas insulated substations and air insulated substations and mention the advantages of gas insulated substations. — CO4 — L2 — 10M

15. A) A 2-wire d.c. distributor cable AB is 2 km long and supplies loads of 100A, 150A, 200A and 50A situated 500 m, 1000 m, 1600 m and 2000 m from the feeding point A. Each conductor has a resistance of 0·01 Ω per 1000 m. Calculate the p.d. at each load point if a p.d. of 300 V is maintained at point A. — CO5 — L3 — 10M

OR

B) Write short notes on the following : — CO5 — L2 — 5M
i) Radial distribution system
ii) Ring main distribution system — 5M