BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION)

CLASS: B.Tech. **SEMESTER: V**
BRANCH: EEE **SESSION: MO/2022**

SUBJECT: EE307 ELECTRIC POWER TRANSMISSION AND DISTRIBUTION

TIME: 2 HOURS **FULL MARKS: 25**

INSTRUCTIONS:
1. **The total marks of the questions are 25.**
2. **Candidates attempt for all 25 marks.**
3. **Before attempting the question paper, be sure that you have got the correct question paper.**
4. **The missing data, if any, may be assumed suitably.**
5. **Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.**

				CO	BL
Q1	(a)	"The greater the diversity factor, the lesser is the cost of power plant, transformer and line conductor" Justify	[2]	CO1	BL2
Q1	(b)	A power station has a maximum demand of 15000 kW. The annual load factor is 50% and plant capacity factor is 40%. Find the reserve capacity of the plant	[3]	CO1	BL3
Q2	(a)	Calculate the number of units to be consumed so that the annual bill on the basis of two part tariff is same from the following data- Maximum demand =10 kW Two part tariff : Rs. 1200 per annum per kW of maximum demand plus Rs. 1.80 per unit consumed. Flat rate tariff-Rs. 2.40 per unit.	[2]	CO1	BL3
Q2	(b)	Why power factor tariff is necessary for industrial load? Define different types of power factor tariff.	[3]	CO1	BL1
Q3	(a)	Discuss about availability based tariff ? Why is it called frequency linked tariff system?	[2]	CO1	BL2
Q3	(b)	A generating station has a maximum demand of 15 MW and the daily load on the station is as follows : 10 pm to 5 am 2500 kW 1 pm to 4 pm 10,000 kW 5 am to 7 am 3000 kW 4 pm to 6 pm 12,000 kW 7 pm to 11 am 9000 kW 6 pm to 8 pm 15,000 kW 11 am to 1 pm 6000 kW 8 pm to 10 pm 5,000 kW Determine plant load factor, plant capacity factor, plant use factor and reserve capacity of the plant.	[3]	CO1	BL4
Q4	(a)	Mention the advantages of stranded ACSR conductor over solid Al conductor.	[2]	CO2	BL2
Q4	(b)	Derive the inductance of three phase asymmetrical spaced conductors. Prove that the network becomes unbalanced due to this asymmetrical spacing.	[3]	CO2	BL4
Q5	(a)	Derive capacitance for one meter length of a single phase line.	[2]	CO2	BL4
Q5	(b)	Calculate the inductance of a 100 km long 3-phase, 50 Hz overhead transmission line consisting of 3- conductors, each of diameter 2 cm and spaced 2.5 m at the corners of an equilateral triangle.	[3]	CO2	BL3

:::::: 29/09/2022 ::::::M