DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular & Supplementary Summer 2024

Course: B. Tech. **Semester : IV**

Branch: Electrical Engineering / Electrical Engineering (Electronics and Power)/ Electrical & Electronics Engg. / Electrical & Power Engineering.

Subject Code & Name: BTEEC402 POWER SYSTEM

Max Marks: 60 **Date: 14/06/2024** **Duration: 3 Hr.**

Instructions to the Students:

1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		**12**
A)	Describe the working principle of hydroelectric power Plant. Highlight their advantages, disadvantages, and environmental impacts.	**CO1**	**6**
B)	With neat diagram explain in detail thermal power plants.	**CO3**	**6**
C)	Explain in detail Nuclear power plant with neat block diagram of main parts.	**CO4**	**6**
Q.2	**Solve Any Two of the following.**		**12**
A)	Derive the expression for Flux linkages due to a single current carrying conductor.	**CO2**	**6**
B)	Explain skin and proximity effect in detail.	**CO2**	**6**
C)	Describe in detail the phenomenon of corona Effect in transmission lines.	**CO3**	**6**
Q. 3	**Solve Any Two of the following.**		**12**
A)	Explain types of Conductor used in transmission line, explain each type in detail.	**CO1**	**6**
B)	Explain String Efficiency with mathematical expression.	**CO4**	**6**
C)	Explain types of Insulators used in transmission line, explain with diagram.	**CO4**	**6**
Q.4	**Solve Any Two of the following.**		**12**
A)	Write performance equation of long transmission line.	**CO2**	**6**
B)	Derive ABCD parameters of medium transmission line (T and π nominal network).	**CO3**	**6**
C)	A 3-phase, 50-Hz overhead transmission line 100 km long has the following constants : Resistance/km/phase = 0.1 Ω Inductive reactance/km/phase = 0·2 Ω	**CO1**	**6**

Capacitive susceptance/km/phase = 0·04 × 10− 4 Siemen
Determine (i) the sending end current (ii) sending end voltage (iii) sending end power factor and (iv) transmission efficiency when supplying a balanced load of 10,000 kW at 66 kV, p.f. 0·8 lagging. Use nominal T method.

Q. 5	**Solve Any Two of the following.**		**12**
A)	Explain classification of distribution system of power system in detail.	**CO2**	**6**
B)	Distinguish between overhead distributions systems versus underground distribution system.	**CO4**	**6**
C)	What are the deferent method to obtain 3 wire DC system in distribution system? Explain with diagram.	**CO3**	**6**

***** End *****