

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

**CLASS: B.Tech
BRANCH: EEE**

**SEMESTER : V/ADD
SESSION : MO/2025**

SUBJECT: EE307 ELECTRICAL POWER TRANSMISSION AND DISTRIBUTION

TIME: 02 Hours

FULL MARKS: 25

INSTRUCTIONS:

1. The question paper contains 5 questions each of 5 marks and total 25 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates
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		CO	BL
Q1. Justify the following statements in brief [for one mark each].	[1x5]	1,2	1
(a) ACSR conductor is preferred over Cu and Al conductors			
(b) Flat rate tariff is preferred over simple tariff			
(c) The value of phase inductance is different for single phase and three phase transmission lines.			
(d) Require using Ampere's law for inductance calculation.			
(e) Skin effect is present only in AC system.			
Q.2(a) Differentiate between Load Curve and Load Duration Curve with proper diagrams. Mention the importance of these two curves in power system operation.	[2]	1	2
Q.2(b) A small industry has a connected load of 500 kW, with a maximum demand of 300 kW, and operates for 16 hours a day. Calculate the demand factor and load factor. Discuss the importance of these factors in power system planning.	[3]	1	3
Q.3(a) Load factor of a consumer is 35% and the monthly consumption is 504 kWh. If the tariff is Rs. 180 kW of the maximum demand plus Rs 2.0 per kWh, then find the monthly bill of the month of March.	[2]	1	3
Q.3(b) Derive the capacitance of a single-phase transmission line.	[3]	2	2
Q.4(a) What is meant by transposition of conductors (ToC) and importance of ToC?	[2]	2	1
Q.4(b) Mention the importance of a three-phase double circuit line. Write the steps in calculating inductance per phase per km of the drawn three-phase double circuit line. Consider the line is completely transposed.	[3]	2	3
Q.5(a) What do you mean by solid and composite conductor?	[2]	2	1
Q.5(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]	2	3

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