

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION MO/2024)

CLASS: BTECH
BRANCH: EEE

SEMESTER : VII/ADD
SESSION : MO/2024

SUBJECT: EE535 HVDC AND FACTS

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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Q.1(a)	Discuss the application of HVDC system.	[2]	1	I
Q.1(b)	Compare the HVDC transmission system with EHVAC transmission system for bulk power generation based on technical performance, economics, protection and reliability.	[3]	1	II
Q.2(a)	Explain the difference between line commutated converters and voltage source converters.	[2]	2	II
Q.2(b)	Draw and explain various types of DC links used in HVDC system.	[3]	1	II
Q.3(a)	Explain the advantages of 6 pulse converter over 12 pulse converter.	[2]	2	II
Q.3(b)	With the help of suitable diagram, explain the working of various components of HVDC system.	[3]	1	III
Q.4(a)	Explain the harmful effects of AC side and DC side harmonics.	[2]	2	II
Q.4(b)	Derive the expression for output DC voltage, Input AC Current and Power Factor of 6 pulse converter.	[3]	2	IV
Q.5(a)	Explain the reasons for the development of characteristic and non-characteristic harmonics in HVDC system.	[2]	2	II
Q.5(b)	Draw the firing angle sequence and output voltage waveforms at different firing angles for three-phase 6 pulse bridge-controlled converter.	[3]	2	IV

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