Total No. of Pages: 01

Total No. of Questions: 08

## M.Tech. (Power System) (Sem. – 3) HVDC Subject Code: MTPS-301B-18 M.Code: 76551 Date of Examination: 12-12-2022

Time: 3 Hrs.

Roll No.

Max. Marks: 60

## INSTRUCTIONS TO CANDIDATES:

1. Attempt any FIVE questions out of EIGHT questions.

1. a) Explain the H.V.D.C. Power flow mechanism in detail with all components.

2. Each question carries TWELVE marks.

	b) Explain the various types of H.V.D.C. links with suitable diagrams.	(8+4)
2.	Draw and explain the working of 3-phase 12-pulse bridge converter with suitable waveforms and applications.	diagrams, (12)
3.	a) What are importance of higher level of control techniques used in converters? Just	tify.
	b) What are the roles of CIA and CEA and CC in HVDC?	(6+6)
4.	a) Explain the characteristics and non-characteristics harmonic filters design.	
	b) Explain the methods for control of over voltages on AC/DC side.	(6+6)
5.	a) What are representation for power flow solution for HVDC system? Brief them.	
	b) Design harmonic filter to reduce the telephone interface for HVDC.	(6+6)
6.	a) A back to back HVDC link with one bridge at each end is transmitting 100MW $V_d = 100$ kV. If $a = 15^\circ$ , $= 18^\circ$ and Rcr= Rci = 12 Ohms, determine $V_{doi}$ , Qr and Qi.	With the V <sub>dor</sub> (6)
	b) If DC link is controlled at the value of Qi, calculated in the above problem (a) value $V_d$ , $I_d$ , Qr, a and for Pd = 50MW.	). Find the (6)
7.	Discuss the studies of regulations for HV tests used to ensure safety and standards fo and control. Justify your answer.	r operation (12)
8.	Write short notes on:	
	a) Equivalent circuit of HVDC line.	
	b) Protection of HVDC system.	
	c) Role of converter and inverter in HVDC.	

d) Synchronous link stability

## NOTE : Disclosure of Identity by writing Mobile No. or Marking of passing request on any paper of Answer Sheet will lead to UMC against the Student.

(3×4)