09-06-2026 BE ELECTRICAL SEM-VII C SCHEME HVDCT QP CODE: 20015053

TIME: 3 HOURS **MAX MARKS: 80**

NOTE

1.Question number 1 is compulsory
2.Attempt any three from the remaining
3.Figures to right indicate full marks
4.Assume suitable data if necessary and mention the same

1.		Attempt **any four: -**	
	a)	What are the features of HVDC Transmission for Offshore Wind Farms?	**05**
	b)	"Converter consumes reactive power" Justify the statement. Draw all supporting voltage and current waveforms and phasor diagrams.	**05**
	c)	Explain means of manual control	**05**
	d)	What is bypass valve? Explain its role in HVDC Converter.	**05**
	e)	Explain role of AC and DC filters in HVDCTS.	**05**
2.			
	a)	A 3-phase fully-controlled bridge converter is connected to a 400 V, 50 Hz supply having a source reactance of 0.3Ω/ph. The converter is operating as a rectifier at a firing angle of 60°. Determine the average load voltage and the overlap angle when the converter is supplying a steady current 100 A.	**10**
	b)	Explain control characteristics with suitable diagram and describe the concept of current margin.	**10**
3.			
	a)	Explain 12 pulse converter used in HVDCT with suitable diagram and waveforms.	**10**
	b)	What do you understand by firing schemes?. How IPC differs from EPC firing scheme?	**10**
4.			
	a)	Explain concept of commutation failure in HVDC converters. Explain any one in detail.	**10**
	b)	Harmonics, toubled causes by harmonics and means of reduction in HVDCT Converter	**10**
5.			
	a)	Explain the concept of power reversal in HVDCTS.	**10**
	b)	What are the causes of over currents in HVDC and illustrate how the system is protected?	**10**
6.		Write brief notes (any two)	
	a)	Six Pulse converter operation for overlap angle greater than 60°.	**10**
	b)	Various types of faults in converters.	**10**
	c)	Componenets of HVDCT systems	**10**

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