QP Code :15602

(3 Hours)   [Total Marks : 100

N.B. : (1)   Question No. **1** is **compulsory**.
   (2)   **Attempt** any **4** Questions out of remaining **six**.
   (3)   Assume suitable data if **necessary**.
   (4)   **Figures** to right indicate **full** marks

1.	(a)	What is current margin? Give its significance.	5
	(b)	Explain PLC-RI filter used in HVDC system.	5
	(c)	Draw and explain complete equivalent circuit of HVDC link.	5
	(d)	Find the effective commutation resistance of a 6-pulse rectifier which is fed from 400 kV, 3-phase ac voltage, when the dc current in HVDC link is 1 kA & rectifier dc voltage is 500 kV at firing angle of 20°.	5

2.   (a)   Calculate the secondary line voltage of the transformer for 3-phase bridge rectifier to provide a DC voltage of 120 kV. Assume $\alpha=30°$, $\mu=15°$. What is the effective reactance X_L, if the rectifier gives 800 A of DC output current.   10
   (b)   Explain the equidistant pulse control scheme and individual phase control scheme used in HVDC system?   10

3.   (a)   Explain different types of HVDC links with neat diagrams.   10
   (b)   What do you understand by commutation resistance? Explain its effect on dc voltage produced by converters with appropriate derivation.   10

4.   (a)   Explain the different faults taking place in converters.   10
   (b)   What are the different types of harmonics getting produced in HVDC system?   10

5.   (a)   What is mode stabilization and how it is obtained?   10
   (b)   Explain starting and stopping of DC link.   10

6.   (a)   Compare AC and DC transmission on the basis of Economics of transmission and Technical performance.   10
   (b)   Explain different levels of control of HVDC.   10

7.   Write note on any **Three** :—   20
   (a)   VDCOL Characteristics.
   (b)   Causes and effects of harmonics in HVDC.
   (c)   Ground Return advantages and problems.
   (d)   Commutation failure and its effect.

————————

LM-Con.:11592-14.