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**Question Paper Code: 49313**

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

Elective

Electrical and Electronics Engineering

14UEE913- HVDC TRANSMISSION

(Regulation 2014)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 1 = 10 Marks)

- HVDC transmission commercially began in the year  
(a) 1950                      (b) 1954                      (c) 1970                      (d) 1935
- In a monopolar system usually the pole is  
(a) Positive                      (b) Negative  
(c) Positive and Negative                      (d) Alternately positive and negative
- Modern HVDC system are all  
(a) 3-pulse converters                      (b) 6-pulse converters  
(c) 24-pulse converters                      (d) 12-pulse converters
- Short circuit ratio of an HVDC grid is  
(a) Dc power flow/ KVA  
(b) AC MVA/DC MW  
(c) Voltage/Current at the short circuit point  
(d) Short circuit MVA at converter bus rated DC power MW
- Converter valves should be operated strictly within their \_\_\_\_\_ Rating  
(a) Power                      (b) Voltage                      (c) Current                      (d) Both a and b

6. The difference between the current controller settings of the two stations is called  
 (a) Current margin (b) Voltage margin (c) Constant current control (d) Tap changer
7. There are basically \_\_\_\_\_ types of filters  
 (a) 3 (b) 4 (c) Five (d) 2
8. The radio interference is mainly due to the ..... Conductor  
 (a) Positive (b) Negative (c) Both positive and negative (d) Metallic conductor
9. The first HVDC scheme in India is  
 (a) Vidhyachal back-to-back system (b) Chandrapur-padghe scheme  
 (c) Delhi-Rihand 500 kV system (d) Sileru –Basoor system
10. Power flow studies normally are associated with the following buses  
 (a) PQ alone (b) PV &PQ (c) PV, PQ and Slack bus (d) None

PART - B (5 x 2 = 10 Marks)

11. Draw the block diagram of bipolar link.
12. Define pulse number of a converter.
13. Justify, how power is reversed in HVDC link?
14. What are the problems of harmonics?
15. What are the simulation tools are available for simulation of HVDC systems?

PART - C (5 x 16 = 80 Marks)

16. (a) Discuss the modern trends in DC transmission. Also describe the steps involved in planning the HVDC transmission system. (16)  
 Or  
 (b) Describe with a neat diagram, the different configurations of asynchronous interconnection in HVDC system. (16)
17. (a) Explain 12 pulse converter with bridge rectifier. (16)  
 Or  
 (b) With the neat diagram and waveforms explain the 6-pulse Graetz's circuit (16)

18. (a) Explain the individual phase control and equidistance pulse control schemes for firing angle control of HVDC link. (16)

Or

- (b) Explain the individual phase control and equidistance pulse control schemes for firing angle control of HVDC link. (16)

19. (a) Explain the starting and stopping operations of DC link. (16)

Or

- (b) Write short notes on STATCOM and its function. (16)

20. (a) Explain DC power flow analysis in detail (16)

Or

- (b) With any one case study briefly explain about the ac-dc power flow analysis under dynamic conditions. (16)

