**Reg. No. :** | | | | | | | | | | |

## Question Paper Code: 49313

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

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)

1. Valve rating is specified in terms of
   (a) Average voltage value (b) Rms voltage value (c) Peak inverse voltage (d) None

2. In a Bi-polar system usually the pole is
   (a) Positive (b) Negative
   (c) Positive and Negative (d) Alternately positive and negative

3. 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

4. HVDC system are all
   (a) 3-pulse converters (b) 6-pulse converters
   (c) 24-pulse converters (d) 12-pulse converters

5. 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. Compare AC and DC transmission system.

12. Define pulse number of a converter.

13. Justify, how power is reversed in HVDC link?

14. What is a need for filters?

15. What are the simulation tools are available for simulation of HVDC systems?

PART - C (5 x 16 = 80 Marks)

16. (a) Explain in detail about types of HVDC link in transmission line? (16)

Or

(b) Describe with a neat diagram, the different configurations of asynchronous interconnection in HVDC system. (16)

17. (a) Develop the analysis of 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) Draw the converter characteristics of a HVDC link and explain the different modes of operation. (16)

Or

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

19. (a) Derive an equation for harmonic voltage and current for single tuned filter and discuss the influence of network admittance on design aspects. (16)

Or

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

20. (a) Describe the governing equations for the dc converter and controller unit. (16)

Or

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

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