



R18 Regulation

Subject code: 2E8BA

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech VIII Semester Supplementary Examinations, April 2024

HVDC Transmission Systems

(Electrical and Electronics Engineering)

Maximum Marks: 70

Date: 22.04.2024 Duration: 3 hours

- Note:
1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
 3. Part B consists of 5 Units. Answer any one full question from each unit which carries 10M.
 4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks

(10x2M=20 Marks)

- 1 State the advantages in DC transmission.
- 2 Explain types of HVDC links
- 3 Define extinction angle control.
- 4 What is constant ignition angle control?
- 5 Write the equation of DC Converter Control.
- 6 What is the importance of reactive power?
- 7 Explain about filters.
- 8 How corona affects the DC line?
- 9 What is the effect of pulse number on harmonics?
- 10 Compare rectifiers and inverter wave forms.

Part-B

Answer All the following questions.

(5X10M=50Marks)

- 11 a) what is technical performance in HVDC transmission. [5M]
b) Explain about different sources of reactive power to meet the reactive power requirement of Converters. [5M]

OR

- 12 a) Compare AC and DC transmissions in detail. [5M]
b) Explain the major components of a HVDC transmission in converter station unit. [5M]

- 13 a) Derive the steady state equivalent circuit of HVDC converter. [5M]
b) "Converter consume reactive power". Justify the statement. [5M]

OR

- 14 Explain about Converters Control Characteristics in HVDC system. [10M]

- 15 a) describe the firing angle control. [5M]
b) Discuss in detail source inductance on HVDC systems. [5M]

OR

- 16 a) Describe constant ignition angle control. [5M]
d) Describe individual phase control. [5M]

- 17 a) Discuss the operation of surge arrestors for overvoltage protection of HVDC Systems. [5M]
b) Explain the basic principles of over current protection. [5M]
- OR
- 18 Discuss the various faults exist in converter protection. [10M]
- 19 Write a short note on
(a) Modelling of H.V.D.C. links. [5M]
(b) P.U. system for d.c. quantities. [5M]
- OR
- 20 a) What are the filter configurations that are employed for HVDC converter station? Give design aspect of one such filter. [5M]
b) Why High pass filters are provided with damping resistor? Also explain about advantages, disadvantages of High Pass Filter. [5M]