PAPER ID-410655

Subject Code: KEE072

Roll No: | | | | | | | | | | | | | |

B.TECH
(SEM VII) THEORY EXAMINATION 2021-22
HVDC & AC TRANSMISSION

Time: 3 Hours *Total Marks: 100*

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 10 = 20

a. Explain Necessity of EHVAC transmission.
b. What do you understand by standard transmission voltage?
c. Write down Corona loss formula.
d. Explain principle of half wave transmission.
e. What are the necessities of High voltage testing?
f. What is disruptive discharge voltage?
g. Explain Principle of DC link control.
h. What is firing angle control?
i. What type of insulation is preferred for DC smoothing Reactors?
J. Write down application of MTDC.

SECTION B

2. Attempt any *three* of the following: 10 x 3 = 30

a. Explain the technical and economical reasons for adopting EHV transmission system for transfer of bulk power over long distance.
b. Two generator rated 250MW and 500MW are operating in parallel. The drop characteristics of the governors are 4% and 5% respectively. How would a load of 750 MW be shared between them? What will be the system frequency? Take nominal frequency is 60H.
c. Explain design factors for EHV lines under steady state limits.
d. What are the benefits of using FACTS devices? Give the type of FACTS controllers and quantities/parameters being controlled by these.
e. Draw a simple scheme of HVDC converter station and describe briefly components of the converter station.

SECTION C

3. Attempt any *one* part of the following: 10 x 1 = 10

a. Explain UHVAC transmission system.
b. Illustrate the power handling capacity and line loss of EHVAC lines with various voltage levels.

4. Attempt any *one* part of the following: 10 x 1 = 10

a. Write short notes on
(i) Radio interference effects on EHVAC (ii) Ferro-resonance
b. Explain generation and characteristics of corona pulses for EHVAC transmission.

5. Attempt any *one* part of the following: 10 x 1 = 10

a. What are the effects of pollution on the performance of EHV lines?
b. Explain measurement of high voltage by sphere gaps and potential dividers.

6. Attempt any *one* part of the following: 10 x 1 = 10

a. Describe types of HVDC links with the help of diagrams. Discuss the applications of each of These links.
b. Discuss the advantages & disadvantages of HVDC transmission.

7. Attempt any *one* part of the following: 10 x 1 = 10

a. Explain protection against over currents and over voltages for EHV DC transmission.
b. Write short notes on
(i) generation of harmonics for EHV DC (ii) AC and DC filters