Regulation R18

Subject code:2E7BC

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VII Semester Supplementary Examinations, November 2022

FLEXIBLE AC TRANSMISSION
(Professional Elective)

(ELECTRICAL AND ELECTRONICS ENGINEERING)

Maximum Marks: 70

DATE: 3-12-2022

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.
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 What are the second-Generation FACTS Controllers?
2 What are the factors which limit loading capability?
3 Which types of converters are generally used in FACTS devices.
4 What are static VAR compensators? What are their advantages?
5 How Series compensation is classified?
6 Why series compensation is more effective than shunt compensation?
7 What are harmonics? What are their sources?
8 Write short notes on principle of operation of STATCOM
9 Explain the basic operating principle of an UPFC.
10 Explain how a UPFC is different than a simple VSC.

Part-B

Answer All the following questions. (10M X 5=50Marks)

11 What are the objectives of FACTS controllers? [5]
Enumerate three phase full-wave bridge Voltage Source Converter operation. [5]

OR

12 List and explain briefly important controllable parameters that are considered for power flow control. [5]
Why shunt compensation is always attempted at midpoint of a transmission line. [5]

13 Explain the variable impedance type static VAR Generator? [10]

OR

14 Explain different types of stability issues that limit transmission capability. [10]

15 Explain the working principle & V – I char. Of STATCOM? [10]

OR

16 Compare between STATCOM and SVC in terms of operational and performance characteristics along with application benefits. [10]

17 Describe the configuration and characteristics of basic thyristor-switched series capacitor. [10]

OR

18 Draw V-I Characteristics and loss characteristics for: i) GCSC ii) TCSC iii) SSSC [3+4+4]

19 Describe dependence of real and reactive power flow control in UPFC. [10]

OR

20 How an UPFC scheme can be implemented using two back to back voltage source converter? [10]