Regulation R18

Subject code: 2E7BC

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VII Semester Supplementary Examinations, July 2022

FLEXIBLE AC TRANSMISSION SYSTEMS

(ELECTRICAL AND ELECTRONICS ENGINEERING)

Maximum Marks: 70

Date:04.07.2022 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 objectives of FACTS controllers?

2 Why in general voltage sourced converters is preferred over current sourced converters in FACTS controllers?

3 Write the three important objectives of shunt compensation.

4 What are the characteristics differences between TSSC and TCSC?

5 What is reactive power? What is its significance?

6 What are the advantages of thyristor switched capacitors?

7 What are the objectives of series compensation?

8 Explain different losses that are encountered with FC – TCR arrangement.

9 Explain main objectives and usefulness of UPFC in power industry

10 List merits of Hybrid compensator.

Part-B

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

11 a) Explain various loading capability limits in power flow systems. [5]
b) Enumerate single phase full-wave bridge Voltage Source Converter operation. [5]

OR

12 a) Explain prevention of voltage stability with the help of end of line voltage support? [5]

b) Explain all Shunt Connected Controllers with neat diagram? [5]

13 Explain the Switching converter type VAR Generator? [10]

OR

14 a) Explain the improvement of transient stability? [5]
b) What is the need for reactive power compensation in transmission systems? [5]

15 With a neat circuit diagram and necessary waveforms, discuss the operation of a Thyristor Controlled Reactor (TCR). Also represent their V-I operating area. [10]

OR

16 Explain the operation of STATCOM with an aid of block diagram. [10]

17 Explain the voltage stability enhancement and power oscillation damping with series capacitive compensation. [10]

OR

18 Explain with a neat sketch and waveforms the GCSC type of series controller. [10]

19 Explain the implementation of the UPFC by back-to-back voltage sourced converters. [10]

OR

20 What is interline power flow controller? With a schematic diagram, explain its working. [10]