



R22 Regulation

Subject code: E122PC2

**TKR COLLEGE OF ENGINEERING AND TECHNOLOGY**

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

**M.Tech II Semester Supplementary Examinations, March 2025**

**POWER ELECTRONICS APPLICATION TO POWER SYSTEMS  
(Power Electronics)**

**Maximum Marks: 60**

Date: 13.03.2025

Duration: 3 hours

- Note:**
1. This question paper contains two parts A and B.
  2. Part A is compulsory which carries 10 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

- |      |  |                  |
|------|--|------------------|
| 1.a) | Write bus impedance matrix formula       | (10X1M=10 Marks) |
| b)   | What is Transmission Line                |                  |
| c)   | Define economic dispatch                 |                  |
| d)   | What is use of power system security?    |                  |
| e)   | Define Voltage stability                 |                  |
| f)   | What is PV curve                         |                  |
| g)   | What is Flexible ac transmission systems |                  |
| h)   | Define facts controllers,                |                  |
| i)   | What is the need of TCSC.                |                  |
| j)   | List different types of TCSC.            |                  |

Part-B

Answer All the following questions.

- |   |   |                          |
|---|---|--------------------------|
| 2 | Explain about the regulated shunt compensation  | (5X10M=50Marks)<br>(10M) |
|   | OR  |                          |
| 3 | Discuss about<br>a) Phase shifting transformer ( 5M)      b) Load flow study.   | (5M)                     |
| 4 | Explain about the Power system security levels.   | (10M)                    |
|   | OR  |                          |
| 5 | Explain Sensitivity analysis and also discuss about the Generation shift distribution factors and line outage distribution factors.         | (10M)                    |
| 6 | Discuss about security constrained economic dispatch.   | (10M)                    |
|   | OR  |                          |
| 7 | a) What are the applications of power electronics to power system?<br>b) Discuss about Voltage stability and explain the slope of PV-curve. | (5M)<br>(5M)             |
| 8 | Explain about FACTS system and Reactive power control   | (10M)                    |
|   | OR  |                          |

9	Compare TSC, TCR.	(10M)
10	Explain about thyristor controlled series capacitor with a neat diagram (10M)	
	OR	
11	a) Write the advantages of TCSC	(5M)
	b) Explain Transient stability models of TCSC	(5M)