# GUJARAT TECHNOLOGICAL UNIVERSITY
## M.E. SEMESTER III–EXAMINATION – WINTER 2015

**Subject code: 2732903**                                    **Date: 04/12/2015**

**Subject Name: Power Electronics for Power System**

**Time: 2:30 PM to 5:00 PM**                              **Total Marks: 70**

**Instructions:**
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Notations used have usual meaning.**

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|---|---|---|---|
| **Q.1** | **(a)** | Discuss merits and demerits of AC transmission system. Compare DC verses AC transmission system in all respect. | **07** |
| | **(b)** | Write a detailed note on reactive power compensation in electrical power system. | **07** |
| | | | |
| **Q.2** | **(a)** | Discuss about active and reactive power flow control in HVDC transmission system. | **07** |
| | **(b)** | Discuss voltage control by Static VAR Compensator (SVC). | **07** |
| | | **OR** | |
| | **(b)** | Discuss multiple pulse converter for HVDC transmission system. | **07** |
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| **Q.3** | **(a)** | Discuss Thyristor controlled reactor (TCR) as a shunt compensator along with its characteristic. | **07** |
| | **(b)** | Write a short note on reference frame theory. | **07** |
| | | **OR** | |
| **Q.3** | **(a)** | Explain the operation of STATCOM with characteristics. | **07** |
| | **(b)** | Discuss the effect of series and shunt compensation schemes on power transfer capacity. | **07** |
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| **Q.4** | **(a)** | Explain Fixed Capacitor Thyristor Controlled Reactor (FC-TCR) with neat diagram. Discuss its application. | **07** |
| | **(b)** | Discuss how shunt compensation can be achieved with ideal midpoint reactive compensator. | **07** |
| | | **OR** | |
| **Q.4** | **(a)** | Explain working principle of Thyristor controlled series capacitor (TCSC) with neat diagram. | **07** |
| | **(b)** | Enumerate advantages of series compensation. | **07** |
| | | | |
| **Q.5** | **(a)** | Write a brief note on advantages and applications of FACT controller. | **07** |
| | **(b)** | Explain Static Synchronous Series compensator (SSSC) with neat diagram. | **07** |
| | | **OR** | |
| **Q.5** | **(a)** | Write a short note on GTO Controlled Series Capacitor. | **07** |
| | **(b)** | Explain the operation of Unified power flow controller (UPFC) with vector diagram. | **07** |

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