Seat No.: _____ Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**BE - SEMESTER–VI • EXAMINATION – WINTER • 2014**

**Subject Code: 160803** **Date: 01-12-2014**

**Subject Name: Switch Gear and Protection**

**Time: 02:30 pm - 05:00 pm** **Total Marks: 70**

**Instructions:**

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

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|---|---|---|
| Q.1(a) | Explain the principle and different methods of Arc interruption. | 07 |
| (b) | List out types of circuit breaker. Explain Circuit Breaker ratings and specifications. | 07 |
| Q.2(a) | What is the need of Instrument Transformer in power system protection? Why CT secondary should never open circuit? | 07 |
| (b) | Define following terms: (1) Recovery Voltage (2) RRRV (3) Resistance Switching | 07 |
| | OR | |
| (b) | Explain the construction and working principle of $SF_6$ Circuit Breaker. | 07 |
| Q.3(a) | Give the comparison between Bulk and Minimum oil circuit breaker. | 07 |
| (b) | What are the reasons for generation of over voltages in power system? | 07 |
| | OR | |
| Q.3(a) | What do you mean by insulation coordination? Explain volt-time characteristics of standard impulse wave. | 07 |
| (b) | Explain 3-zone protection of transmission lines by distance relays. | 07 |
| Q.4(a) | Give the classification of electromagnetic relay. Explain construction and working principle of attracted armature type relay. | 07 |
| (b) | Explain the faults and abnormalities in power transformer. Explain differential protection of transformer. | 07 |
| | OR | |
| Q.4(a) | Explain the construction and working principle of Buchholtz relay for the protection of power transformer against overloading. | 07 |
| (b) | Explain impedance, Reactance and Mho characteristics of distance relay. | 07 |
| Q.5(a) | Explain carrier current protection scheme of transmission lines by necessary circuit diagram. | 07 |
| (b) | Explain the effects of ungrounded neutral on power system performance. Explain any one method of neutral grounding. | 07 |
| | OR | |
| Q.5(a) | Explain the comparison between Static versus Electromagnetic relay. | 07 |
| (b) | Explain the need of fuse in protection. Explain the current time characteristics of fuse. | 07 |

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