6E 6073

Roll No. _____ [Total No. of Pages : 2

**6E 6073**

**B.Tech. VI Semester (Main&Back) Examination, April-2019**
**Electrical & Electronics Engg.**
**6EX3A Switchgear & Protection**
**(Common with EE,EX)**

**Time : 3 Hours** **Maximum Marks : 80**
**Min. Passing Marks : 26**

***Instructions to Candidates:***

*Attempt any **five questions**, selecting **one question** from **each unit**. All Questions carry **equal** marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly).*

**Unit - I**

1. a) Explain static Relays also state its merits and demerits. **(08)**
   b) Explain the concept of Duality between amplitude and phase comparators. **(08)**

**(OR)**

1. a) Explain the working phenomena of static over current relay. **(08)**
   b) Describe the working concept of inverse time over current relay. **(08)**

**Unit - II**

2. a) By help of neat diagram explain the concept of static MHO Relay. **(08)**
   b) Explain static differential protection of generator. **(08)**

**(OR)**

2. a) Explain the static differential relay for single phase schemes. **(08)**
   b) Describe the working concept of static impedance relay. **(08)**

**Unit - III**

3. a) Explain basic apparatus and scheme of power line carrier system. **(08)**
   b) Describe out of step tripping and blocking relays. **(08)**

**(OR)**

3. a) Explain the principle of operation of directional comparison. **(08)**
   b) Explain in brief the concept of quadrilateral and Elliptical relay. **(08)**

## Unit - IV

4. a) For a 132KV system, the reactance and capacitance up to the location of the circuit breaker is $3\Omega$ and $0.015\,\mu F$, respectively. Calculate the following
   i) The frequency of transient oscillation
   ii) The max. value of restriking voltage across the contacts of the circuit breaker.
   iii) The max. value of RRRV. **(08)**

   b) Explain the Miniature Circuit Breaker **(08)**

**(OR)**

4. a) By help of neat diagram explain working of minimum oil circuit breakers. **(08)**

   b) Explain the Arc and Interruption theories. **(08)**



## Unit - V

5. a) Explain the working module of $SF_6$ circuit breaker. **(08)**

   b) Explain transmission line distance protection. **(08)**

**(OR)**

5. a) By help of suitable diagram explain working framework of vacuum circuit breakers. **(08)**

   b) Describe a brief description of block diagram of digital relay. **(08)**

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