

COLLEGE OF ENGINEERING & TECHNOLOGY



Department : **Electrical & Control Engineering**

Lecturer : **Dr. Mohamed E. Elgamal.**

Course : **Power system protection II**

Course Code : **EE 541**

Marks: 40

Date : **17 - 1 - 2015**

Time : 2 hour

Final Exam

(Q1) Answer the following question (8 marks)[B.17]

Figure [1] shows an electromechanical relay, state the name of that relay and describe the theory of its operation. Explain using block diagrams only how the operation of this relay can be implemented using a static relay, and state which power system equipment that should be protected using that relay.

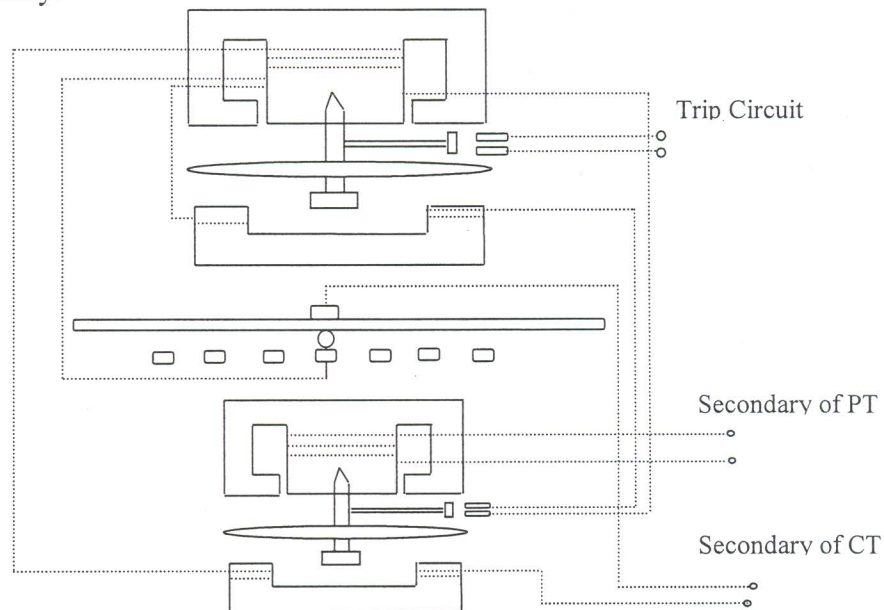


Figure 1.

(Q2) Answer two parts of the question only (8 marks)

- State the merits of a reactance relay to its counterpart impedance relay. Describe the theory of a static reactance relay in block diagrams and mathematical equations. (4 marks) [A.10]
- Describe how a hall generator can be used in a static reverse power relay. State which power system equipment that should be protected using that relay. (4 marks) [B.3]
- Briefly state the contents of a combined protection monitoring and control system. Mention some of its various management systems, data transmission channels and hierarchical levels. (4 marks) [A.8]
- Explain with clarifying mathematical equations to the digitized input signal how a Finite Impulse Response digital filter has contributed to the implementation of a harmonic restraint differential protection relay of power transformers. (4 marks) [C.5]

Members of course Examination Committee:	Signature:	Date:
Lecturer: Dr. Mohamed E. Elgamal	<i>Mohamed</i>	30 /12/ 2014
Course Coordinator : Prof. Dr. Amany Hanafy	<i>Amany</i>	30 /12/ 2014
Head of Department: Prof. Dr. Hamdy Ashour	<i>Hamdy</i>	30 /12/ 2014

Please turn over

