

**KING FAHD UNIVERSITY OF PETROLEUM & MINERALS**  
**ELECTRICAL ENGINEERING DEPARTMENT**

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**EE-465**

**Key Solution**

Quiz # 4    Serial #

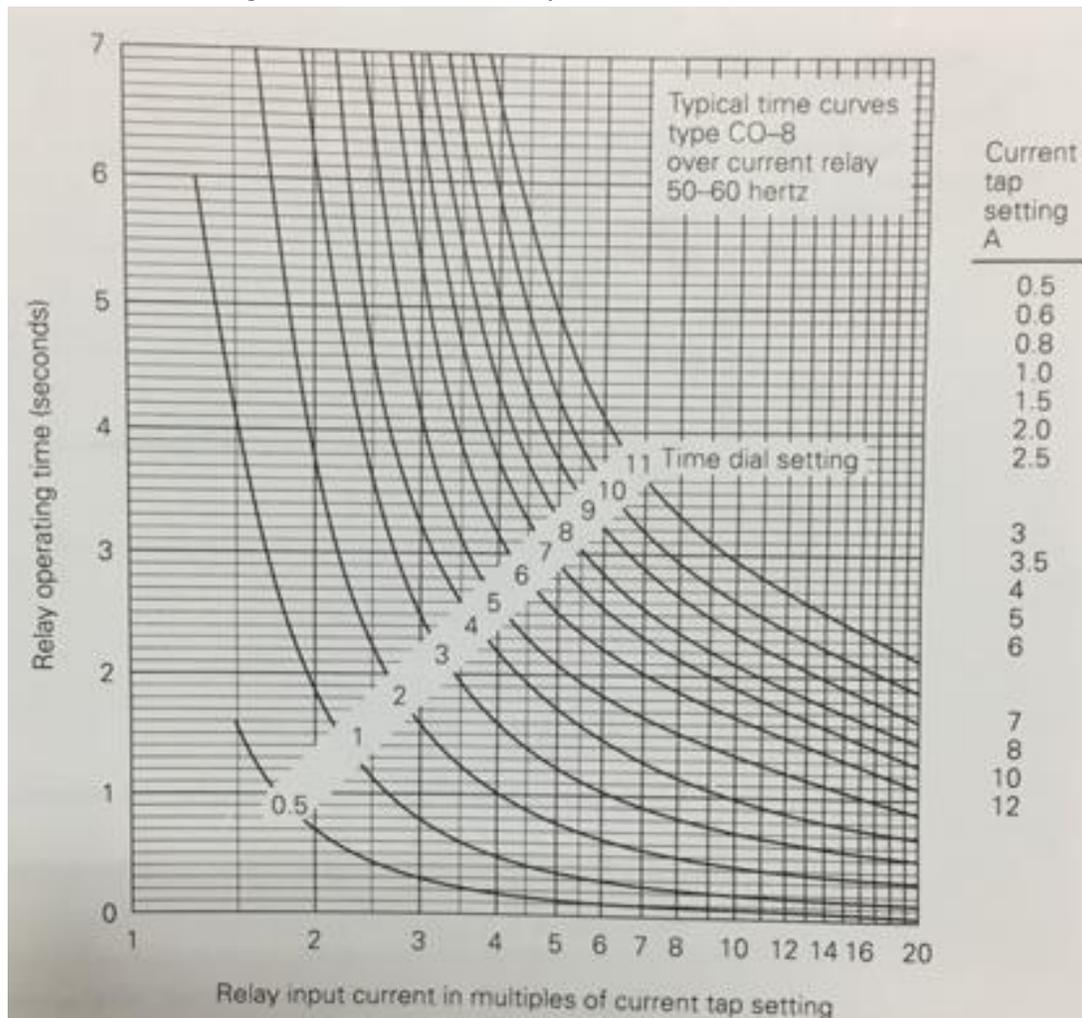
Name:

I.D.#

1) Any transmission lines protection relay can be used as primary defense or as secondary defense when time-dial is properly selected and coordinated with other relays.                    (2 Marks)

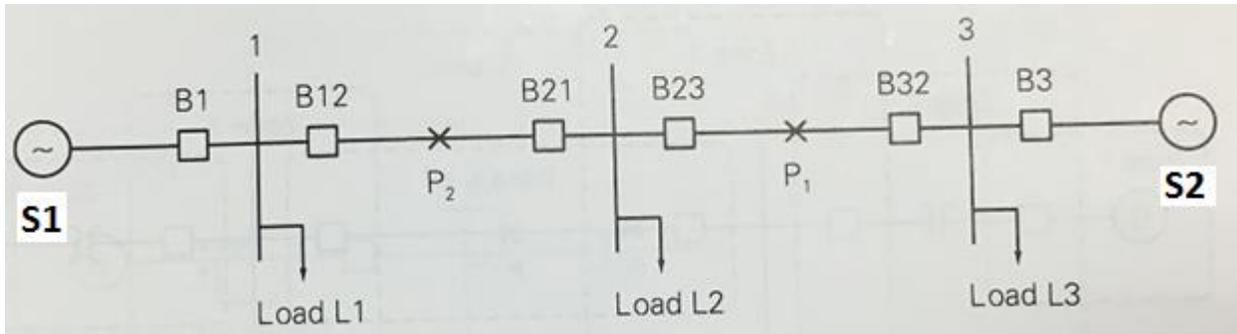
- a. True
- b. False

2) Find the operating time for the CO-8 overcurrent relay shown below, if the pickup current is 3 A, and time-dial setting 1. Assume a secondary current of a 200:5 CT of 9 A.                    (3 Marks)



Answer: 0.8 sec.

3) Consider the following radial system.  $B_1$  &  $B_3$  are time-delay OC relays used as backup for  $B_{12}$  &  $B_{32}$  relays, respectively. The remaining circuit breakers are directional relays. (4 Marks)



- Which load remains in service for a fault at  $P_1$  when primary protection relays operate?
- Which load remains in service for a fault at  $P_1$  when secondary protection relays operate?

a. All loads remain in service.

b. Loads  $L_1$  &  $L_2$  remain in service.

4) Differential relay is very commonly used as primary and secondary protection relays for any power system component for localized faults. (1 Mark)

- True
- False