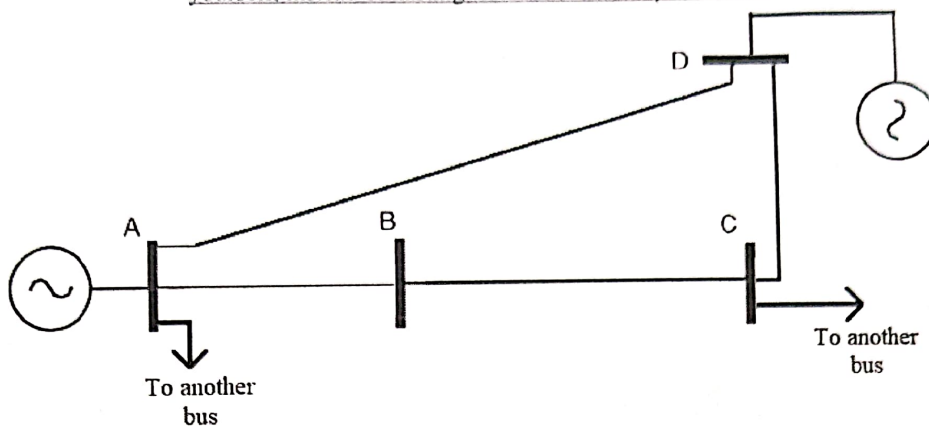


Complex Engineering Problem (Conceptual Engineering Problem for the present case)

Prepare final solution neatly, on two A4 sheets at max.

Marking will be based upon your approach and not the exact answer. You may use Internet/e-books etc. for the first half an hour of the quiz.

Conceptual Complex Problem with minimal/abstract system details – so that you will have to think for yourself, instead of hasting to use established procedures.



Consider a portion of a power system as shown in the figure above. A directional comparison blocking scheme has been used for the protection of the transmission line BC of this system. For this scheme, the forward tripping relays (both at bus B and C) are mho relays; while the reverse blocking relays (both at B & C) are directional instantaneous overcurrent relays. Assume that the relay settings are as follows:

1

Bus	Relay	Relay Setting
Bus B	Mho relay	Zone setting = Z_1 ohms
	OC relay	$I_{pu} = x$ Amp
Bus C	Mho relay	Zone setting = Z_2 ohms
	OC relay	$I_{pu} = y$ Amp

4

How will you proceed to evaluate/assess the suitability of the relay settings at Bus B for this protection scheme?

Sketch RX plane diagrams to justify your assessment.

Subsequently, how will you assess the effect of fault resistance on the working of this scheme with reference to the relays at Bus B?

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