

[Time: Three Hours]

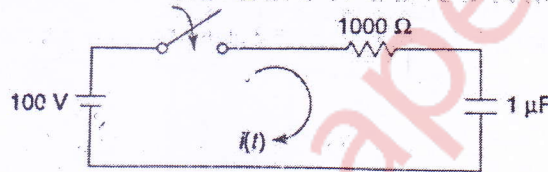
[Marks:80]

- N.B:
1. Question.No.1 is compulsory.
  2. Attempt any three questions from remaining five questions.
  3. Assume suitable data wherever necessary.

1 Attempt the following.

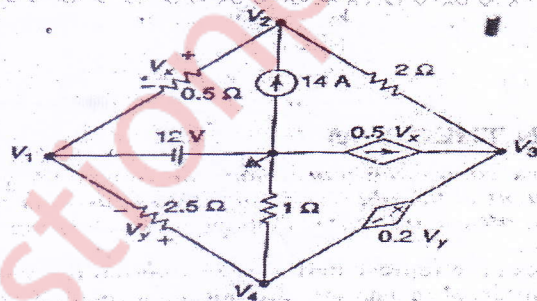
1. Explain construction and working of series type ohmmeter.
2. Explain the construction of Schering Bridge.
3. Determine the range of values 'a' so that  $P(s) = s^4 + s^3 + as^2 + 2s + 3$  is Hurwitz.
4. In the given network the switch is closed at  $t = 0$ . With the capacitor uncharged find  $i, \frac{di}{dt}$  at  $t = 0^+$

20



2 a Find the node voltages in the network shown below.

10



b Explain the construction and working of PMMI electrical instrument.

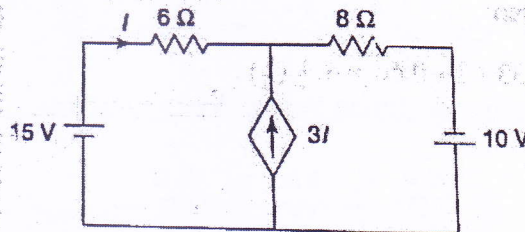
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3 a State how a Megger is Constructed and its working in your own words.

10

b Find the current through the 6Ω resistor :

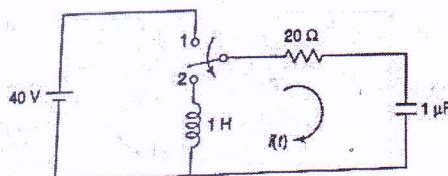
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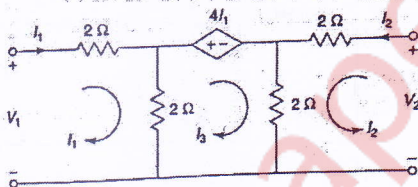
TURN OVER



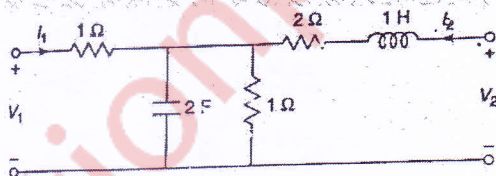
- 4 a In the network shown below the switch is changed from the position 1 to position 2 at  $t = 0$  steady condition having reached before switching. Find the values of  $i$ ,  $\frac{di}{dt}$ , at  $t = 0^+$ . 10



- b Find Z and h parameters for the network shown below. 10



- 5 a Determine the short circuit admittance parameters for the network shown below. 10



- b Test whether polynomial ;  $P(s) = s^4 + 7s^3 + 6s^2 + 21s + 8$  is Hurwitz or not. 10

- 6 a Test whether polynomial is Hurwitz or not: 10

i)  $P(s) = s^4 + 5s^3 + 5s^2 + 4s + 10$

ii)  $P(s) = s^5 + 3s^3 + 2s$

- b In the network shown below determine  $V_a$  and  $V_b$ . 10

