

Duration: 03 Hours.

Total marks assigned to the paper: 80

Marks assigned to each question are stated against each question.

Instructions to the candidates if any:-

N. B. (1) Question No. 1 is compulsory.

(2) Answer any **three** out of remaining **five** questions.

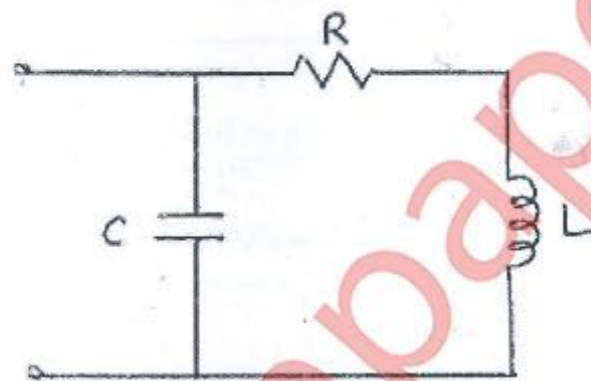
(3) Assumptions made should be clearly stated.

Q. No.	Marks
--------	-------

Q. 1 Attempt any Four	20
------------------------------	----

a) Explain steps involved in Maximum Power Transfer Theorem with the help of formulae and circuit diagram.

b) Determine the driving-point impedance function of a one-port network shown in following figure

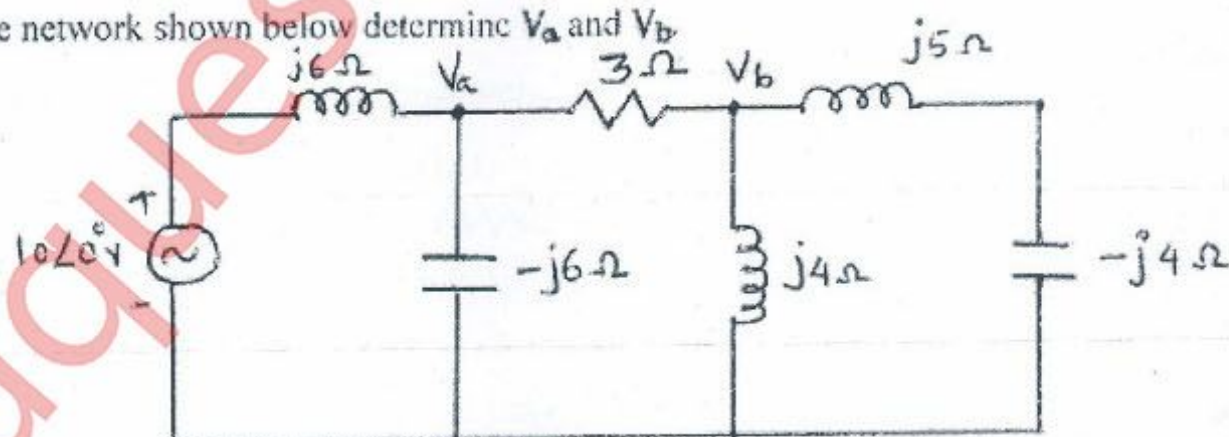


c) Test whether the polynomial $P(s) = s^4 + 7s^3 + 6s^2 + 2.1s + 8$ is Hurwitz.

d) Write a short note on PMMC and PMMI instruments

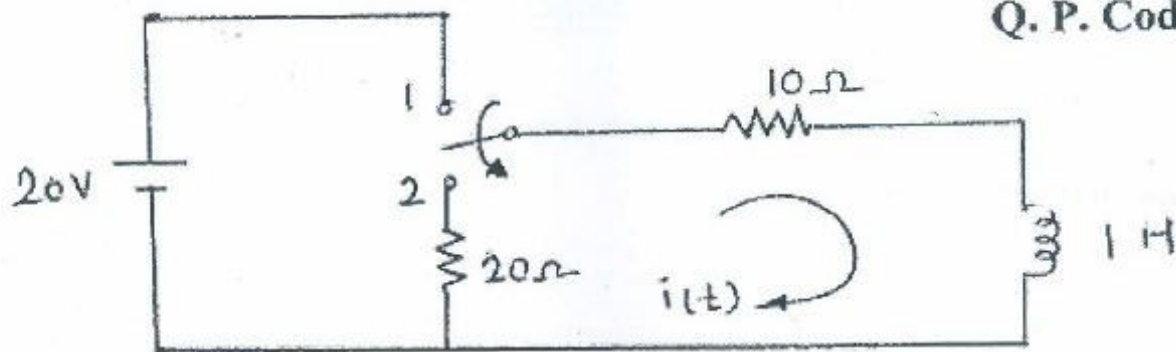
e) Why is Kelvin's double bridge used? Draw its circuit diagram and write the formula.

Q.2 a) In the network shown below determine V_a and V_b	10
---	----

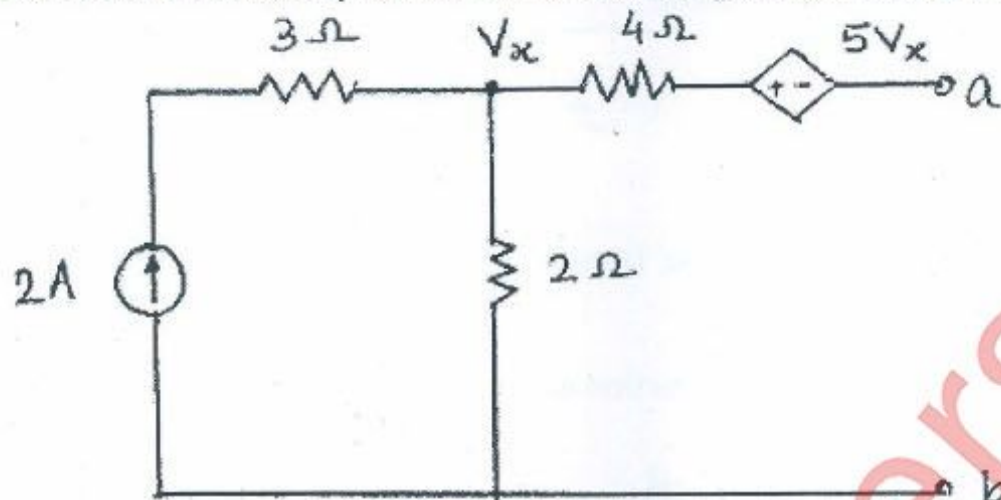


b) In the network shown below the switch is changed from the position 1 to the position 2 at $t = 0$ steady condition having reached before switching. Find the values of i , di/dt and d^2i/dt^2 at $t = 0^+$

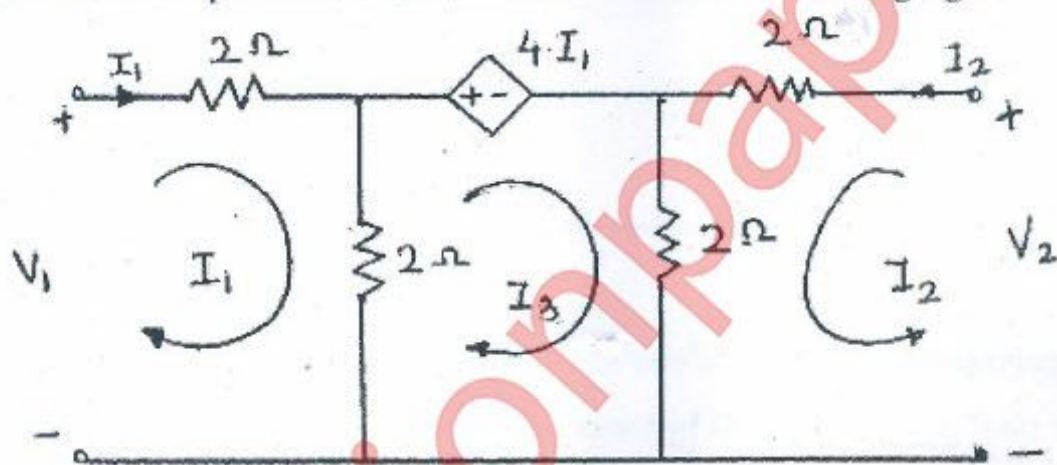
TURN OVER



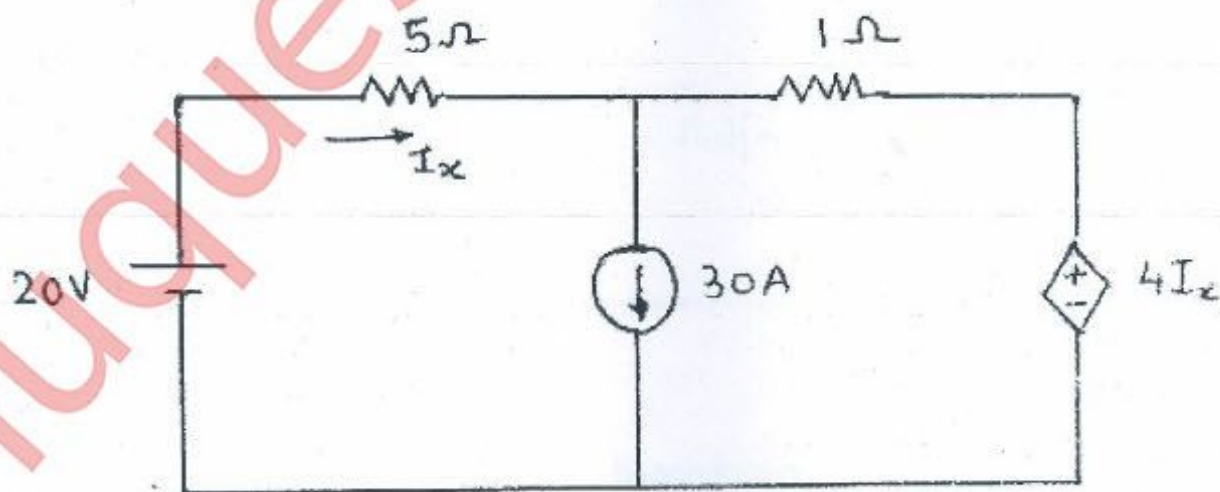
Q.3 a) Obtain the Thevenin equivalent network for the given network at terminals a and b. 10



b) Find Z and h-parameters for the network shown in following figure 10



Q.4 a) Find the current I_x 10



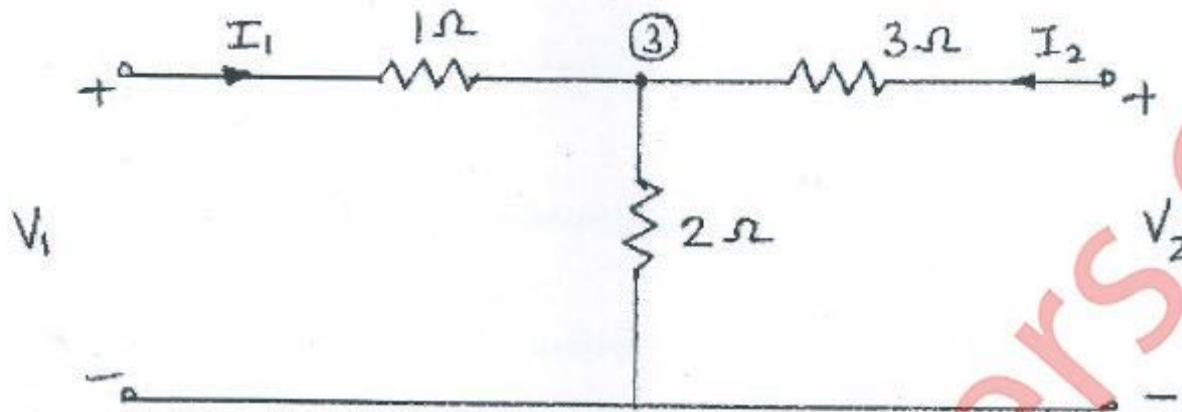
TURN OVER

b) Determine the Foster form of realization of the RC impedance function 10

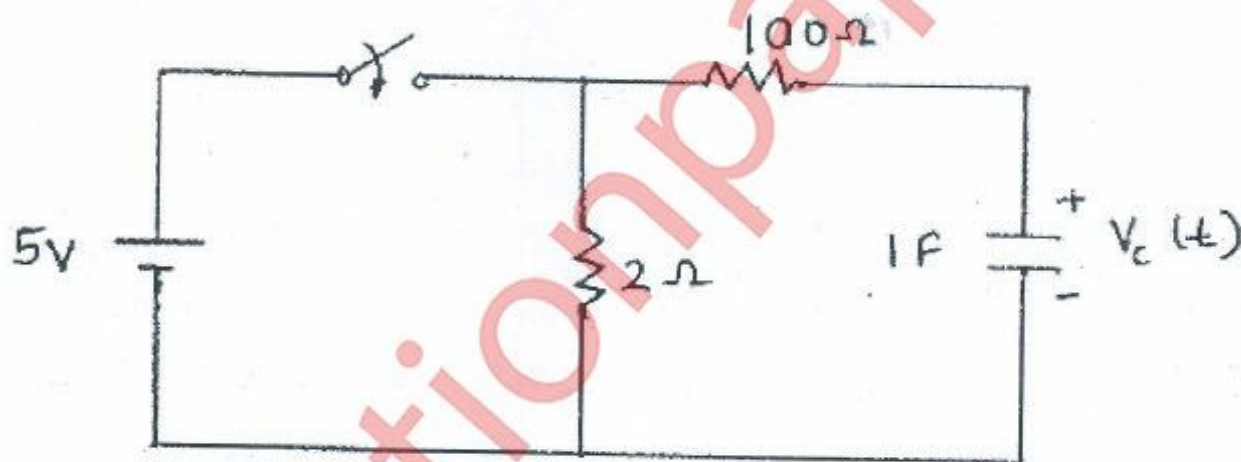
$$Z(s) = \frac{(s+1)(s+3)}{s(s+2)(s+4)}$$

Q.5 a) Explain Energy meter with the help of diagram in detail. 10

b) (i) Find Y-Parameters for the network shown in the following figure 05



(ii) In the figure shown below the switch is closed at $t=0$. Find $v_c(t)$ for $t > 0$ 05



Q.6 a) Mention high resistance measurement methods. Explain Megger in detail. 10

b) (i) Write a short note on CRO 05

(ii) Test whether $F(s) = \frac{(s^2+1)}{(s^3+4s)}$ is positive real function. 05
