S.E. (sem-III) (choice Base) (Instru.)   30/05/2019

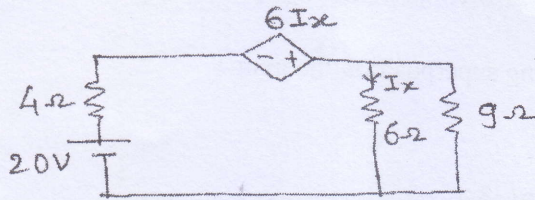[Time: Three Hours]   [Marks:80]

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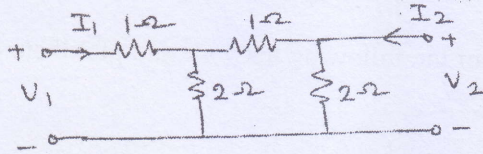3. Assume suitable data wherever necessary.

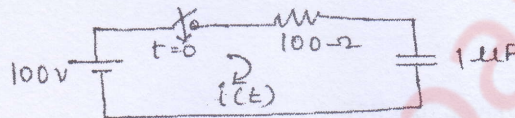1. Attempt the following.   (20)

a) Find current in $9\,\Omega$ resistor of the network.

b) Find Z parameters

c) Find I and $\dfrac{di}{dt}$ at $t = 0^+$ with capacitor uncharged and switch is closed at $t = 0$
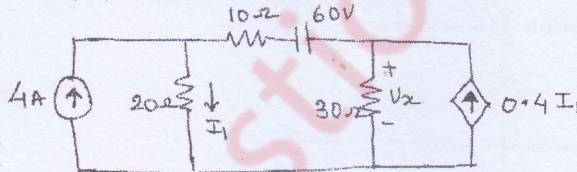

d) Write the properties of positive real function.

e) Write the working principle of D'Arsonval galvanometer.

2. a) Use superposition theorem to find V_x (10)
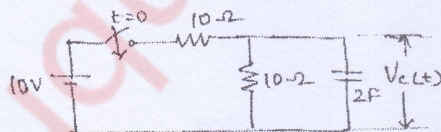

b) Explain the method to measure very high resistance.   (10)

3. a) Switch is closed at $t = 0$. Find $V_c(t)$

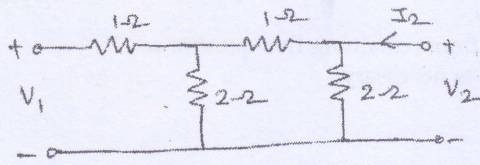b) Explain an a.c. bridge used for measurement of capacitance.   (10)
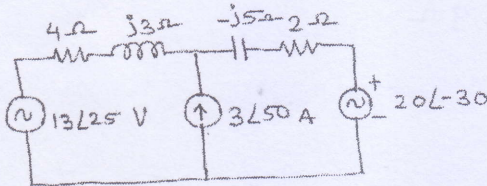
Q. P. code

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S.E. (Sem-III) (Choice Base) (Instru.) (30/08/2019)
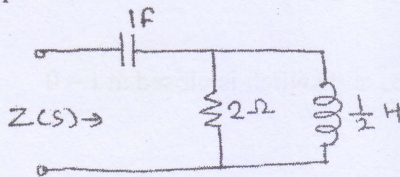
4. a) Determine ABCD parameters. **(10)**

b) Explain construction and working of PMMC instrument. **(10)**

5. a) Find current flowing through $4\,\Omega$ using superposition theorem. **(10)**

b) Find poles and zeros of the impedance of the following network and plot them on S-plane **(10)**

6. a) Realize foster forms of the impedance function **(10)**

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

b) Test whether the polynomial is Hurwitz $p(s) = s^5 + s^3 + s$ **(5)**

c) Test positive realness of the function $F(s) = \dfrac{s^3 + 6s^2 + 7s + 3}{s^2 + 2s + 1}$ **(5)**

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