EE 214A , JUST , 2nd Semester 2007/8 , 2nd MTE

15/25

Q1 (D problem)

$\bar{V}$ equals :

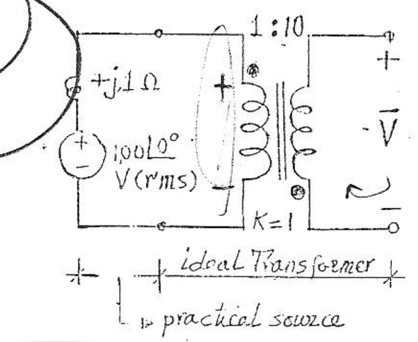
a) $100 \angle 180^\circ$ V (rms)

b) $10 \angle 0^\circ$ V (rms)

c) $10 \angle -180^\circ$ V (rms)

d) $1000 \angle 0^\circ$ V (rms)

e) $1000 \angle 180^\circ$ V (rms)



Q2 (C problem)

The impedance seen by the source consists of:

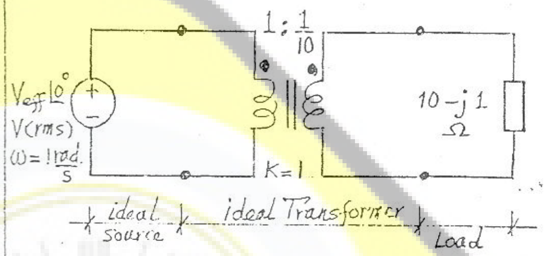
a) $R = 1K\Omega$ in series with $C = 10\,mF$

b) $R = 0.1\ \Omega$ in series with $C = 100F$

c) $R = 100\ \Omega$ in series with $C = 100\,mF$

d) $R = 1\ \Omega$ in series with $C = 10F$

e) $R = 1000\ \Omega$ in series with $L = 100H$



Q3 (B problem)

$\bar{V}$ equals :

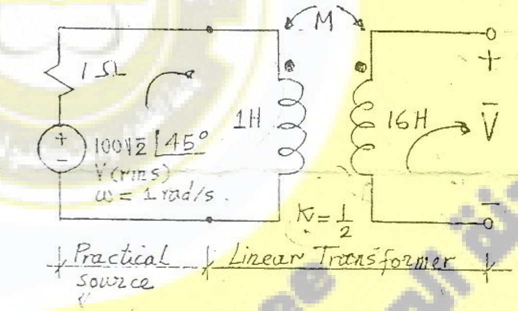
a) $100\sqrt{2} \angle 90^\circ$ V (rms)

b) $100 \angle 0^\circ$ V (rms)

c) $200 \angle +90^\circ$ V (rms)

d) $100 \angle +45^\circ$ V (rms)

e) $200 \angle -45^\circ$ V (rms)



Q4 (B problem)

$V(t)$ equals :

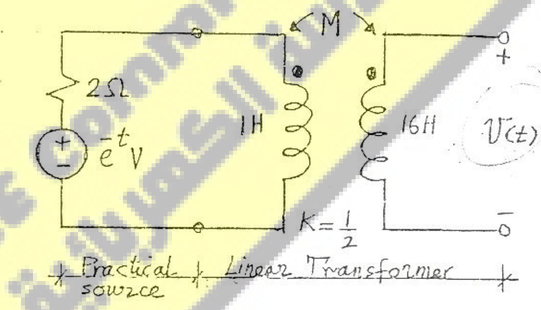
a) $+4\,e^{+t}$ V

b) $-2\,e^{-t}$ V

c) $+2\,e^{-t/2}$ V

d) $+\ e^{-t}$ V

e) $-\ e^{-t}$ V



Q5 (A problem)

The ratio $\bar{I}_1 / \bar{I}_2$ equals :

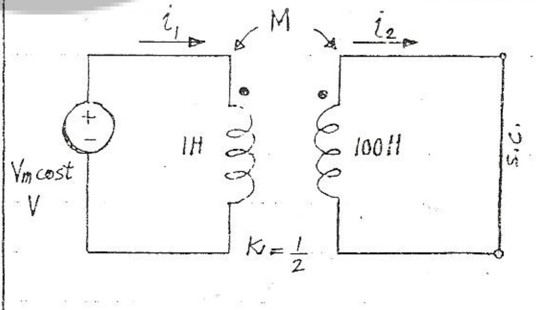
a) $10 \angle -30^\circ$

b) $10 \angle 30^\circ$

c) $20 \angle -90^\circ$

d) $20 \angle 0^\circ$

e) $20 \angle 90^\circ$



EE-214 Second Exam April 29, 2008

Name: Univ. No. Section:

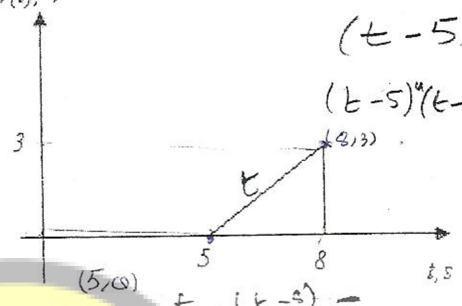
Q6) The Laplace transform of the voltage waveform shown is:

a. $V(s)=\frac{1}{s^2}\left(e^{-5s}-e^{-8s}\right)-\frac{3}{s}e^{-8s}$

b. $V(s)=\frac{1}{s^2}\left(e^{-5s}-e^{-8s}\right)$

c. $V(s)=\frac{1}{s^2}\left(e^{5s}-e^{8s}\right)-\frac{3}{s}e^{8s}$

d. $V(s)=\frac{1}{s^2}\left(e^{5s}-e^{8s}\right)$



$(t-5)[u(t-5)-u(t-8)$

$(t-5)u(t-5)-(t-5)u(t-8)$

$-(t-8+3)u(t-8)$

$-(t-8)u(t-8)+$

$3u(t-8).$

$tu(t-5)-$ $\frac{e^{-5s}}{s}$

Q7) For the circuit shown V(s) is:

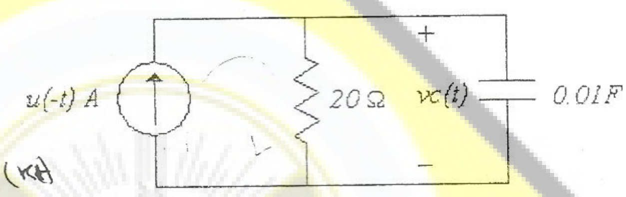
a. $\frac{100}{s(s+5)}$ $t>0$

b. $\frac{-100}{s(s+5)}$

c. $\frac{20}{s+5}$

d. $\frac{-20}{s+5}$

$V_c(s)=V_s$



$u(kt)$ $\frac{1}{k}F\left(\frac{s}{k}\right)$

$\frac{3-0}{8-5}=\frac{3}{3}=1$

Q8) The inverse Laplace transform for $F(s)=\frac{1}{s^2(s+1)}$ is:

a. $f(t)=te^{-t}u(t)$

b. $f(t)=\left(t+e^{-t}\right)u(t)$

c. $f(t)=\left(t+e^{t}\right)u(t)$

d. $f(t)=\left(t-1+e^{-t}\right)u(t)$

$1/s$

$u(t-5)-3u(t-8)$

$\frac{-1}{s}+20$

Q9) Given $F(s)=\frac{2s^3-s^2-3s-5}{s^3+6s^2+10s}$. $f(0^+)$, $f(\infty)$ respectively are:

a. -0.5, ∞

b. ∞, -0.5

c. -∞, ∞

d. 0, ∞

$\frac{2s^3-s^2-3s+5}{s^2}$

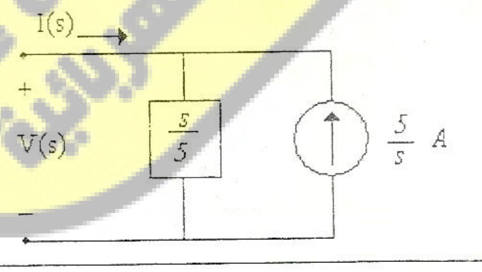
Q10) The s-domain circuit model shown represents:

a. $C=5F$, $v_c(0)=5V$

b. $C=0.2F$, $v_c(0)=0.2V$

c. $L=0.2H$, $i_L(0)=-5A$

d. $L=0.2H$, $i_L(0)=5A$



6

$\frac{s+1-s(s+1)+s^2}{s^2(s+1)}$

Q	1	2	3	4	5	6	7	8	9	10
Ans.	d	a	c	b	d	a	a	b	b	d
	e						c	d		c

$(2s-13)+\frac{55s+125}{s^2+6s+10}$

$\frac{2s^3-s^2-3s-5}{s^2+6s+10}$

$2s-13$

$s^2+6s+10 \,\big)\, 2s^3-s^2-3s-5$

$-2s^3+12s^2+20s$

$-13s^2-23s-5$

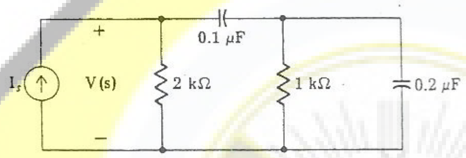
$+13s^2+78s+130$

$55s+125$

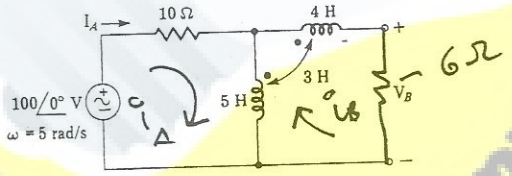
Jordan University of Science & Technology
Electrical Engineering Department
2nd Examination

EE214 | **Circuits II** | **29 Jul. 2008**

Q1 **(10marks)**
Find all the critical frequencies of the ratio $V(s)/I_s$, for the circuit shown, and sketch the magnitude of the ratio as a function of σ



Q2 **(10marks)**
(a) Find I_A and V_B for the circuit illustrated in the following figure
(b) Repeat if a 6 Ω resistor is connected between the terminals at the right



Q3 **(10marks)**
Use several operational amplifiers in cascade to realize the transfer function $H(s) = V_{out} / V_{in} = 100\,(s+100) / (s+1000)$