

	19 <sub>Q</sub> E (4W <sub>E</sub> )	2015	3.4.2015	11 <sup>00</sup>
N <sub>0</sub>	13	20		
	14	21	<u>12</u>	
	15	22		
	16	23	<del>(8-10)</del>	<u>10<sup>00</sup></u> A272
K <sub>1</sub>	17	24		

QUESTION 2

PROOF SIGNAL  $y = \sin t$

CAN BE GENERATED BY

$y' = z$        $y(0) = 0$

$z' = -z$        $z(0) = 1$

$y' = \cos t$

$y' = z$

$z = \cos t$

$z' = -\sin t$

$y' = z$

$y(s) = \sin \phi = 0$

$p y = z \quad / \cdot \frac{1}{p}$

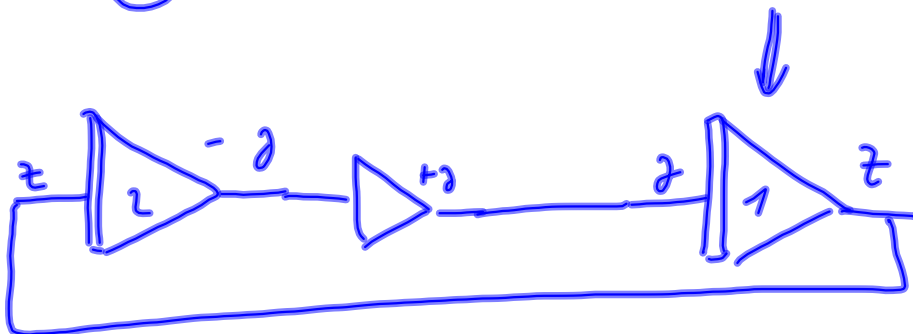
$z' = -z$

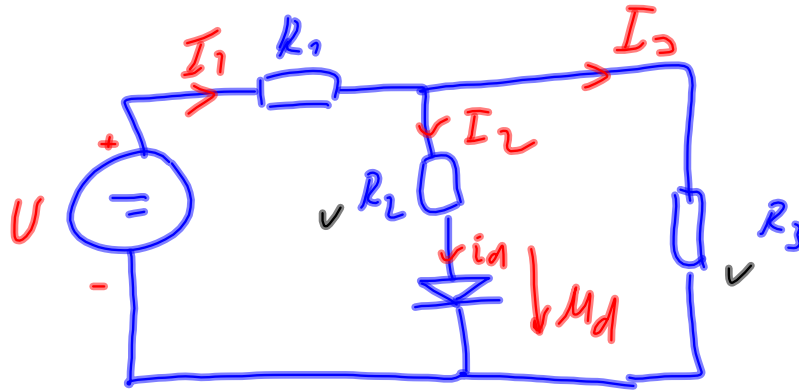
$z(s) = \cos \phi = 1$

$p z = -z \quad / \cdot \frac{1}{p}$

(2)  $-z = \left(-\frac{1}{p}\right) z$

$z = \left(-\frac{1}{p}\right) z$  (1)





$U = 15V$   
 $R_3 = 1000 \Omega$   
 $R_2 = 202,5 \Omega$

FIN) (CALCULATE)  $R_1$  SO THAT

$U_d = 0.7V$

10) E DESCRIBE IT

$$i_d = a \left( e^{b U_d} - 1 \right)$$

$a \dots 10^{-18}$   
 $b \dots 54.610 \dots$

} MATERIAL CONSTANTS

①

$$i_d = 10^{-18} \left( e^{54.61 \cdot 0.01 \cdot \underline{M_d}} - 1 \right) \quad \cdot$$

$$\underline{\underline{i_d = 0.04 \text{ A}}}$$

$$i_d = I_2$$

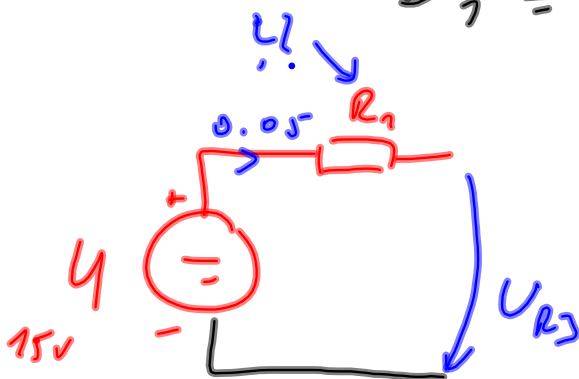
$$U_{R_2} = R_2 \cdot I_2 = 232,5 \cdot 0,04 = \underline{\underline{9,3 \text{ V}}}$$

$$U_{R_3} = M_d + U_{R_2} = 9,3 + 0,7 = \underline{\underline{10 \text{ V}}}$$

$$I_{R_3} = \frac{U_{R_3}}{R_3} = \frac{10}{1000} = \underline{\underline{0,01 \text{ A}}}$$

$$I_1 - I_2 - I_3 = 0$$

$$I_1 = 0,05$$

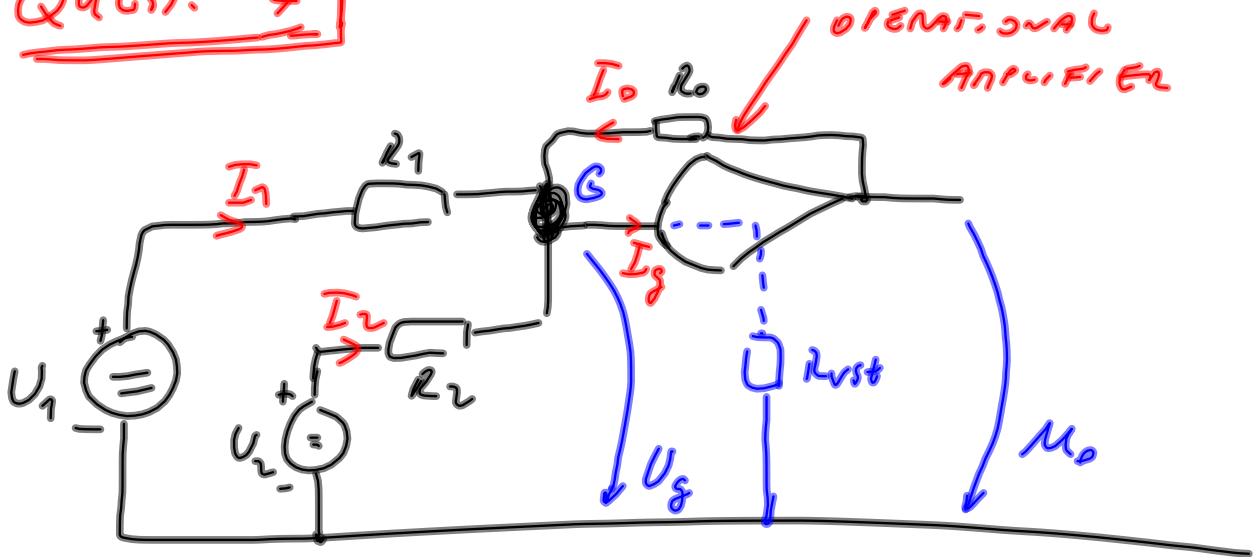


$$R_1 = \frac{U - U_{R_3}}{I_1}$$

$$R_1 = 100 \Omega$$

SPECIFY KIRCHHOFF'S LAWS :

QUEST. 4



I. KIRCHHOFF'S

$$I_1 + I_2 + I_o - I_g = 0$$

$$I_1 = \frac{U_1 - U_g}{R_1}$$

$$I_2 = \frac{U_2 - U_g}{R_2}$$

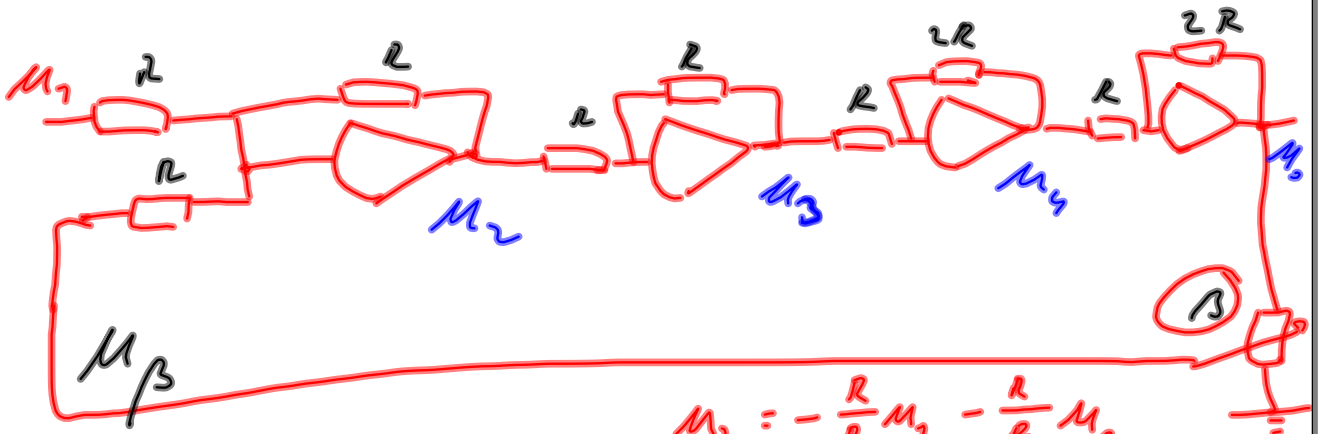
$$I_o = \frac{U_o - U_g}{R_o}$$

$$I_g = \frac{U_g}{R_{vst}}$$

$$\frac{U_1 - U_g}{R_1} + \frac{U_2 - U_g}{R_2} + \frac{U_o - U_g}{R_o} + \frac{U_g}{R_{vst}} = 0$$



QUESTION 5



$$u_2 = -\frac{R}{R}u_1 - \frac{R}{R}u_\beta$$

$$u_3 = -\frac{R}{R}u_2$$

$$u_2 = -u_1 - u_\beta$$

$$u_3 = u_1 + u_\beta$$

$$u_4 = -2u_1 - 2u_\beta$$

$$u_0 = 4u_1 + 4u_\beta$$

$$6 = 4 \cdot 3 + 4 \cdot 6 \cdot \beta$$

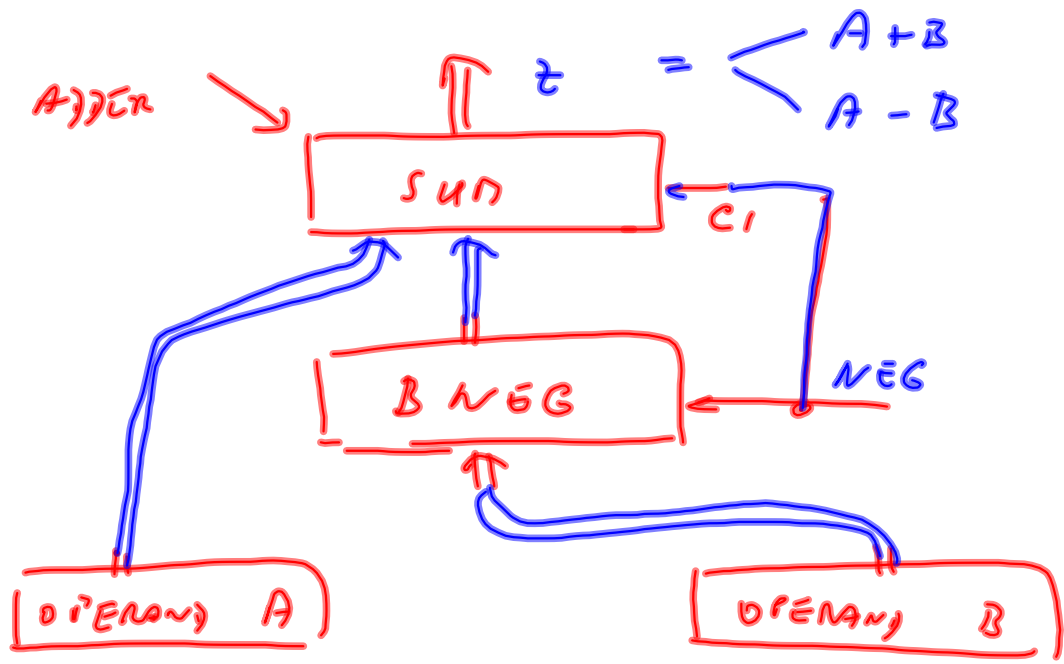
$$\beta = -0.25$$

$$u_1 = 3 \text{ V}$$

$$u_0 = 6 \text{ V}$$

$$\beta = ?$$

COMPLETE THE BLOCK SCHEME ...



(A) <sup>sign</sup> 00110000

(B) <sup>sign</sup> 01010111

A + B

00110000	
01010111	
10000111	

A - B      A + (2<sup>n</sup> COMPLEMENT)

B

00110000	
01110000	
01110001	

≡ (B)

