Antal blad / *Number of* sheets: 07 ✓

TENTAMEN / EXAMINATION

Anvisningar: *Skriv din anonymitetskod på varje blad.*
Endast en uppgift får lösas på varje blad.
Var vänlig skriv tydligt!

Instructions: *Write your anonymous code on each sheet.*
Answer only one question on each sheet.
Please write clearly!

Vänligen texta anonymitetskoden i textboxen enligt exempel nedan!
Please write the Anonymous Code clearly in the textbox like example below!

Bokstäver/Letters:
A-B-C-D-E-F-G-H-I-J-K-L-M-N-O
P-Q-R-S-T-U-V-W-X-Y-Z-Å-Ä-Ö

Siffror/Numbers:
Ø-1-2-3-4-5-6-~~7~~-8-9

Exempel:

A	B	C	1	~~7~~	Ø	-	Ø	1	~~7~~

Kretsteknik ELGA01

Kurskod + Kurs / *Course Code + Course:*

Delkurs / *Part course:*

Anonymitetskod / *Anonymous code* = *Kurskod + kodnr / course code + code number*

E	L	G	A	Ø	1	-	Ø	Ø	5

✓

Tentamensdatum / *Examination date:* 21/1 -17

Behandlade uppgifter / *Solved problems*

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
X	X	X	X		✓									
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

Ifylles av lärare / *To be completed by the examiner*

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2	0	3	0	-	2	-	-							
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

Poäng / Marks gained: 7

Betyg / Grade: U

Max poäng / Total marks gained: 40

För Gk poäng / Marks gainedto be passed: 18

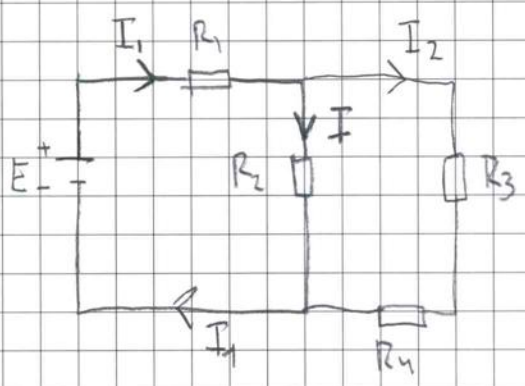
Examin. lärare / Kursansvarig signatur / Signature of the examiner

Magnus Mossberg

Namnförtydligande / Clarification of the signature

3500000682

1.



$R_1 = R$

$R_2 = 3R$

$R_3 = R_1$

$R_4 = 2R$

$$I_1 = I + I_2 \quad (\text{KI})$$

$$R_{ers} = R_1 + R_2 // (R_3 + R_4)$$

$$R_{34} = R_3 + R_4 = 3R$$

$$R_2 // R_{34} = \frac{3R \cdot 3R}{3R + 3R} = \frac{9R}{6R} = \frac{3}{2}R$$

$$R + \frac{3}{2}R = \frac{5}{2}R$$

$$U = R \cdot I$$

$$I = \frac{U}{R}$$

$$I_1 = \frac{E}{5/2\,R}$$

Strömdelning ger

$$I = \frac{3R}{3R + R + 2R} \cdot I_1 =$$

nästa sida

Häftområde

Skriv ej i detta område
Leave this area blank

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ELGA01-005

Löpande sidnr
Consecutive no:

2

Uppgift nr /
Question no:

1

Poäng / *Points awarded:*

Lärarens anteckning
Examiner's remarks:

1/

$$\frac{3R}{6R} \cdot \frac{E}{5/2R} = \frac{3RE}{15R} = \frac{RE}{5}$$

$$I = \frac{RE}{5}$$

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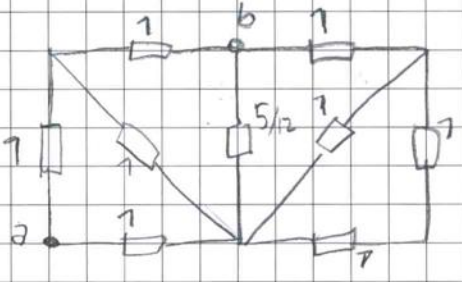
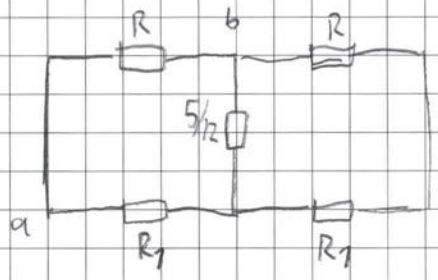
Behandla endast en uppgift per sida / *Answer only one question per page*

2.

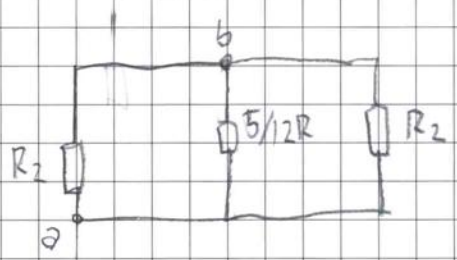


$1\,\Omega = R$

$R_1 = R//2R = \frac{2}{3}R$

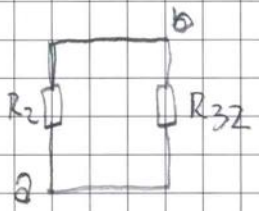


$R_2 = R + R_1 = \frac{5R}{3}$



$R_3 = 5/12$

$R_{32} = R_3//R_2 = \frac{5/12 \cdot 5/3}{5/12 + 5/3} = \frac{25/36}{25/12}$



$R_{232} = R_2//R_{32}$

Häftområde

Skriv ej i detta område
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ELGA01-005

Löpande sidnr
Consecutive no:

4

Uppgift nr /
Question no:

3

Poäng / *Points awarded:*

Lärarens anteckning
Examiner's remarks:

3)

$$I = J - \frac{U}{R_2}$$

$$I_k = J$$

$$U_t = R_2 J$$

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Behandla endast en uppgift per sida / *Answer only one question per page*

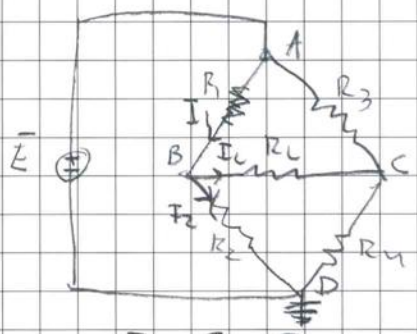
4

Beräkningsjordar D

D : $V_D = 0$

C : $V_C =$

A : $V_A = \bar{E}$

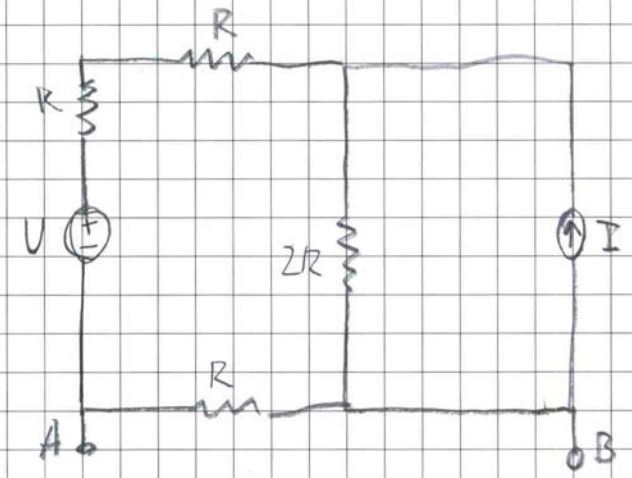


$I_1 = I_L + I_2$

B : $V_B - (R_2 \cdot I_2) = 0$

6,

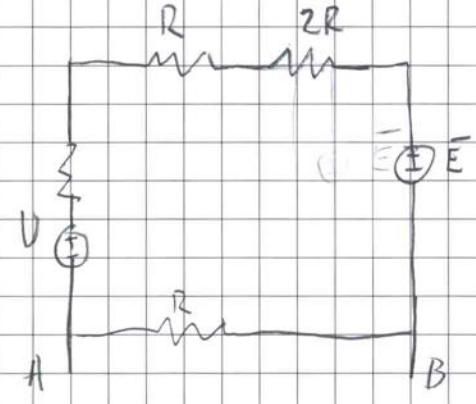
a,



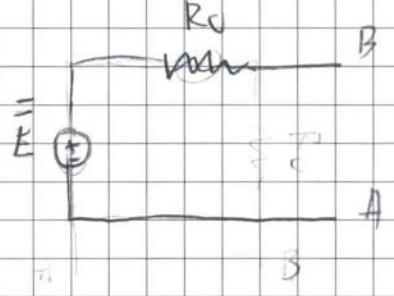
$R = 10\,\Omega$

$U = 5\,V$

$I = 0,1\,A$



$\bar{E} = 2R \cdot I = 2V$



$\bar{\bar{E}} = U - \bar{E} = 3V$

$R_0 = 2R + R + R = 4R = 40\,\Omega$

Häftområde

Skriv ej i detta område
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ELGA01-005

Löpande sidnr
Consecutive no:
7

Uppgift nr /
Question no:
6

Poäng / *Points awarded:*

Lärarens anteckning
Examiner's remarks:

6

a, Den ska vara lika stor som R_0 alltså 40 Ω

b, $\frac{\bar{E}^2}{4R_0} = \frac{3^2}{4 \cdot 40} = \frac{9}{160} = 0{,}05625\,W = 56{,}25\,mW$

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