

exam

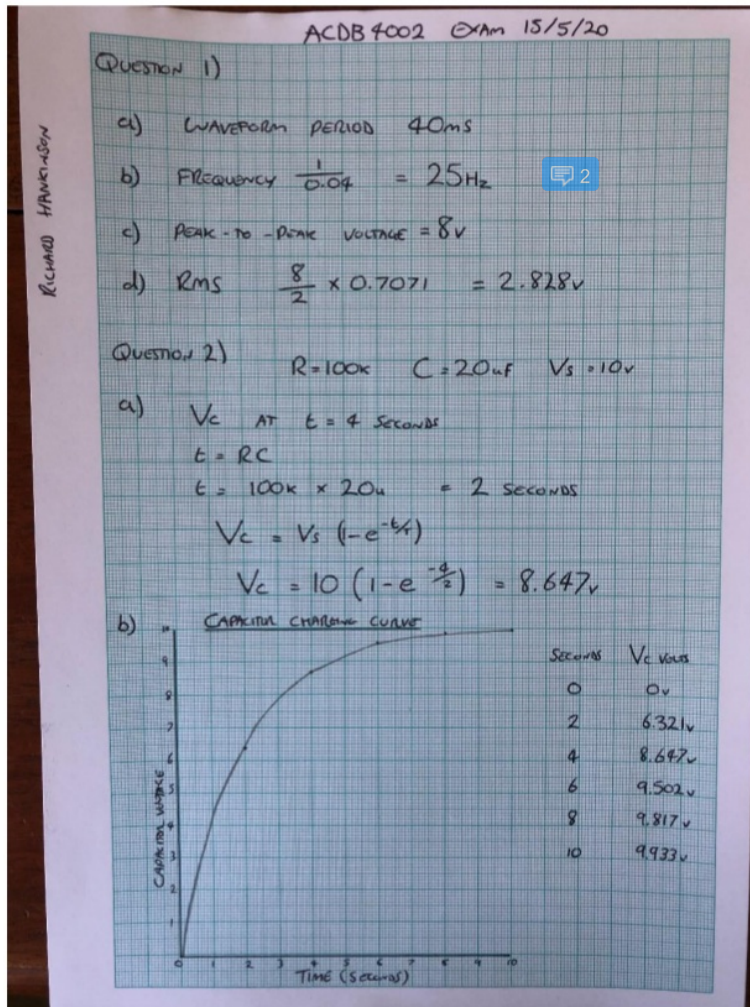
by Richard Peter Hankinson

FILE	12382_RICHARD_PETER_HANKINSON_EXAM_256021_467966295.DOCX (6.3M)		
TIME SUBMITTED	08-JUN-2020 01:23PM (UTC+0100)	WORD COUNT	18
SUBMISSION ID	130314843	CHARACTER COUNT	94



Principles Exam 15/5/2020

These are my results for the principles exam. Thank you words words words words words



Richard Harkness

c) Energy stored fully charged

Fully charged voltage = 9.933V

$$E = \frac{1}{2} CV^2$$

$$E = \frac{1}{2} \times 10\mu \times 9.933^2 = 0.493\text{mJ}$$

d) Time taken stored energy to reach 0.25mJ

$$V = \sqrt{\frac{E}{\frac{1}{2}C}} \quad V = \sqrt{\frac{0.25\text{m}}{\frac{1}{2} \times 20\mu}}$$

$$V = \sqrt{\frac{0.25\text{m}}{10\mu}} = 5\text{V}$$

$$-\ln\left(\frac{V_c}{V_0}\right) \times \tau = t$$

$$-\ln\left(\frac{5}{10}\right) \times 2 = 1.386 \text{ seconds}$$

Question 3

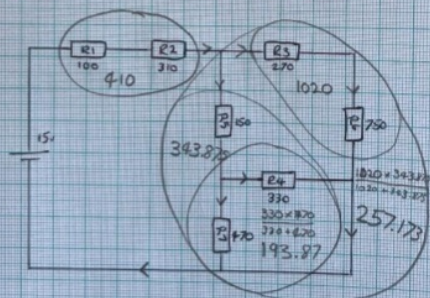
LOGIC FUNCTION	Boolean Equation	TRUTH TABLE	Symbol															
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Richard Hainshaw

Logic Function	Boolean Equation	Truth Table	Symbol															
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QUESTION 4

a)



$$410 + 257.173 = 667.2 \Omega$$

$$\text{TOTAL RESISTANCE} = 667.2 \Omega$$

Resistor network

b) TOTAL CURRENT

$$\frac{V}{R} = \frac{15}{667.2} = 22 \text{ mA}$$

c) CURRENT THROUGH R6

$$\frac{1020}{343.975} = 2.97$$

$$\frac{22}{2.97} = 7.4 \text{ mA}$$

CURRENT THROUGH R6 = 7.4 mA

d) POWER DELIVERED BY BATTERY

$$IV = W \quad 0.022 \times 15 = 330 \text{ mW}$$

e) $P = I^2 R$

POWER DISSIPATED BY R7

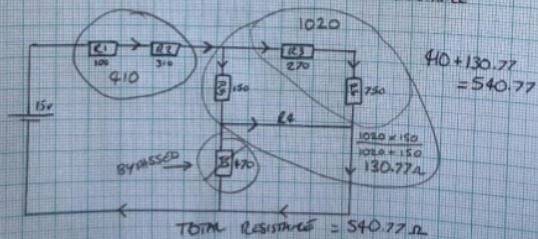
CURRENT THROUGH R5 = 14.8 mA

$$\frac{470}{330} = 1.42$$

$$\frac{14.8}{1.42} = 10.422$$

$$0.010422^2 \times 470 = 51 \text{ mW}$$

f) R4 REPAIRED BY WIRE NEW TOTAL RESISTANCE



TOTAL RESISTANCE = 540.77 ohms

FINAL GRADE

GENERAL COMMENTS

Instructor

68/100

PAGE 1



Comment 1

Total Marks - 34

Marks Available - 50

$34/50 \times 100 = 68\%$



Comment 2

Q1 a) 1 Mark

b) 1 Mark

c) 1 Mark

d) 2 Marks

Q1 total 5 Marks

PAGE 2



Comment 3

Question 2

a) 3 Marks

b) 4 Marks - missing unit on Y axis

c) 1 Mark - wrong capacitor value used

d) 4 Marks

Q2 total = 12 Marks

PAGE 3



Comment 4

Q3 - 7 Marks

PAGE 4



Comment 5

Question 4

a) 4 Marks

b) 2 Marks

c) 0 Marks - Wrong resistor values used

d) 2 Marks

e) 0 Marks - Wrong resistor values used

f) 2 Marks - Needed to find current.

Q 4 total 10 Marks