

UNIVERSITY OF TASMANIA
EXAMINATIONS FOR DEGREES AND DIPLOMAS
SEMESTER 1, JUNE 2009
KXE131 INTRODUCTION TO ELECTRONICS

EXAMINER: Waheed Hugrass

TIME ALLOWED 2 HOURS

Attempt ALL QUESTIONS
Total marks 100

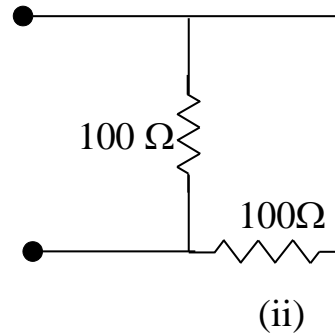
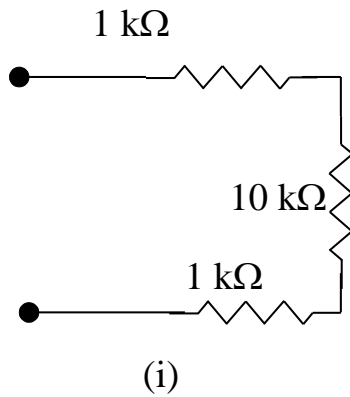
INSTRUCTIONS FOR THE CANDIDATE

Attempt ALL questions. Total marks 100.

Any material or equipment, other than a computer, may be taken into the examination provided it is relevant to the course and does not cause a public nuisance.

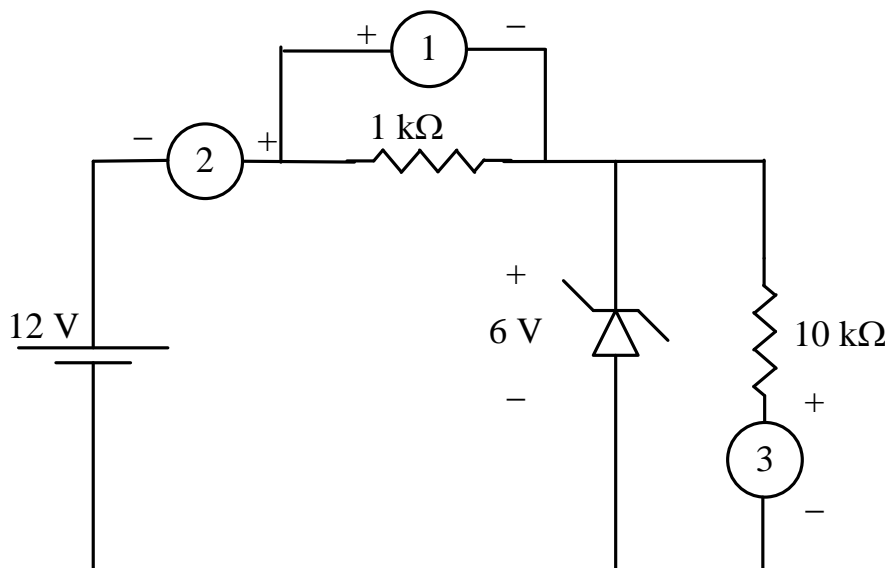
Question 1

- a) Calculate the equivalent resistance of the following resistor combinations.



[10]

- b) In the circuit shown below the voltage difference across the Zener diode is 6.0 V.

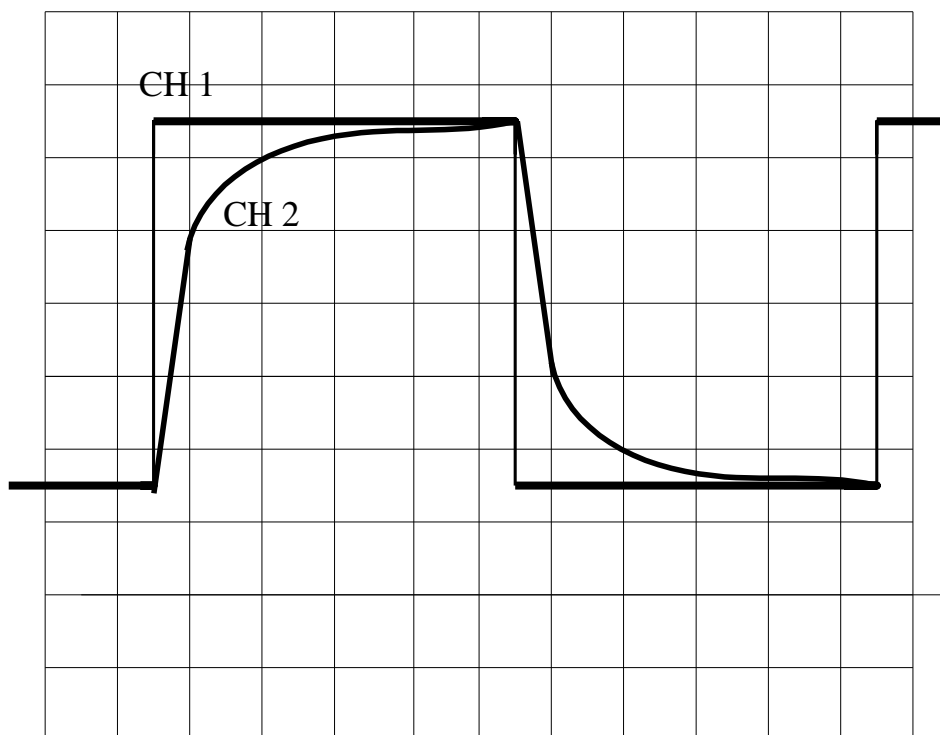
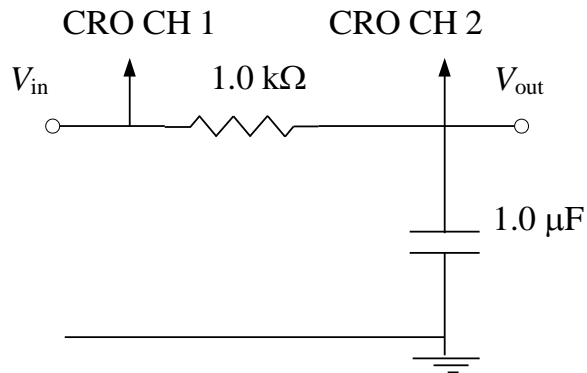


- i) What is the reading of meter 1? [4]
- ii) What is the reading of meter 2? [4]
- iii) What is the reading of meter 3? [4]
- iv) How much power is supplied by the battery? [4]
- v) How much power is dissipated in the Zener diode? [4]

Continued..

Question 2

The input voltage V_{in} in the circuit shown below is obtained from a signal generator (square wave). The peak-to-peak voltage of the square wave is 5 V. Both V_{in} and V_{out} are displayed on an oscilloscope as shown in the figure below.

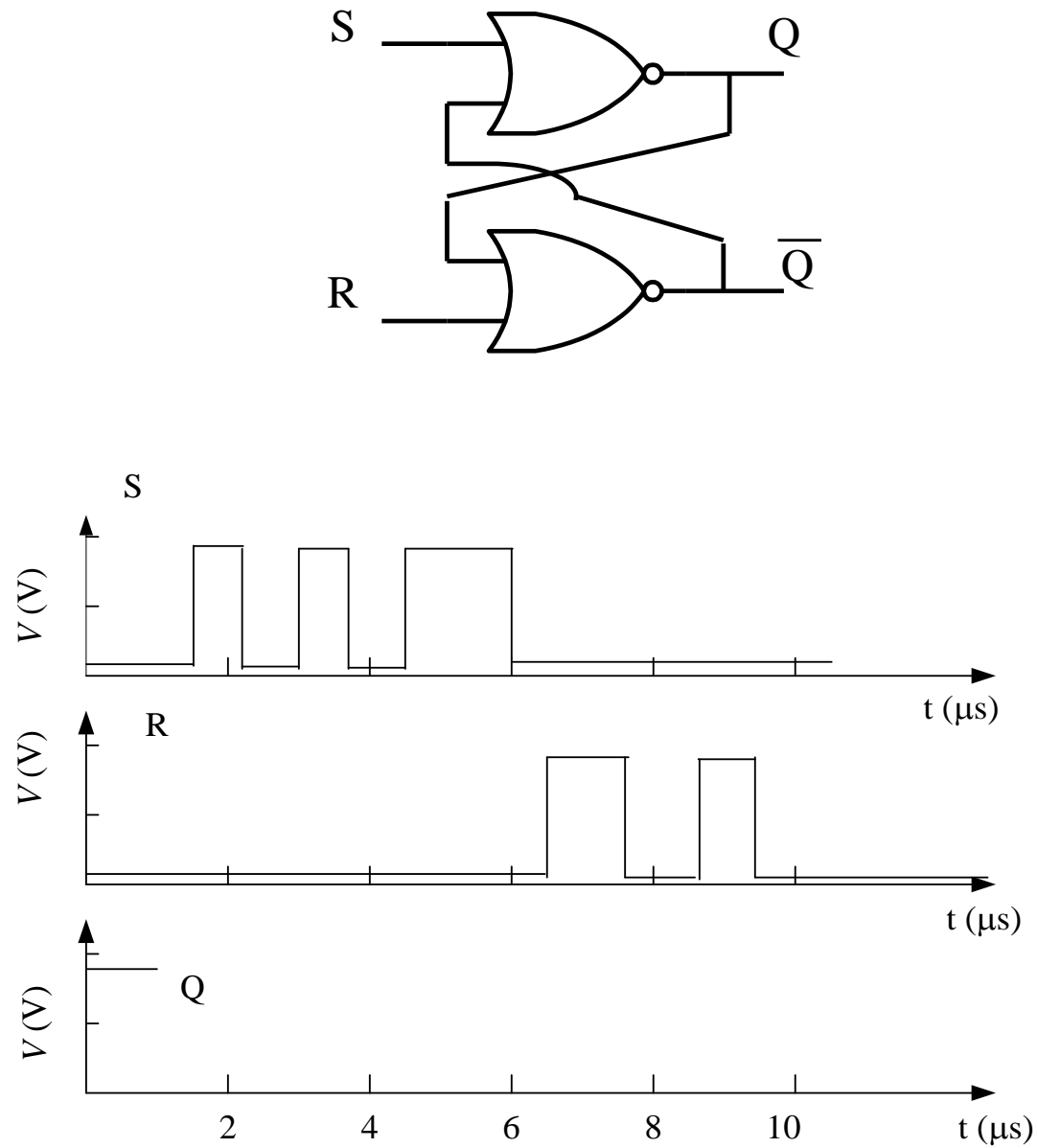


- What is the vertical scale for CH1 (in V/Div)? [7]
- What is the vertical scale for CH2 (in V/Div)? [7]
- What is the horizontal scale (in ms/Div)? [11]

Continued..

Question 3

The figure below shows an RS flip-flop built using TTL logic gates. The waveforms at S and R together with a part of the waveform at Q, are also shown.



- a) Copy the waveforms to your answer book and complete the waveform at Q.
 b) What is the vertical scale in Volts per division?

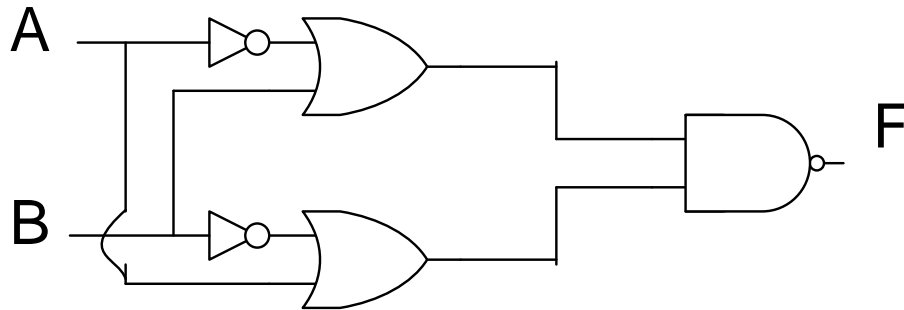
[15]

[5]

Continued..

Question 4

For the logic circuit shown below:



- a) Write down a Boolean expression to describe the function of this circuit. [7]
- b) Use De Morgan's theorem to obtain an equivalent expression. [8]
- c) Write down the truth table for this circuit and state what logic function it performs. [10]

End of Paper