Examination: **Industriel Electronic Componernts Rezekne** 19.06.2019
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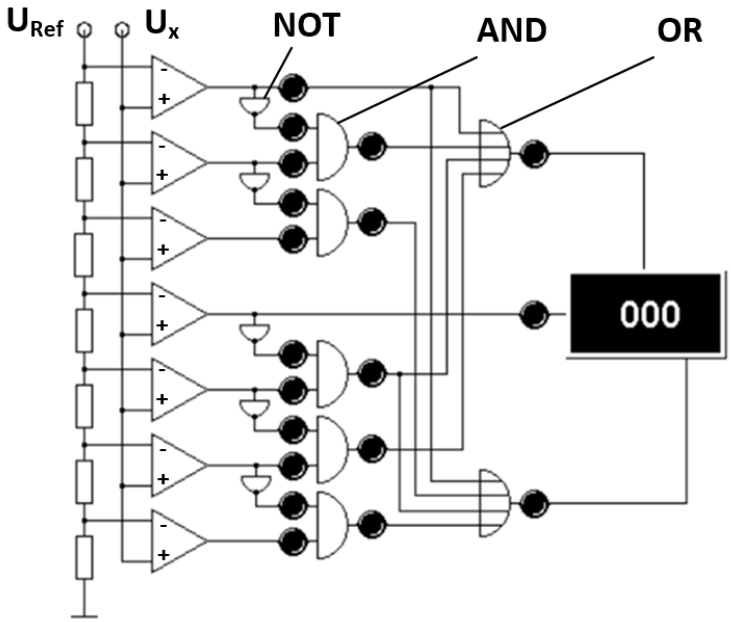
Question 1 (25 P)

List the 4 or 5 (different) application fields of Operational Amplifier. You should use circuit diagrams, diagrams, keywords, ...

Question 2 (25 P)

The scheme right shows an Analog-Digital-Converter.

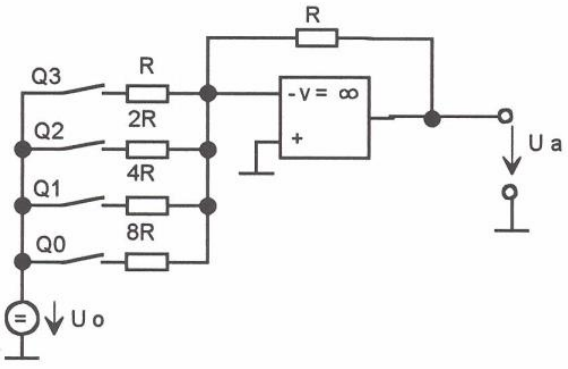
a) Give the detailed name
b) Describe short in keywords the function and the advantages and the downsides
c) For U_{Ref} = 14 V and U_x = 6.8 V write near the dark black points the signal states „0“ or „1“
d) Give the result of the conversation as a digital number.



Note: The devices with **+ / -** are comparators. If $U_+ > U_-$, they show the result "1“, in the other case they give "0“.

Question 3 (25 P)

a) Describe in keywords the function of the circuit diagram right. How does it work?
b) Which voltage has U_a, if Q3 and Q2 are "on“ and Q2 and Q0 are "off“. The voltage U_0 = 10 V.
c) Sketch (parallel) a simplified circuit diagram without the switches with regard to b).



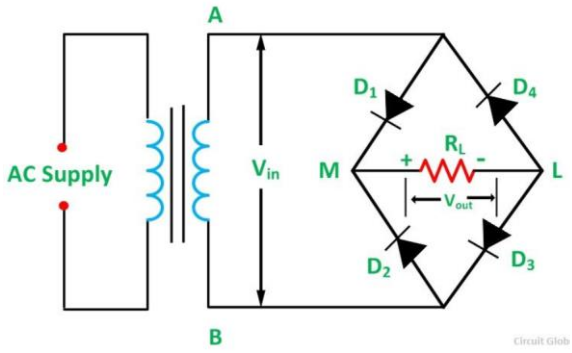
Question 4 (30 P)

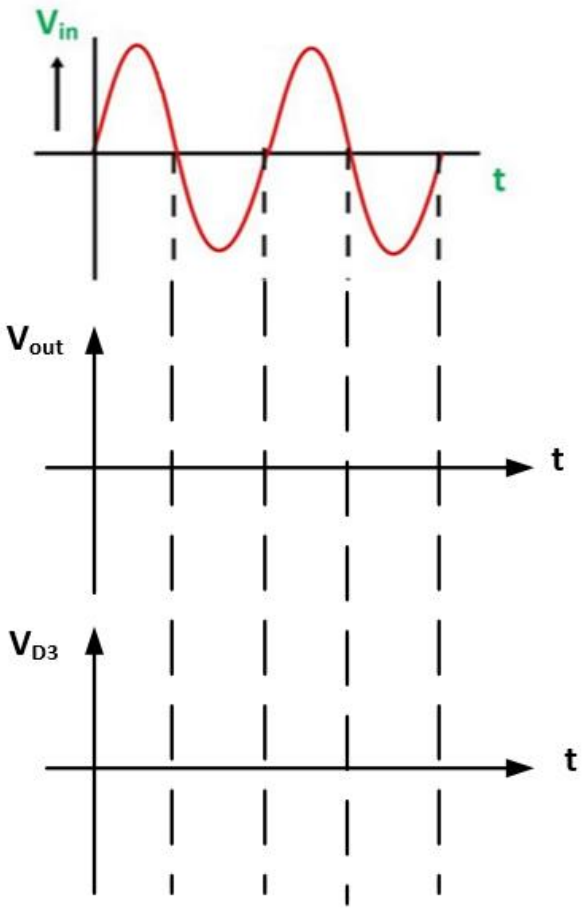
I) Sketch

a) the symbols
b) V-I-diagrams

of a A) diode and B) a Zener diode

II) Given is a full bridge rectifier, see right
Sketch V_{out}, V_{D3}





Question 5 (15 P)

You see electronic devices 78xx and 79xx.

a) What is it?
b) For what stands xx?
c) What is the difference between them?
d) Sketch a principle circuit