University POLITEHNICA of Bucharest

Faculty of Electronics, Telecommunications and Information Technology

Project 1

Title: …….

Student:

Group:

Coordinator(s):

Year:

1. **Project requirements (1 page)**

It is required to design a circuit with the following parameters:

.....

2. The block diagram of the circuit (1-2 pages)

Here will be a block diagram of the circuit designed by you. The role of each sub-block present on the diagram will be explained in writing.

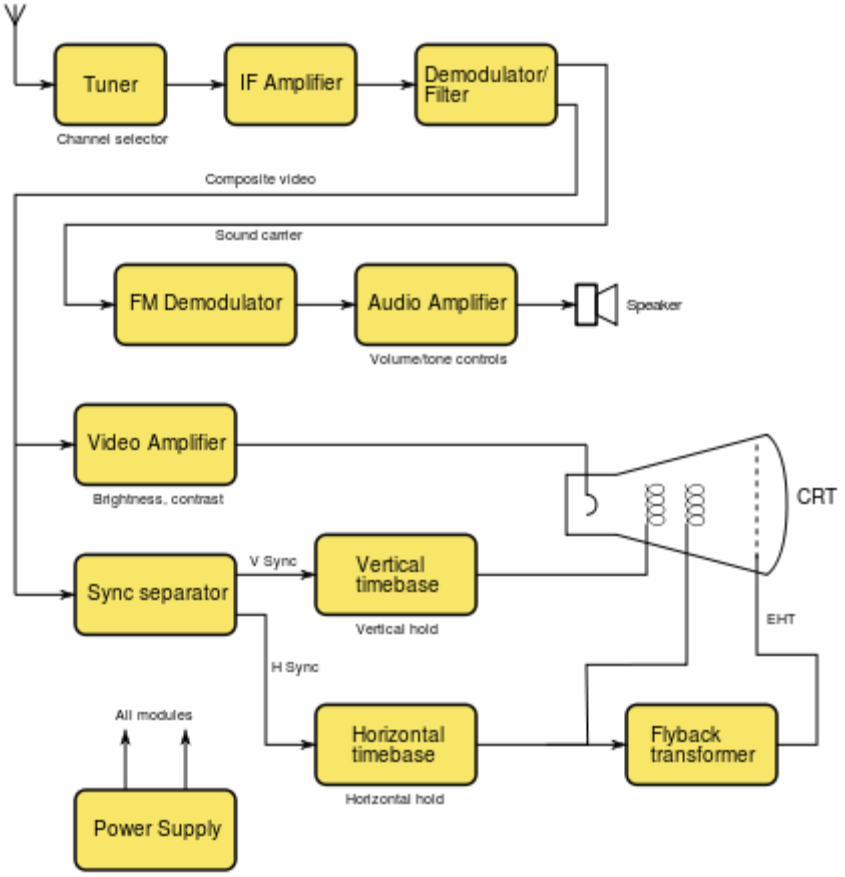

Fig.1. Example of a block diagram

Explanation:

You will use Times New Roman 12pts/ 1row spacing.

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3. **The detailed schematic diagram with detailed explanations related to operation, identification of each sub-block which was presented in the block diagram, and the calculations for each component (passive or active) that is part of that sub-block (5-10 pages).**

-calcululus of:

DC bias

Open-loop voltage gain for the amplifier (a_v)

Negative feedback circuit (transfer function f_v)

Open-loop /closed loop output impedance

s, S

OVP (over-voltage protection) circuit

OCP (over-current protection) circuit

Explanation:

You will use Times New Roman 12pts/ 1row spacing.

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.....

4.SPICE simulations of the designed circuit (.CIR files, the waveforms, bias points, etc.). For simulations you may use any free or commercial SPICE simulator. A list with examples is mentioned below:

- **SPICE 3 (https://ptolemy.berkeley.edu/projects/embedded/pubs/downloads/spice/index.htm)**
- **Spice from Microsim (https://wiki.dcae.pub.ro/index.php/Fi%C8%99ier:Spice.rar)**
- **LTspice (https://wiki.dcae.pub.ro/index.php/Fi%C8%99ier:Spice.rar)**
- **TINA Student version (https://www.tina.com/tina-student-version/)**
- **Orcad 16.6 Lite (http://www.cetti.ro/v2/orcad16.php/)**
- **Orcad 9.1 with Schematics (https://wiki.dcae.pub.ro/index.php/Fi%C8%99ier:Pspice.rar)**

-simulation of:

DC bias

Open-loop voltage gain for the amplifier (a_v)

closed loop output impedance

S

OVP

OCP

Each simulation will be explained. **The simulation print screens may be included in the project, but only accompanied by hand calculations. The total space occupied in the document by the images with the simulations must be less than 25% of the total size of the project.**

5. Comments/Conclusions (max 1 page)

You will use Times New Roman 12pts/ 1row spacing

6. Layout/mounting map

You will use Times New Roman 12pts/ 1row spacing

7. **References**

(You will use Times New Roman 11pts/ 1row spacing).