UNIVERSITAT POLITÈCNICA DE CATALUNYA BARCELONATECH

EETAC - **CSD**

Enginyeria Electrònica

Counter_BCD_1digit

LAB 10 CONTROL SHEET

Date: _____

Group: G ____

Student names: _____

_____

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PART A: Paper work and computer activities (Check ✓ if done)

	#1. Specifications: symbol, timing diagram, state diagram, etc. Note: important question to study for exam exercises.
	#2. Planning: Applying the FSM recipe adaptation to µC. Note: important question to study for exam exercises.
	#3 & **#4**. Develop & test/debug: MPLAB X + XC8 project. Generate the executable *coff* file for running Proteus. Use breakpoints and watch window to control the program flow and visualise RAM variables.
	Measurements. Use the Proteus logic analyser to calculate the propagation time from CLK to output at a given transition. Infer the maximum frequency at which the circuit can operate $f_{MAX.}$

	#5. Prototype: Install the WaveForms software driver in one of your computers for the VB8012. Note: You can check its operation using it in demo mode.

PART B: Lab workbench activities (Check ✓ if done)

The key idea on lab experimentation: From your experiences in LAB4.2: ➔ Please focus on group cooperation and use pen & paper to draw pictures, diagrams and sketches to prepare and document lab activities.

Experiment #1		Change the options in MPLABX to generate the executables *hex* and *elf* files for programming the PIC18F46K22 using the MPLAB SNAP. Check that the circuit is working. (Fig. 24)

Experiment #3 Mounting the breadboard and measuring (*)		Step #1: short wires and test as shown in Fig. 27.
		Test that it works correctly (Fig 28).
		Step #2: flexible long wires (Fig. 29).
		Step #3: Connect the instrument probes to the male header pins and run WaveForms app (Fig. 30).
		Use the setup file for the logic analyser instrument for an easy initial probe configuration
		Test that it works.
		Try different Wavegen CLK frequencies and experiment (Fig. 31).
		Measure transition delays (Fig. 32).

(*) Capture your PC screen for experiment documenting purposes.

(**) Experiment #2 is optional; on learning to use the SNAP in-circuit debugger.

Additional notes: