

Assignment 6 - writeup.

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a) Write a note on microprocessor and microcontroller.
Draw block diagram of PIC18, memory.

Ans -

1) microprocessor:-

- i) microprocessor is suited to processing information in computer system.
- ii) microprocessor is processing intensive has powerful addressing modes, instructions to perform complex operations and manipulate large volume of data.
- iii) microprocessor usually requires external circuitry to interface I/O devices.
- iv) microprocessor has very wide bus width. Large memory address spaces (> 4 Gbytes) and lots of data. (data bus: 32, 64, 128 bits wide)

2) microcontroller.

- i) IS suited to control of I/O devices requiring a minimum component count
- ii) microcontroller is to control of I/Os and O/Ps. Hence instructions are to set/clear bits, Boolean operations. It has extremely compact instructions, many implemented in one byte.

Block diagram of memory

00h	Access RAM	000h
Bank 0	GPR	05Fh
FFh		060h
Bank 1	GPR	0FFh
00h		100h
FFh		1FFh
Bank 2	GPR	200h
00h		2FFh
FFh		300h
Bank 3	GPR	3FFh
00h		400h
FFh		4FFh
Bank 4	GPR	500h
00h		5FFh
FFh		600h
Bank 5	GPR	6FFh
00h		700h
FFh		7FFh
Bank 6 to 14	unused	800h
	Read 00h	8FFh
		900h
	SFR	9FFh
00h		A00h
Bank 15	SFR	AFFh
FFh		B00h

Access Bank Low

GPR

Access Bank high

SFR

iii) It has built in I/O control module, event timing, counting.

iv) Has narrow buses, Relatively small memory address spaces (Kbytes) and less data (data bus 8, 16 bits wide)

Block diagram of PIC18

MCIR/VPP	□ 1	40	□ RB7/PGD
RA0/AN0/CVREF	□ 2	39	□ RB6/PGC
RA1/AN1	□ 3	38	□ RB5/PGM
RA2/AN2/VRFF	□ 4	37	□ RB4
RA3/AN3/VREF ^T	□ 5	36	□ RB3/CANRX
RA4/TOCK1	□ 6	35	□ RB2/CANTX/IMTL
RA5/AN4/SS/LV0	□ 7	34	□ RB1/INT1
RE0/AN5/RD	□ 8	33	□ RB0/INT0
RE1/AN6/W ^R /C1001	□ 9	32	□ VDD
RE2/AN7/C ^S /C2OUT	□ 10	31	□ VSS
VPP	□ 11	30	□ RD7/PSP7/PIB
VSS	□ 12	29	□ RD6/PSP6/PIB
OSC1/C/K1	□ 13	28	□ RD5/PSP5/PIB
OSC2/CLK0/RAG	□ 14	27	□ RD4/PSP4/ECCP1/PIA
RC0/T1OSO/TCK	□ 15	26	□ RC7/RX/DT
RC1/T1OS	□ 16	25	□ RC6/TX/CK
RC2/CCP2	□ 17	24	□ RC4/ECCP1/SDD
RC3/SCK/SL	□ 18	23	□ RC4/SD1/SDA
RD0/PSP0/C1INT	□ 19	22	□ RD3/PSP3/C2IN ⁻
RD1/PSP1/C1IN	□ 20	21	□ RD2/PSP2/C2INT