

1. *How many available GPRs are there in Bank 0 of the 16F684?*  
Bank 0 contains **128**, which are 00h to 7Fh.
2. *What is the first available address (in hex) in the GPR?      The last?*  
20h
3. *Which programmers can you use with the P16F684?*  
PICSTART Plus, MPLAB REAL ICE, PICKit 1/2/3, MPLAB ICD 2/3, PRO MATE II, MPLAB PM3 are the programmers.
4. *How large is the instruction set in MPASM?*  
Instruction set in MPASM is **35** commands.
5. *For the instruction movlw k, what does k represent?*  
k = **Literal field**, constant data or label
6. *Where must all data first be written to before going to any other register?*  
**Working register** takes all the data before allocating them to other registers.
7. *For the instruction addwf f, d, what does f represent?*  
f = register file address (0x00 to 0x7F)
8. *For the instruction addwf f,d , what does d represent?*  
d = destination select; **d = 0** indicates store result in working register, **d = 1** indicates result in file, corresponding register.
9. *Using Notepad, open the header file p16f684.inc (run a search). What values are assigned (EQU) to W and F registers.*  
H'0000' is assigned to W register. F register is set to H'0001'.
10. *What are the two address locations of the Status Register?*  
**03h, 83h** are the two addresses.
11. *What would have to happen to set (logical 1) the **Z (bit 2)** bit of the Status Reg?*  
The arithmetic/logic operation must have an answer of not 0.
12. *What would have to happen to set (logical 1) the **C (bit 0)** bit of the Status Reg?*  
When 1 is carried out from the most significant bit from the result in ALU bit position.
13. *Which bit in the STATUS Register is responsible for bank selecting?*  
**bit 5**, register bank select bit. Indicates which bank it will message.
14. *Which bank is being selected if the Status Reg had a value of 00100110? Is the value of the Digit Carry bit set (logical 1) or cleared (logical 0)?*  
**Bank 1** is being selected, the result of the arithmetic operation is not 0, The carry bit is 0, but the digit carry is 1.
15. *What is the address of the "Reset Vector"?*  
0000h contains the reset vector, interrupt vector is at 0004h.
16. *What do bits 6 and 7 represent in both PORTA and PORTC?*  
0, unimplemented location