**QUESTION 1**

1. Which of the following items are registers as named in the Wombat 1 processor.

|  |  |  |
| --- | --- | --- |
|  |  | pc |
|  |  | ip |
|  |  | RAM Main |
|  |  | Acc |
|  |  | control unit |
|  |  | Mar |
|  |  | Status |
|  |  | Add |

**5 points**

**QUESTION 2 WRONG**

1. Given the following section of program written for Wombat 1  
     
   lab4:            load 20  
                    add 30  
                    add 30  
   lab5:           store 40  
   ---------------------------------  
   If the address of **lab4:** is 19410what is the address (in decimal) of **lab5:**

|  |  |  |
| --- | --- | --- |
|  |  | 207 |
|  |  | 200 |
|  |  | 204 |
|  |  | 202 |
|  |  | 197 |

**5 points**

**QUESTION 3**

1. Put the following hexadecimal numbers in increasing order



000016

                                                                                 

000116

                                                                                 

001016

                                                                                 

010016

                                                                                 

011116

                                                                                 

011016

                                                                                 

001116

                                                                                 

010116

**5 points**

**QUESTION 4 WRONG answer => true**

1. On Wombat 1 it is possible for **ir** to contain the same bit pattern as the**acc**

 True

 False

**5 points**

**QUESTION 5 WRONG answer=> Except** LABEL

1. Which of the following are valid instructions for Wombat 1

|  |  |  |
| --- | --- | --- |
|  |  | store |
|  |  | add |
|  |  | jump |
|  |  | label |

**5 points**

**QUESTION 6**

1. Wombat one uses 16 bit memory addresses

 True

 False

**5 points**

**QUESTION 7**

1. Wombat 1 is a 16 bit machine

 True

 False

**5 points**

**QUESTION 8 WRONG ANSWER => eXECUTION HALTED**

1. What is the response of Wombat 1 to a Zero op code

|  |  |  |
| --- | --- | --- |
|  |  | Execution Halted |
|  |  | Illegal Op Code |
|  |  | Appear to do nothing because of the continual looping to address Zero. |
|  |  | Place Zero(0) in the Acc register and increment the program counter |

**5 points**

**QUESTION 9**

1. The **pc**can have the same value as the **mbr**

 True

 False

**5 points**

**QUESTION 10 WRONG answer=> It does not have op code**

1. The 4 bit op code for **.include** is:

|  |  |  |
| --- | --- | --- |
|  |  | 1610 + the op code included |
|  |  | A16 |
|  |  | 11102 |
|  |  | It does not have an op code |

**5 points**

**QUESTION 11**

1. If the instruction at address 0 is:  
   **store 0**  
   Then when executed, this instruction will be overwritten with whatever is in **acc**

 True

 False

**5 points**

**QUESTION 12 WRONG answer=> except last**

1. Which of the following form part of Wombat 1

|  |  |  |
| --- | --- | --- |
|  |  | **RAM Main** |
|  |  | **ROM Main** |
|  |  | A register called **status** |
|  |  | instruction set fields called **addr** and **op** |
|  |  | instructions called **move** and **open** |
|  |  | An instruction to ask the user to input a number |
|  |  | An instruction to output numbers in Hexadecimal |

**5 points**

**QUESTION 13 WRONG**

1. Assembler  have a  to  relationship with 

**5 points**

**QUESTION 14**

1. How many op codes can a machine have if op codes are allowed 5 bits?

|  |  |  |
| --- | --- | --- |
|  |  | 16 |
|  |  | 5 |
|  |  | 32 |
|  |  | 2+2+2+2+2 |
|  |  | (16 - 5)2 |
|  |  | 52 |

**5 points**

**QUESTION 15 WRONG**

1. The wombat 1 multiply instruction multiplies the number in the  register by a number in  and leaves the result in . The original number in  is lost but the number in  is . If the result needs to be  a  instruction must be used to copy it from  to an  in .

**5 points**

**QUESTION 16**

1. If the instruction at address 0 is:  
   **load 0**  
   Then when executed, the bit pattern of a load 0 instruction will be placed in **acc**

 True

 False

**5 points**

**QUESTION 17 WRONG answer => false**

1. Addresses are read from memory and placed directly in the the **mar**

 True

 False

**5 points**

**QUESTION 18**

1. In Wombat 1 assembly language .**data** is:

|  |  |  |
| --- | --- | --- |
|  |  | An assembler virtual instruction |
|  |  | An illegal instruction |
|  |  | An assembler pseudo instruction |
|  |  | A machine code instruction |

**5 points**

**QUESTION 19**

1. In the Wombat 1 machine:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  | | --- | --- | |  | mar and mbr are connected directly to | |  | A value from memory is placed in this register by the FETCH sequence and DECODED as an instruction. | |  | Data going to or from memory always goes via this register | |  | This register is often used to hold a program address but does not usually contain the address of the instruction being executed. | |  | When the "RAM Main" is being read from or written to, the address used will be the one held in this register | |  | The Wombat 1 "add" instruction always places its answer in this register | | |  |  | | --- | --- | | A. | pc | | B. | mar | | C. | acc | | D. | ir | | E. | RAM Main | | F. | mbr | |

**5 points**

**QUESTION 20 WRONG answer=> 0**

1. What value would be output by the following Wombat 1 program  
   start:    load v1  
               add v1  
               store v1  
               load v2  
               add v2  
               store v2  
               add v1  
               add v3  
               write   
   v1:      .data 2 0x0001  
   v2:      .data 2 0x0002  
   v3:      .data 2 0xFFFC

|  |  |  |
| --- | --- | --- |
|  |  | 0 |
|  |  | 1 |
|  |  | 2 |
|  |  | 3 |
|  |  | -1 |
|  |  | -2 |
|  |  | -3 |
|  |  | -4 |