Assignment for Week 5

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

Due on 2019-03-06, 23:59 IST.

1) JU 3F3F: This instruction causes the program to jump to location 3F3F unconditionally. JU is a

- Data transfer instruction
- Control instruction
- Arithmetic and Logical instruction
- Hybrid Instruction

No, the answer is incorrect.
Score: 0
Accepted Answers:
Control instruction

2) JUZ 3F3F: This instruction causes the program to jump to location 3F3F if Zero flag is set. JUZ is a

- Data transfer instruction
- Un-conditional Control instruction
- Conditional Control instruction
- None of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
Conditional Control instruction

3) Assume that we have a 4 bit ALU. Consider the operation 5 + 2 given below, assuming signed arithmetic

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Quiz: Assignment for Week 5

**Week 6:**
Organization and Optimization of Micro-programmed Controlled Control Unit

**Week 7:**
Organization and Optimization of Micro-programmed Controlled Control Unit

**Week 8:**
Organization and Optimization of Micro-programmed Controlled Control Unit

**Week 9:**
Memory Sub-system Organization

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Memory Sub-system Organization

**Week 11:**
Memory Sub-system Organization

**Week 12:**
Input/output Subsystem

**TEXT TRANSCRIPTS**

5+2: Assumed signed arithmetic
5 is represented as 0101 in 2’s complement format
1 is represented as 0010 in 2’s complement format

Now,

\[
\begin{array}{c}
\text{0101} \\
+ \text{0010} \\
\hline
\text{0111}
\end{array}
\]

After the operation, which of the following options denote the values of the flags: Zero, Negative, Carry, Even Parity?

- Zero=1, Negative=1, Carry=1, and Even Parity =1
- Zero=0, Negative=1, Carry=0, and Even Parity =0
- Zero=0, Negative=0, Carry=0, and Even Parity =0
- Zero=1, Negative=0, Carry=0, and Even Parity =1

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**
Zero=0, Negative=0, Carry=0, and Even Parity =0

4) What will be the value in R0 after executing the following sub-program?

```assembly
MOVI R0, 00
While:
ADDI R0, 10  // R0 = R0 + 10
CMPI R0, 50  // Compare value in R0 with 50 (immediate value)
JNE While  // Jump to While if the value in R0 is not equal to 50.
```

- 10
- 20
- 50
- None of the above

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**
50

5) In nested procedure CALL/RETURN, prior to the starting of a subroutine, which of the following is performed?

- PC (Program Counter), PSW (Program Status Word) register variables etc. are retrieved from the queue
- PC (Program Counter), PSW (Program Status Word) register variables etc. are retrieved from the stack
- PC (Program Counter), PSW (Program Status Word) register variables etc. are saved in a queue
- PC (Program Counter), PSW (Program Status Word) register variables etc. are saved in a stack

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**
PC (Program Counter), PSW (Program Status Word) register variables etc. are saved in a stack

6) The following is the micro-operation sequence needed for the instruction PUSH:

- PC (Program Counter), PSW (Program Status Word) register variables etc. are retrieved from the queue
- PC (Program Counter), PSW (Program Status Word) register variables etc. are retrieved from the stack
- PC (Program Counter), PSW (Program Status Word) register variables etc. are saved in a queue
- PC (Program Counter), PSW (Program Status Word) register variables etc. are saved in a stack

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**
PC (Program Counter), PSW (Program Status Word) register variables etc. are saved in a stack
PUSH Ri

a. MAR ← SP  

b.  

c. Write  

d. SP=SP-1 // Decrement the stack pointer value  

Which of the following describes most appropriately, the second step?

- PC ← PC+1 (PC gets incremented by instruction length)  
- MAR ← address of operand in IR  
- PC ← Pop the return address from the stack  
- MBR ← Ri  

No, the answer is incorrect.  
Score: 0

Accepted Answers:  

MBR ← Ri

7) The following is the micro-operation sequence needed for the instruction 'POP':  

POP Ri

a. SP ← SP+1  

b.  

c. Read  

d. Ri ← MBR // pop the top element of stack and store in register Ri  

Which of the following describes most appropriately, the second step (i.e., is (b)) marked above with  

- PC<SP+1 (PC gets incremented by instruction length)  
- MAR ← address of operand in IR  
- PC ← Pop the return address from the stack  
- MAR ← SP (Memory address register is assigned the value of Stack Pointer)  

No, the answer is incorrect.  
Score: 0

Accepted Answers:  

MAR ← SP (Memory address register is assigned the value of Stack Pointer)

8) The overflow bit is SET if  

- If the sum of 2 positive numbers yields a positive number  
- If the addition of 2 numbers result in carry out of the most significant number  
- If the sum of 2 positive numbers yields a negative number  
- None of the above  

No, the answer is incorrect.  
Score: 0

Accepted Answers:  

If the sum of 2 positive numbers yields a negative number

9) A stack pointer gives  

- The address of the memory of the stack where the details of the main program is stored.  
- The address of the PSW and PC of the currently executing subroutine.  
- The address of the last filled memory of the stack after each subroutine call.  
- None of the above  

No, the answer is incorrect.  
Score: 0

Accepted Answers:  

The address of the memory of the stack where the details of the main program is stored.
Consider the memory segment shown in the figure below. The main program, procedure A, and procedure B are the programs stored in this memory segment. Memory location for CALL A instruction is 1CD and CALL B instruction is 37A. Assume that there are 8 general purpose registers and we need to retain the value of all the registers during procedure call. Which of the following does not occur when the CALL B instruction is executed?

- PC becomes 3C1
- Eight registers are pushed in the stack
- Program status word is retrieved from the stack
- Control move to procedure B

No, the answer is incorrect.
Score: 0
Accepted Answers:
Program status word is retrieved from the stack