Classwork 01 CPE 221 Computer Organization

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Student's Name: _____

① What is the result of

LSR R11, R11, #5 if R11 = 10101010

(Remember we have 32-bit word size)

Answer: 101 (3 points)

② What is the result of (5 points)

ASR R12, R12, #3

if R12 has 0xF1216251

Answer: FF242C4A

(Note that we can store 0xF1216251 in R12 using MOV (we will discuss this later, use LDR and declare variable)

③ Write an ARM Assemble program to immitate the following C++code: (12 points)

```
int *a;
a= new int[5]; //sets all values to zero
a[2]= 32;
int *b;
b= a+1;
b[1]= 65;
int c= a[2]+b[1];
```

[Hint: create a data value in ARM]

Finally, write the final value of c.

Solution

```
LDR  R0, =a
MOV  R3, #0

STR  R3, [R0]
STR  R3, [R0, #4]
STR  R3, [R0, #8]
STR  R3, [R0, #12]
STR  R3, [R0, #16]
```

} Initialize array to zero

```
MOV  R3, #32
STR  R3, [R0, #8]
```

} a[2]=32

```
ADD  R1, R0, #4     @ b=a+1

MOV  R4, #65
STR  R4, [R1, #4]   @ b[1]=65

LDR  R5, [R0, #8]   @ a[2]
LDR  R6, [R1, #4]   @ b[1]
ADD  R7, R5, R6     @ c=a[2]+b[1]

done: B done

.data
    a: .word 0
```

Answer = 65 + 65 = 130.