1. Explain DAA and write the asm code using the following example –

AL 27H and AL35H

* DAA is DECIMAL ADJUST AFTER BCD ADDITION. This instruction is used to make sure the result of adding two packed BCD numbers is adjusted to be a legal BCD number. The result of the addition must be in AL for DAA to work correctly. If the lower nibble in AL aftr an addition is greater than 9 or AF was set by the addition, then the DAA instruction will add 6 to the lower nibble in AL. if the result in the upper nibble of AL is now greater than 9 or if the carry flag was set by the addition or correction , then the DAA instruction will add 60H to AL.
* Let , AL = 27H, and BL = 35 BCD

Add AL,BL

DAA

Let , AL = 35H , and BL= 49 BCD

ADD AL,BL

DAA

1. EXPLAIN THE “CMP” AND “TEST” INSTRUCTION FROM THE FOLLOWING EXAMPLE. ALSO WRITE WHICH ONE OF THESE AFFECT THE FLAG REGISTER AND WHY.

CMP AL, 000H

TEST AL, 001H

* TEST – TEST Destination, Source

This instruction ANDs the byte / word in the specified source with the byte / word in the specified destination. Flags are updated, but neither operand is changed. The test instruction is often used to set flags before a Conditional jump instruction. The source can be an immediate number, the content of a register, or the content of a memory location. The destination can be a register or a memory location. The source and the destination cannot both be memory locations. CF and OF are both 0’s after TEST. PF, SF and ZF will be updated to show the results of the destination. AF is be undefined.

* TEST AL, BH ; AND BH with AL. No result stored; Update PF, SF, ZF.
* TEST CX, 0001H; AND CX with immediate number 0001H; No result stored; Update PF, SF, ZF
* TEST BP, [BX][DI]; AND word are offset [BX][DI] in DS with word in BP. No result stored. Update PF, SF, and ZF
* CMP

This instruction compares a byte / word in the specified source with a byte / word in the specified destination. The source can be an immediate number, a register, or a memory location. The destination can be a register or a memory location. However, the source and the destination cannot both be memory locations. The comparison is actually done by subtracting the source byte or word from the destination byte or word. The source and the destination are not changed, but the flags are set to indicate the results of the comparison. AF, OF, SF, ZF, PF, and CF are updated by the CMP instruction. For the instruction CMP CX, BX, the values of CF, ZF, and SF will be as follows:

* CF ZF SF

0 0 0 CX>BX ; NO BORROW REQUIRED, SO CF=0;