Mid 2015

Question 1

1. (a) Adds 45 to the value of D1 and stores it in D1

2. (a) true

3. (a) stack pointer (specifically A7)

4. ME $2 \downarrow 4 \to 2^4 = 16$ (d) 16 M

5. (c) program Counter

6. (c) stack

7. (b) Immediate

8. (b) False — leat to more

9. (b) 2^n

Question 2

a. i. $[28] = 2^4$
ii. $[[29]] = [24] = 32$
iii. $[[[31]]] = [[24]] = [32] = 27$
iv. $[3 \times [27] - [33] - [26]] = [3 \times 26 - 37 - 20]$
$= [21] = 23$

b.

$$0 \quad 1 \quad 1$$

Carry in

$$
\begin{array}{r}
0\;1\;1\;0\;1\;1\;0\;0 \\
+\;\; 0\;1\;1\;1\;0\;1\;1\;1 \\
\hline
1\;1\;1\;0\;0\;0\;1\;1
\end{array}
$$

Carry out

$C \rightarrow 0$

$V \rightarrow 1$

$Z \rightarrow 0$

$N \rightarrow 1$

Note

$$V = \left(\begin{array}{c} \text{Carry in} \\ \text{on the} \\ \text{last bit} \end{array} \right) XOR \left(\begin{array}{c} \text{Carry out} \\ \text{on the last} \\ \text{bit} \end{array} \right)$$