Task 1.

PCNEXT	COND-RET	COND-JUMP	NEXT-JMP	NEXT-PC	NEXT-OFFSET	NEXT-RA
P+1	X	X	0	P	X	X
P+1	0	0	1	P	X	X
P+S	0	1	1	P	S	X
A	1	X	1	X	X	A

Task 3:

op1 = 12 = 0 ... 0 1100

op2 = 5 = 0 ... 0 0101

sum	op2shf	op1	op1&1 (op odd)	op2
0	10 2x	12→6	0	5
0	20 4x	6→3	0	5
20	20→40 8x	3→1	1	5
20→60	40→80 16x	1	1	5
		0			break

↓

sum=60

Task 4

R_0 = op1 R_1 = op2 R_2 = op2 – shifted R_3 = sum

R_4 = #1

R_5 = op1 & #1

routine

```
MOV R4, #1
MOV R3, #0
MOV R2, R1
CMP R0, #0        // Stop when R0 = 0, that is, when
JEQ 8
AND R5, R0, R4
CMP R5, #0        // 0 if & is false
JNE 2
ADD R3, R3, R2
LSL R2, 1
LSR R0, 1         // Could be ASR?
JMP -8
NOP
```

set R_0, R_1 beforehand

12 ↓ 5

Task 5

R_0 = op1 R_1 = op2 R_2, R_3 = op2 shifted R_4, R_5 = sum

R_6 = #1

R_7 = op1 & #1

```
MOV R0, #12
MOV R1, #5
MOV R2, #0
MOV R3, R1
MOV R4, #0
MOV R5, #0
MOV R6, #1
CMP R0, #0
JEQ 10
AND R7, R0, R6
CMP R5, #0          ← R7
JEQ 3
ADD R5, R5, R3      sum
ADC R4, R4, R2      sum
ADD R3, R3, R3      op2 shift (left shift)
ADC R2, R2, R2      op2 shift (left shift)
LSR R0, R0, #1      op1 (right shift)
JMP -10
NOP
```

R_4, R_5 = sum

ADD R5, R5, R3

sum = sum + op2-shifted

Test Task 5

$10000 \times 10000 = 100000000$

$= 1525 \times 57600$

$5F5 \times E100 \Rightarrow 100000000$