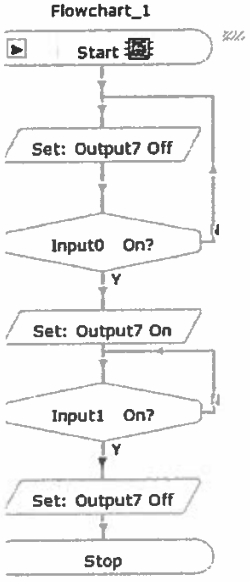
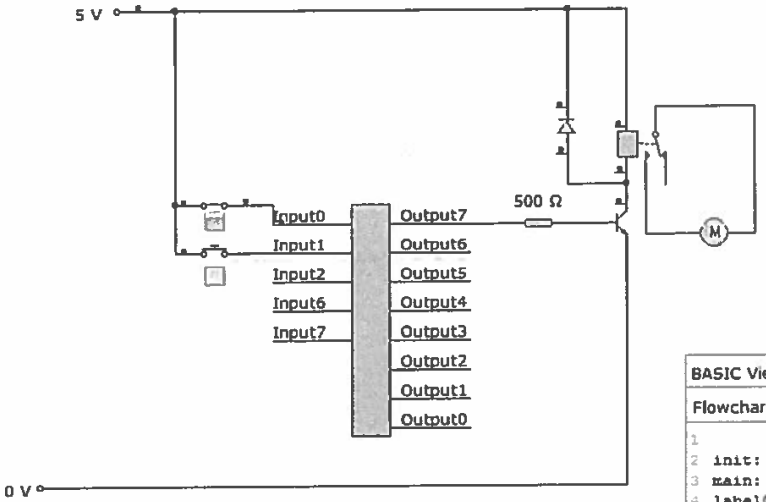
Candidate 1 evidence

Task 1 a

Original





BASIC Viewer

Flowchart_1

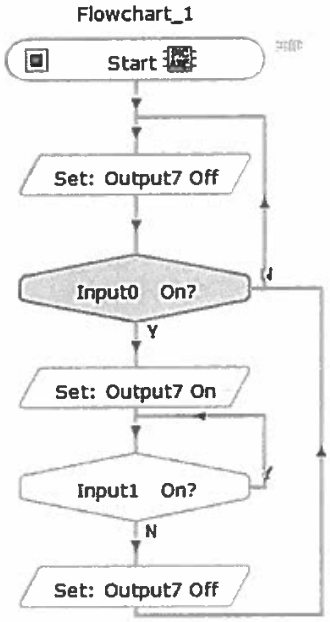
```
1
2  init:     let dirsB = 255
3  main:
4  label0:
5     Switch off 7
6     if Input0 is On then label1
7     goto label0
8  label1:
9     Switch on 7
10 label2:
11    if Input1 is On then label3
12    goto label2
13 label3:
14    Switch off 7
15    end
16
```

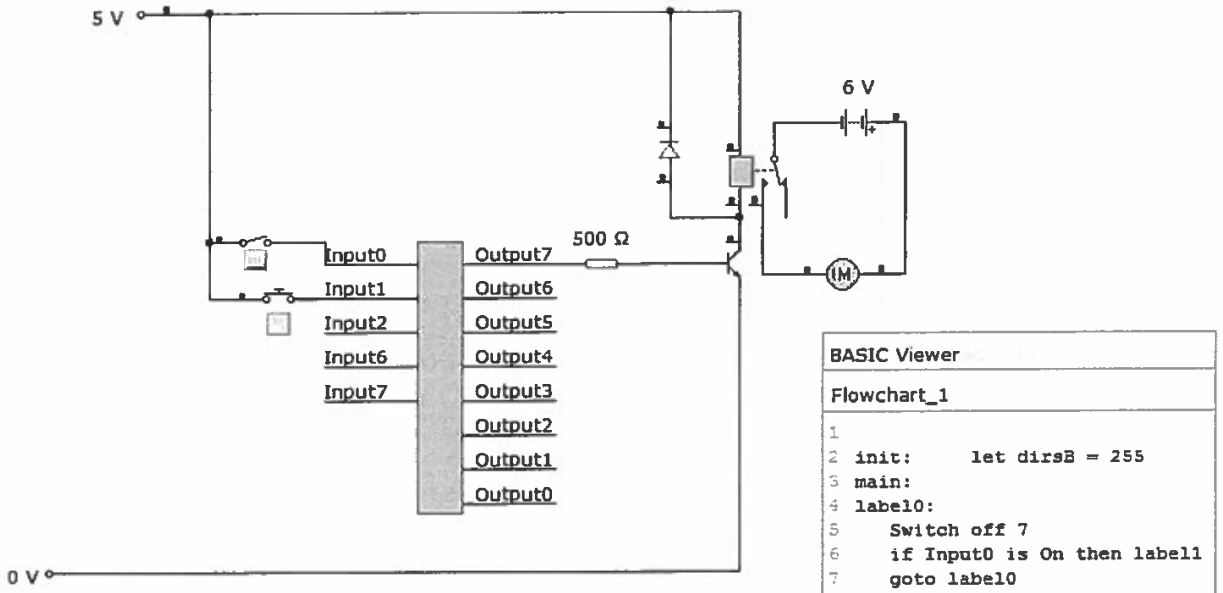
Worksheet 1b

Planned test	Expected result	Initial test result	Amended test result
Test 1 Turn on the master switch.	The relay should activate and the motor should start turning.	The relay was activated but the motor did not turn	The motor turned on when the relay was activated
Test 2 Turn on the master switch and then after a few seconds turn on the position sensor.	The motor should start turning then slow down and stop.	When I turned on the master switch the it kept on looping till I switched on input 0 then the motor turned on. When I pushed input 1 the circuit carried on till it came to an end then I switched off input 0 and the motor slowed down till it came to a halt.	NO AMMEDNMENATS MADE
Test 3 Turn on the master switch and then turn off the master switch.	The motor should start turning then slow down and stop.	The motor kept on spinning when input 0 was off. The motor only stopped when the flowchart had reached the stop command	The motor turned off when the master switch(input 0) was off

(5 marks)

Worksheet 1c





BASIC Viewer

Flowchart_1

```
1
2 init:     let dirsB = 255
3 main:
4 label0:
5    Switch off 7
6    if Input0 is On then label1
7    goto label0
8 label1:
9    Switch on 7
10label2:
11   if Input1 is On then label2
12   Switch off 7
13   goto label0
14   goto label2
15
```

1d

BASIC Viewer

Flowchart_1

```
1
2 init:     let dirsB = 255
3 main:
4 label0:
5    Switch off 7
6    if Input0 is On then label1
7    goto label0
8 label1:
9    Switch on 7
10 label2:
11   if Input1 is On then label2
12   Switch off 7
13   goto label0
14   goto label2
15
```

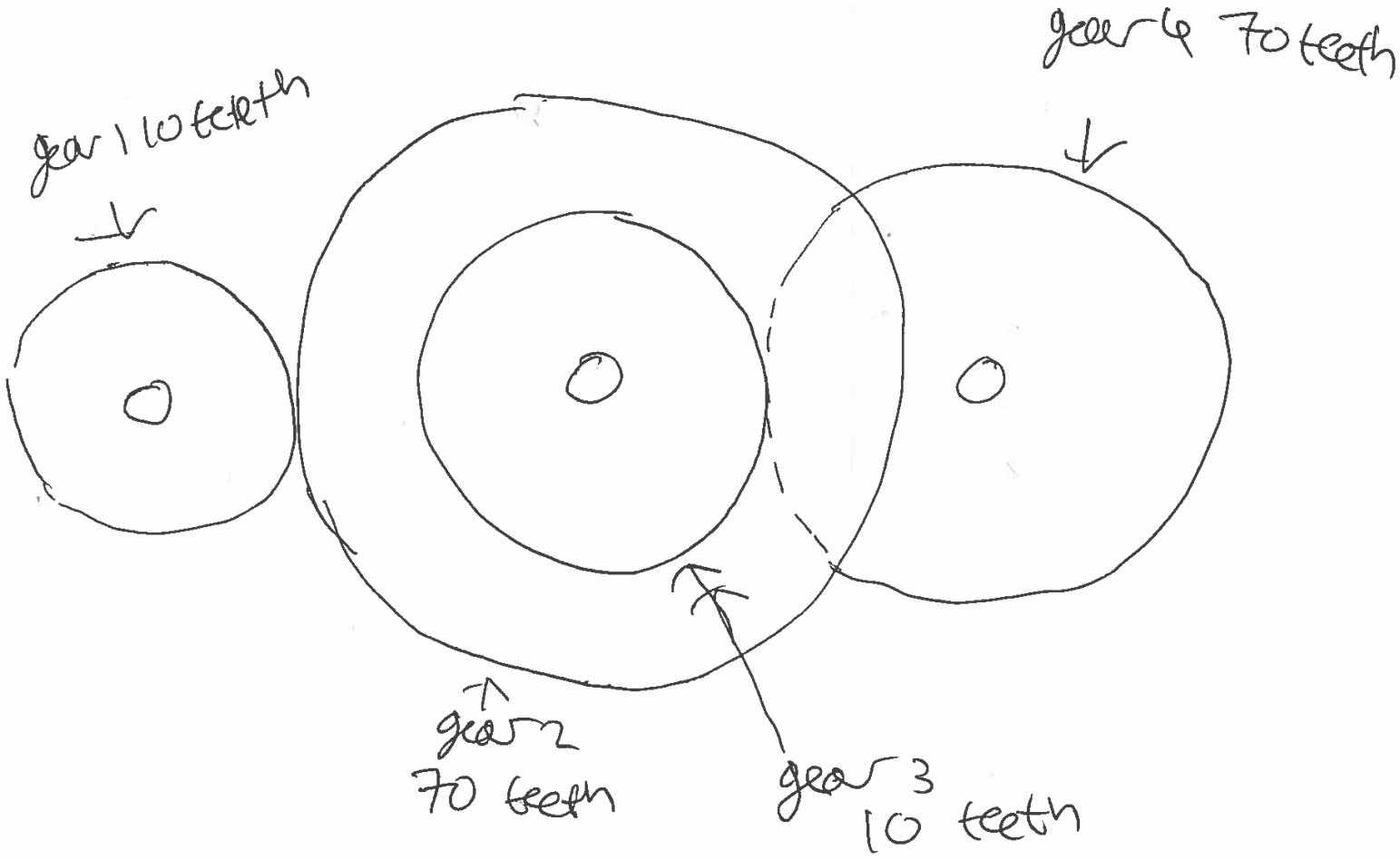
Worksheet 1e

Specification point	Met? Y or N	Description
i	y	Amendment :I placed a 6v battery to the motor circuit which was connected to the relay and the Result: motor turned on when the relay was activated.
ii	y	No amendments required Result: the motor slowed down and stopped a few seconds after I activated the position sensor
iii	y	Amendment removed the stop command in the flowchart. Then I intercepted the final command for pin7 to turn off only if input 0 was off. Preventing pin 7 to turn off when commanded to. Pin 7 could only turn off when input 0 was off. Result: When I turned of the master switch the motor slowed down and stopped.

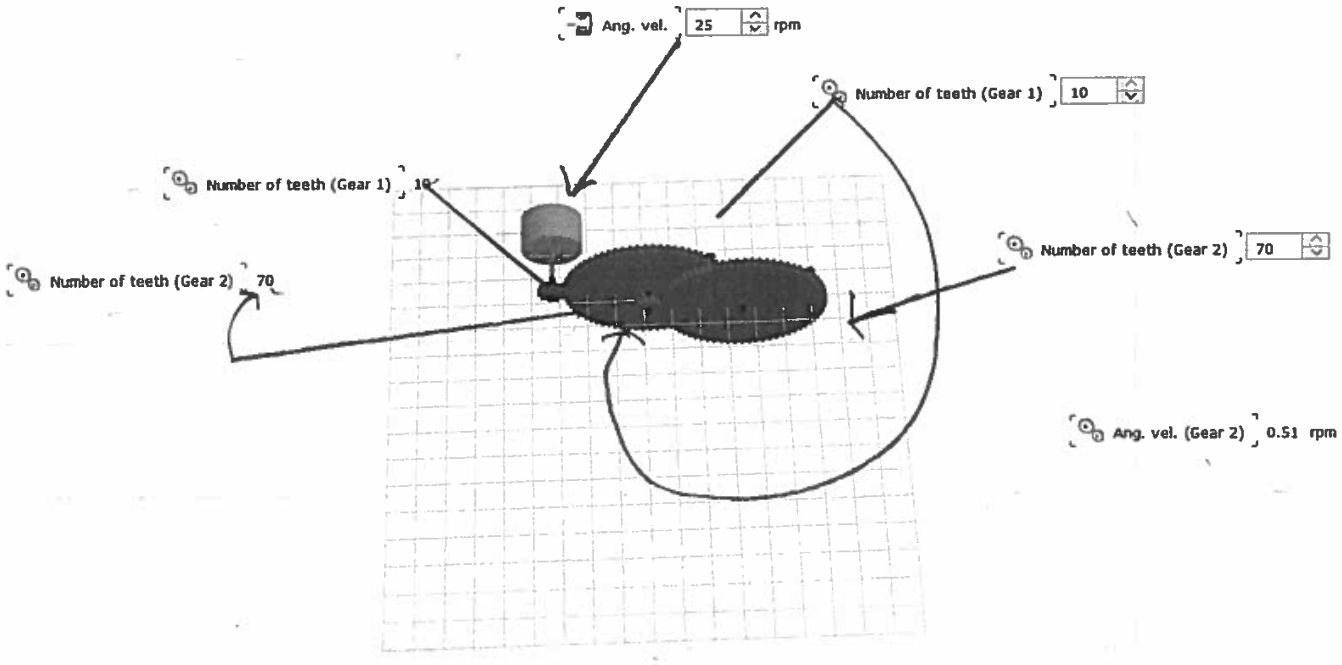
Improvement	I would like to improve the speed of which the motor is slowing down because it takes a long time for it to slow down and I would like to add an emergency stop button in the middle of the flow chart just in case of any accidents while the circuit or flowchart is at its processing stage

(4 marks)

TASK 2a



Task 2b


Ang. vel. 25 rpm
Number of teeth (Gear 1) 10
Number of teeth (Gear 1) 10
Number of teeth (Gear 2) 70
Number of teeth (Gear 2) 70
Ang. vel. (Gear 2) 0.51 rpm

Worksheet 2c

Planned test	Input speed	Output speed	Required velocity ratio	Actual velocity ratio
Measure the input speed and output speed of the gear system and calculate the actual velocity ratio.	25 Revs min-1	0.51 Revs min-1	At least 40 (40 : 1)	49:1

(2 marks)

Worksheet 2d

Specification point	Met? Y or N	Description
i	y	The output speed was reduced to a factor of 49
ii	y	This circuit should be able to function/operate well underneath the stage in compact space

(2 marks)

Worksheet 3a

Specification point	Planned test	Expected result
i	Push up button and turn on the safety guard so no accidents can occur	The piston should outstroke and the stage will move up.
	When the stage is down, push the up button without the safety guard being activated.	The piston would not function (outstroke) therefore the stage wont lower/descend
ii	Push/turn on the down button one or the down button two	The piston should instroke and the stage will move down.
	When the stage is up, activate down button 2 on ground level.	The piston will therefore instroke making the stage descend/lower

(4 marks)

Worksheet 3b

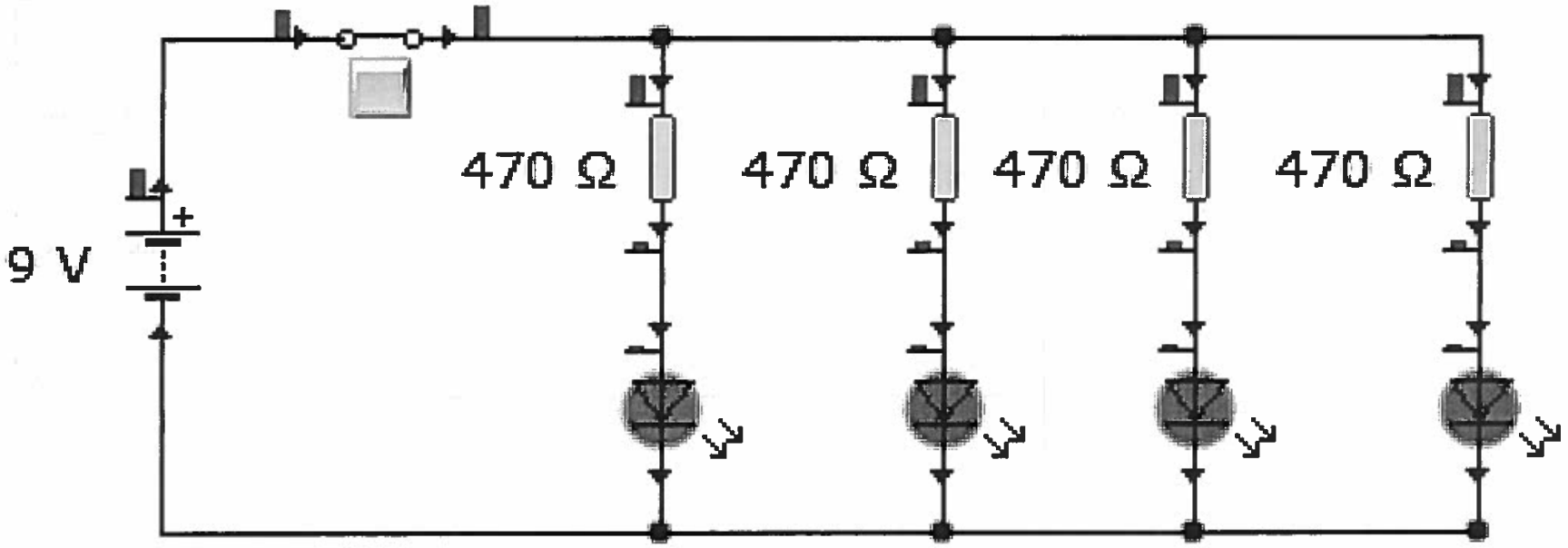
Improvement	I created AND instead of OR so that the piston can instroke if both buttons are pushed at the same time so no accidents can happed
Justification	I did this because I wanted ensure it was safe. AND is the safest pneumatic circuit to use. This circuit will prevent any accidents if any pushes the button by mistake. So 2 people have to operate this circuit and push both buttons at the same time to start the circuits
Components required	• Main air source (pump) • T-piece • tubes • Shuttle valve • 3/2 vale with push button • 3/2 vale with lever • Single acting cylinder piston

(3 marks)


Task 3c

Task 4

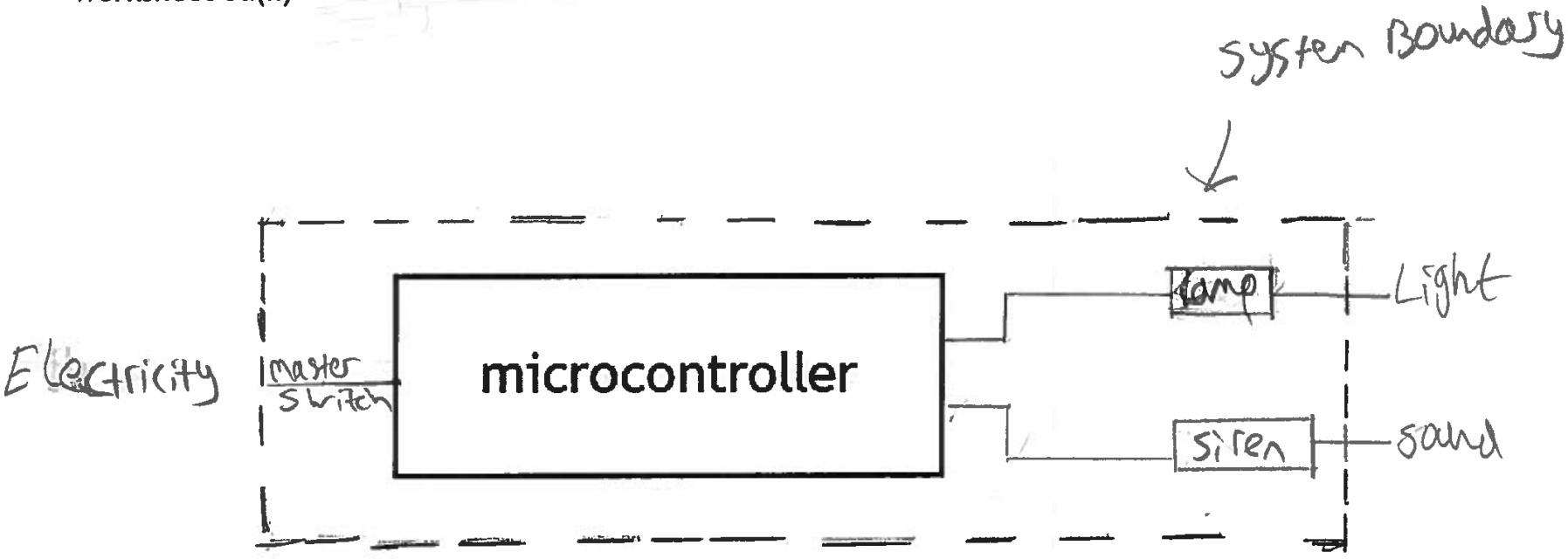
Worksheet 4



Worksheet 5a(i)·

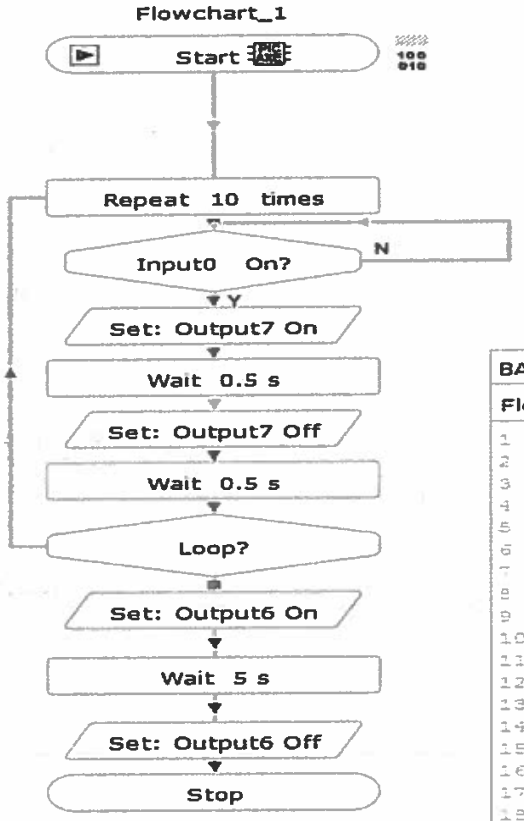
(2 marks)

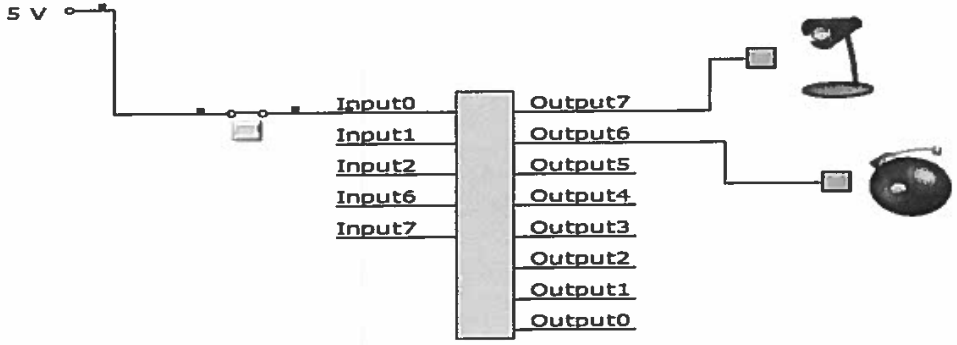
Worksheet 5a(ii)



(5 marks)

Worksheet 5b (4 marks) -





BASIC Viewer

Flowchart_1

```
1  symbol loop1 = b0
2
3  init:      let dirsB = 255
4  main:
5     let loop1 = 10
6     do
7  label0:
8        if Input0 is On then label1
9        goto label0
10 label1:
11       Switch on 7
12       pause 500
13       Switch off 7
14       pause 500
15       let loop1 = loop1 - 1
16    loop while loop1 > 0
17    Switch on 6
18    pause 5000
19    Switch off 6
20    end
21
```