Version 1.0: 0708

ASSESSMENT and QUALIFICATIONS ALLIANCE

General Certificate of Secondary Education

Electronics 3432

Tier F Foundation

Mark Scheme

2008 examination – June series

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for the standardisation meeting each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting they are required to refer these to the Principal Examiner.

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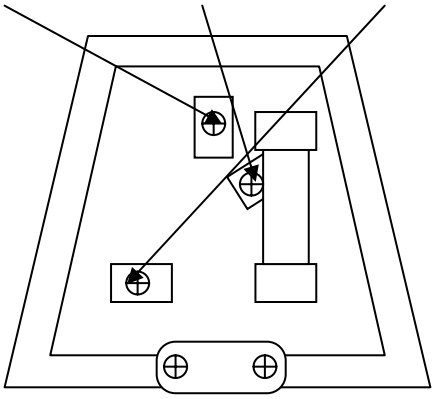
Dr Michael Cresswell Director General

1 (a) blue✓
green✓ and yellow✓
brown✓

(b) earth✓ live✓ neutral✓



(c) earth pin✓
fuse✓
cable grip✓ (any order)

Total – 10

2

resistor symbol✓	passive✓
bipolar transistor symbol✓	active✓
diode symbol✓	passive✓
MOSFET symbol✓	active✓
capacitor symbol✓	passive✓

Total – 10

3 (a) (i) light sensor✓

(ii) lamp✓

(iii) comparator✓

(b) (i) comparator✓

(ii) light sensor✓

(iii) monostable✓

(c) comparator✓ monostable✓ MOSFET✓ lamp✓ time✓

OR light sensor✓ comparator✓ monostable✓ driver✓
(4 max, -1 per error)

Total – 10

4 (a) (i) two inputs labelled A and B✓ OR gate symbol✓
output labelled Q✓

(ii)

A	B	Q
0	0	**0**✓
0	1	**1**✓
1	0	**1**✓
1	1	**1**✓

(b) (i) AND gate✓

(ii) high✓ high✓

Total – 10

5 (a) (i) transistor, or MOSFET, or (three terminal) regulator IC✓
switching or regulating as appropriate to above✓

(ii) Collector✓ Base✓ Emitter✓, or Drain✓Gate✓ Source✓,
or i/p✓ com✓ o/p✓ as appropriate to above✓

(b) (i) resistor✓
limits current✓

(ii) 22✓

(iii) 3W✓

(iv) 5%✓

Total – 10

6 (a) (i) af amplifier✓

(ii) demodulator✓

(iii) tuned circuit✓

(iv) loudspeaker✓

(v) aerial✓

(b) integrated circuit✓

(c) (i) increases✓

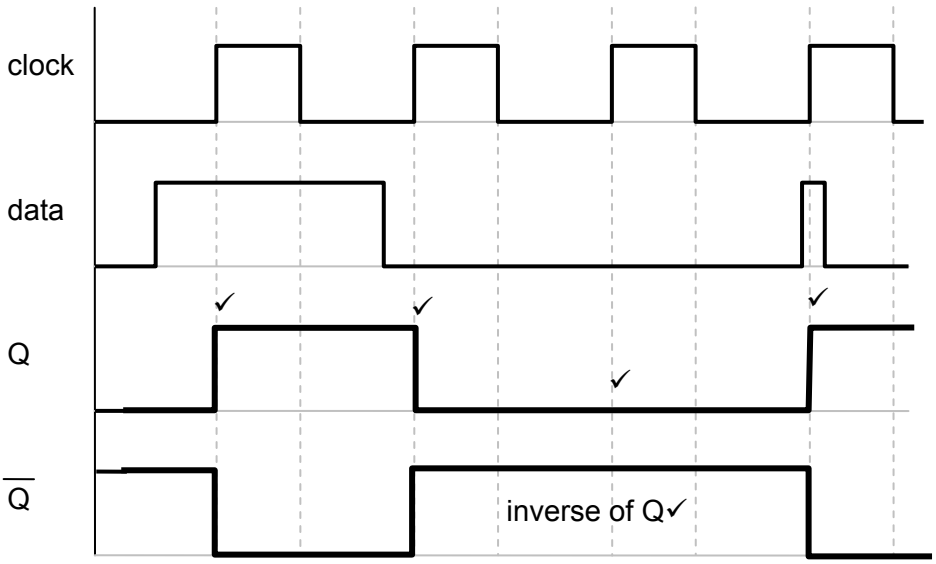
(ii) stays the same✓

(iii) increases✓

(iv) increases✓

Total – 10

7 (a)



(b) (i) resistor✓

(ii) 3.8V✓

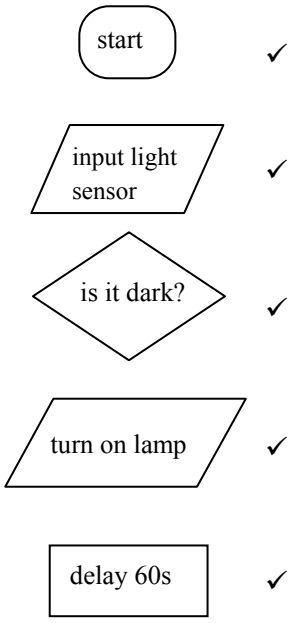
(iii) 380Ω✓

(iv) 390Ω✓

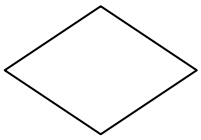
(v) 38mW✓

Total – 10

8 (a)



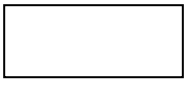
✓
✓
✓
✓
✓

(b) (i) decision box  ✓

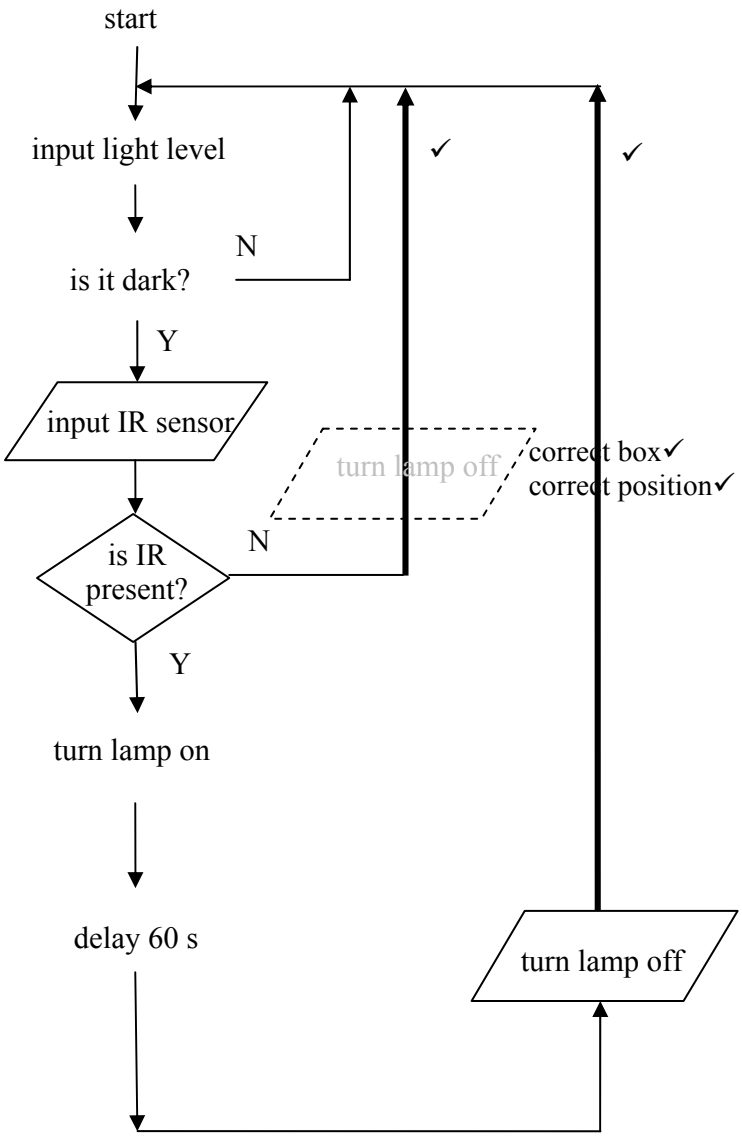
input box  ✓

a loop is any line that returns to a point earlier in the flow chart✓

output box  ✓

process box  ✓

(b) (ii) & (iii)



(c) light level is inputted, is dark detected? ✓
if yes, is IR detected? ✓
if yes turn on lamp✓
wait 60s before repeat✓

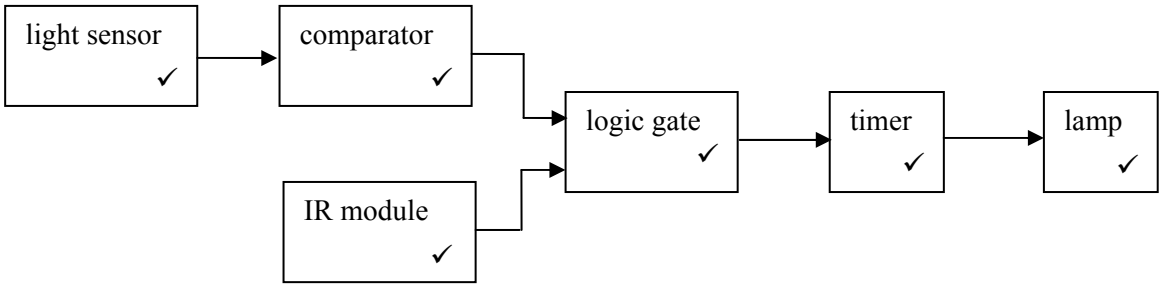
(d) (i) turn off lamp occurs after 60s delay, then switches on again✓

(ii) "turn off lamp" ✓

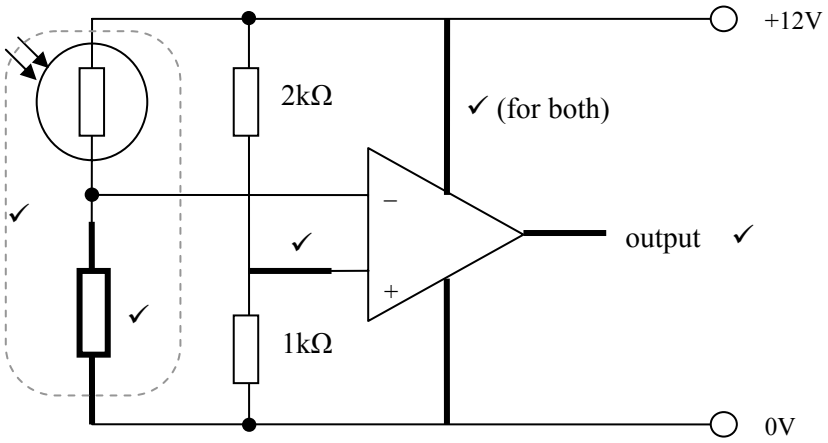
(iii) on diagram above

Total – 20

9 (a)



(b) (i) & (iii)



(ii) 4V✓

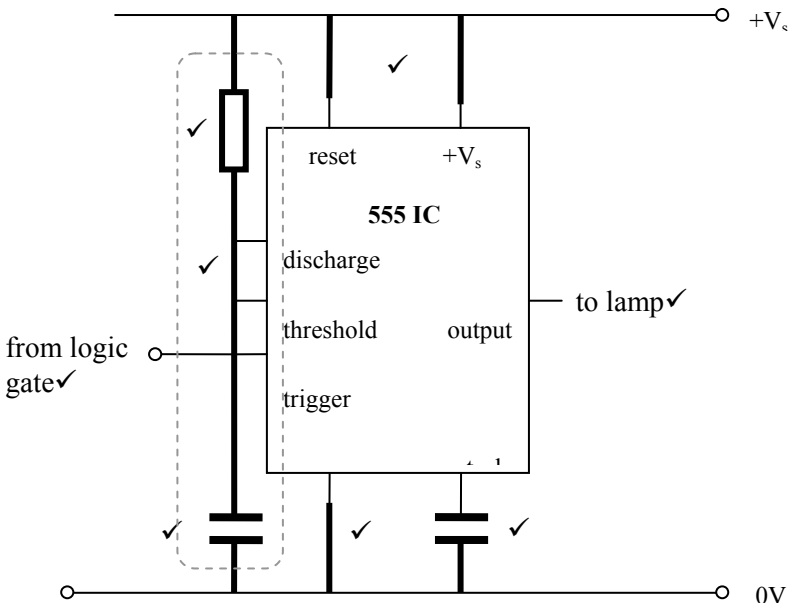
(iv) 100kΩ✓

(c) (i)

light sensor	IR module	output
0	0	**1**✓
0	1	**1**✓
1	0	**1**✓
1	1	**0**✓

(ii) NAND✓

(d) (i) & (ii)
1 mark for each correct component in ring✓✓



(e) (i) relay✓

(ii) diode✓

Total – 30

Paper Total – 120