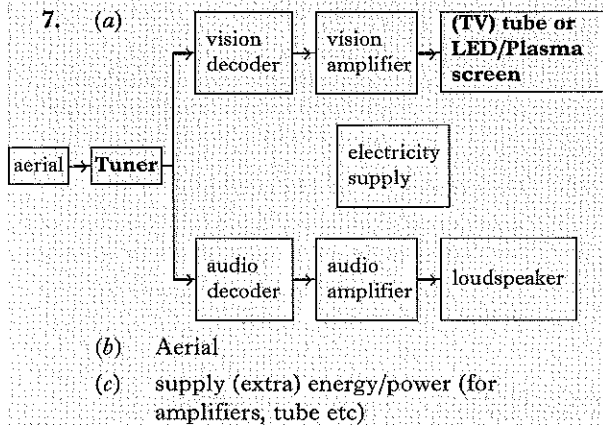


Pocket answer section for SQA General Physics 2000 to 2004

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Physics General Level 2000

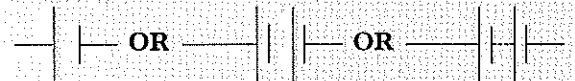
1. B 2. A
3. D 4. E
5. (a) FM radio **or** air traffic control
(b) 300 to 3000 megahertz
6. (a) (i) Sound (to) electrical
(ii) Electrical (to) sound
(b) (i) 3×10^8 metres per second
(ii) They use (radio) waves
which do not need a medium
- (c) Public announcement system:
Heard by all (at once)
Two way radios:
Private
or portable/mobile/small
or no cables
or goes further
or allows 2 people to communicate



8. Any **two** from:

| <i>Hazard</i> | <i>Reason it is dangerous</i> |
|---------------------------------------|---|
| Use of multi-adaptors | Risk of overheating or current too large |
| Taped cable/exposed wire frayed cable | Damaged cables could short/cause fire |
| Inadequate guard on fire | Risk of electrocution |
| Flexes trailing | Risk of tripping/pulling cables |
| Use of appliance in bathroom | Risk of shock near water |

9. (a) $I = 50$ milliamperes
(b) (i)



- (ii) (A) 230 volts
(B) Transformer
(iii) Mains supply: ac current/charges (constantly) change(s) direction
Battery supply: dc current/charges (always) move(s) in same direction
or one terminal stays negative

10. (a) Bell: Gathers sound (from patient's body)
Rubber tubing: Transmits sound (from patient to doctor)
Earpieces: Transfer patient's sound clearly **or** excludes external sounds to doctor's ears
(b) To allow good pick up of patient's sounds **or** remove external sounds
11. (a) laser (light) (b) ultraviolet
(c) X-rays

12. (a)

| <i>Device</i> | <i>Component</i> |
|------------------------------------|------------------|
| Automatic night light | LDR |
| Automatic fire alarm | thermistor |
| Time delay for pedestrian crossing | capacitor |

- (b) (i) transistor (ii) switch

Physics General Level 2000 cont.

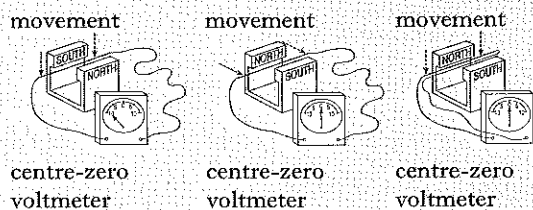
12. (c) To reduce the current through the LED
 or to reduce the voltage across the LED
 or to protect the LED
13. (a) Measure the length of card (using the ruler)— l
 Note time for card to pass through light gate on electronic timer— t
 Use relationship $v = \frac{l}{t}$
- (b) $a = 0.4$ metres per second per second
- (c) NOT CORRECT: proportional uncertainty in stopwatch time is greater
 or because of reaction time
 IS CORRECT: card is slower so electronic timer reading is greater so less error in v
14. (a) $W = 200\,000$ newtons
 (if 9.8 for $\rightarrow 196\,000$ newtons)
- (b) constant
 steady } speed/velocity
 uniform }
- or no acceleration
- (c) (i) $E_p = 60\,000\,000$ joules
 ($g = 9.8$,
 answer $58\,800\,000$ joules)
- (ii) $P = 125$ kilowatts
 ($g = 9.8$,
 answer $122\,500$ watts)
- (iii) Energy is "lost" in friction
 or (extra) energy is needed to accelerate at start
 or (extra) energy is transformed to heat (and sound)

15. (a)

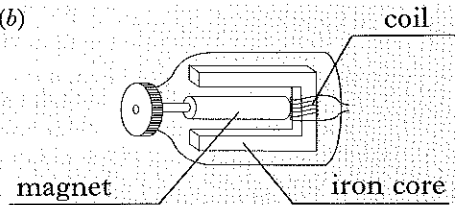
| <i>Fossil fuels</i> | <i>Other energy sources</i> |
|---------------------|-----------------------------|
| gas | nuclear |
| coal | hydroelectric |
| oil | biomass |

- (b) 74(%)
- (c) Fossil fuels running out/pollution (of environment)
- (d) Any **one** from: wind/wave/
 solar/tidal/geothermal

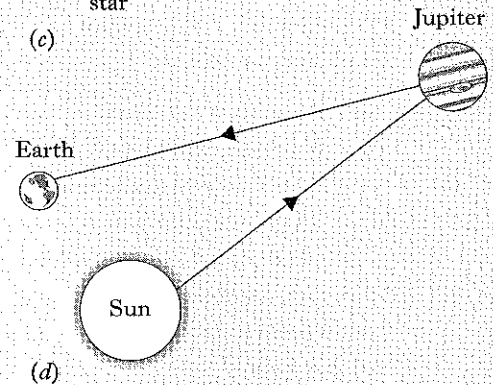
16. (a)



16. (b)



17. (a) 9 (years)
 (b) planet
 galaxy
 star
 (c)



(d)

| <i>Nearest to Earth</i> | \longrightarrow | <i>Furthest from Earth</i> |
|-------------------------|-------------------|----------------------------|
| Sun | Sirius | Edge of our galaxy |

- (e) (i) (triangular) prism
 (ii) (information about the) elements/substances/atoms/gas/ (surface) temperature/distance/red shift/velocity/planets/age
18. Both stones follow a **curved** path.
 Ignoring air resistance, the stones have the same **acceleration** because of the **force of gravity**.
 It is found that **neither** stone reaches the ground first.