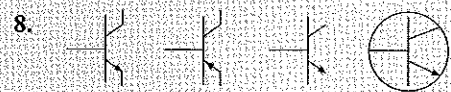


### Physics General Level 1999

1. E                      2. B                      3. E

4. C                      5. B                      6. C

7. increases



9. (a) (visible) light

(b) speed

10. (a) speed of light is greater than the speed of sound

(b) 510 metres

11. (a)  $v = 12$  (metres per second)

(b)  $f = 0.4$  (hertz)

(c)  $\lambda = 30$  metres

(d) *amplitude* = 0.5 metre

12. (a)

<i>Pin</i>	<i>Name of wire</i>	<i>Colour of insulation</i>
P	neutral	blue
Q	earth	green and yellow
R	live	brown

(b) (i) join probes together

lamp will light

(ii) pin Q

12. (b) (iii) connect one probe to metal casing  
 one probe to pin Q  
 (if the) lamp lights (there is no break)
13. (a)  $S_1$  and  $S_4$   
 (b) (i)  $I = 0.75$  ampere  
 (ii)  $I_{TOTAL} = 2.25$  amperes  
 (c) less heat is produced in a fluorescent lamp so more (input) energy is converted to light
14. (a) noise levels above 80 decibels can cause deafness  
 (b) this is the upper limit (of human hearing)  
 (c) Z  
 only protector to reduce noise level below 80 decibels  
 over the whole range of human hearing

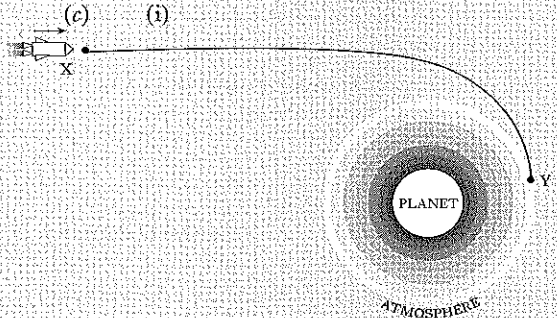
15. (a)

	Logic level at X	Logic level at Y
Cup present	1	0
Cup absent	0	1

- (b) (i) AND  
 (ii)
- | P | Q | Output |
|---|---|--------|
| 0 | 0 | 0      |
| 0 | 1 | 0      |
| 1 | 0 | 0      |
| 1 | 1 | 1      |
- (c) to enable and disable the system

16. (a)  $V_{out} = 10$  volts  
 (b) 1000 hertz
17. (a) equal (b) streamlining  
 (c)  $W = 120\,000$  neutrons
18. (a) (i)  $E_p = 4800$  joules  
 (ii)  $P = 400$  watts  
 (b) (i) runner gets tired  
 (ii) the mass of runner in group X is greater  
 although the heights are the same
19. (a) (i)  $P_{out} = 21\,600$  kilowatts  
 (ii) % supplied = 20 %  
 (b) (i) solar or tidal or wave or geothermal  
 (ii) oil or gas or peat or uranium or nuclear or petrol or petroleum or diesel

20. (a)  $E_h = 422\,400$  joules  
 (b) (i)  $t = 176$  seconds  
 (= 2 minutes 56 seconds)  
 (ii) heat transferred to body of fryer or to surroundings
21. (a) it accelerates or it speeds up or it slows down or it changes direction  
 (b) travelling at a constant speed in a straight line  
 because no (unbalanced) forces are acting



- (ii) reduces speed or slows down or decelerates  
 heats up or temperature increases
22. The diagram shows our **solar system**. At the centre is the Sun. The Sun is a gigantic ball of gas producing energy by nuclear reactions. The Earth is a **planet** which orbits the Sun. The Earth has one natural satellite orbiting around it, called the **Moon**. The Sun is an example of a **star**. Millions of these bodies like our Sun are found in a **galaxy**. All of space is known as the **universe**.