

Name of the Student: _____

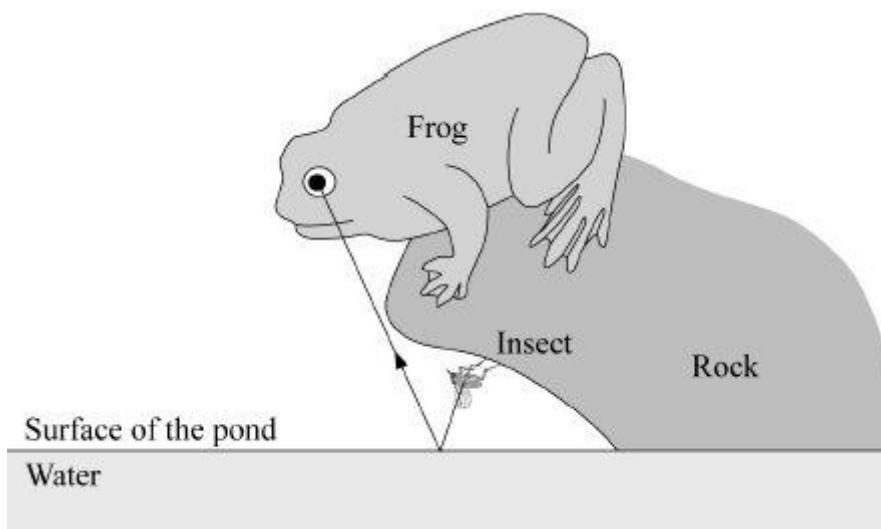
Max. Marks : 22 Marks

Time : 22 Minutes

Mark Schemes

Q1.

- (a) (i) plane
accept any unambiguous indication 1
- (ii) inverted 1
- virtual
accept any unambiguous indication 1
- (b) reflection takes place at the surface of the pond and angle of incidence = angle of reflection
as judged by eye 1
- reflected ray is a straight line to frog's eye through the air 1
- correct direction arrow **either** from insect **or** to frog's eye
only one arrow essential but
*do **not** accept if either arrow contradicted example of a fully correct response*



1

[6]

Q2.

- (a) (i) 25 (%)
*do **not** accept ¼* 1
- (ii) increases 1
- (b) tick (✓) in top and bottom box
both required 1
- (c) SHINY surfaces are good reflectors of infra-red radiation
accept white for shiny
- or** black surfaces are POOR reflectors of infra-red radiation
accept bad for poor
accept insertion of 'not' before 'good' in statement
- or** black surfaces are good EMITTERS of infra-red radiation
- or** black surfaces are good ABSORBERS of infra red radiation 1

[4]**Q3.**

- (a) converging
or convex 1
- (b) (principal) focus
or focal point 1
- (c) **either** (×)1.5 **or** (×)1½ **or** 150%
*unambiguous evidence of appropriate measurements for **1** mark only*
*eg 4 and 6 **or** 8 and 12 **or** 0.8 and 1.2* 2
- (d) real rays cross to form it / formed at the intersection of real rays
accept 'image on the opposite side of the lens to the object'
accept 'can be put onto a screen' 1

[5]**Q4.**

- (a) (i) **A, C and D**
any order but all three required and no others 1
- (ii) **D and E**
either order but both required and no others 1
- (b) (i) 20000 (Hz) to 20 (Hz)

accept '19980 (Hz)'

or vice-versa

1

- (ii) frequency (of dog whistle) too high (for humans to hear) / frequency above 20000 Hz

accept 'it is ultrasound'

accept 'sound from the whistle is ultrasonic'

1

- (c) (i) substance

1

reflection

correct order essential

1

- (ii) detector

1

[7]