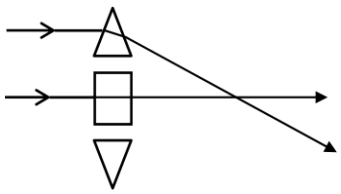
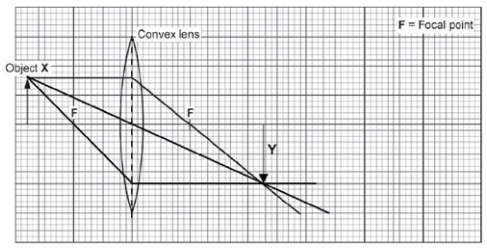
Mark scheme – Wave Interaction (F)

Question			Answer/Indicative content	Marks	Guidance
1			**A** ✓	1 (AO2.2)	
			Total	**1**	
2			**C** ✓	1 (AO1.2)	**Examiner's Comments** This question was answered correctly by the majority of the candidates. A small number of candidates opted for D
			Total	**1**	
3	a		Black ✓ **AND** **Any one from:** Black because blue light absorbed by red paper ✓ Black because red paper only reflects red light ✓ Black because red paper absorbs all colours except red ✓ Black because no light reflected from paper ✓	2 (AO2×2.2)	**ALLOW** dark without any colour **Examiner's Comments** Few candidates realised that the red paper would appear black in blue light. Candidates often thought that the red paper would look purple. Candidates that did state that the red paper appeared black and often reasoned that the red paper would absorb all the other colours. **AfL** Candidates should be encouraged to understand the adding and subtraction of colours and be able to explain light being absorbed at surfaces.
	b	i	Ray from prism: straight line (by eye) towards focal point ✓ Ray from block: continues straight ✓	2 (AO 2x1.2)	**IGNORE** ray in prism **IGNORE** other rays  **Examiner's Comments** This question required candidates to use a ruler to draw straight lines. A number of candidates did not have a continuous

					straight line passing through the centre of the block. Candidates should be encouraged to read the question carefully. In this case there was no need to draw rays for the lower triangular block.
		ii	(in long sight) rays focused <u>behind</u> retina / eye (ball) / AW ✓ Convex lens refracts light inwards / focuses light on the retina / AW ✓	2 (AO 2x1.1)	**ALLOW** near object focussed <u>behind</u> the retina / eye (ball) or eye (ball) is too short **ALLOW** converges / meet for focuses **<u>Examiner's Comments</u>** The explanations written by candidates were often vague. Candidates were expected to explain the meaning of long-sighted vision and then explain how the use of convex lens would focus the image on the retina.
			Total	**6**	
4	a		A (red) filter is needed ✓ (The red filter) absorbs all colours/frequencies/wavelengths except red (light) ✓	2(AO2 × 2.1)	**ALLOW** The red filter absorbs blue and green (light/frequency/wavelength) (but not red) **ALLOW** the filter transmits red light <u>only</u> / <u>only</u> lets red (light/frequency/wavelength) through
	b		**Either** ray (centre ray or focal ray) drawn as indicated below ✓  Image upside down **AND** in the correct place ✓	2 (AO2 × 2.2)	**ALLOW** just one ray drawn If no rays drawn (or incorrect) but image is inverted, slightly larger and roughly in the correct place then award this mark **IGNORE** position of Y (if arrow is in the correct place) **ALLOW** tolerance of +/- 2 squares for image position
			Total	**4**	