May 16 Paper 2B.

1ai, ii, iii, iv See paper 2A No. 1 ai, ii, iii.

a v, vi See paper 2A No. 1 a iv, v

b i, ii, iii. See paper 2A No. 1 b i, ii, iii

ci. convection.

ii. energy, expand, decreases, sinks, lighter, temperature.

ii, iv See paper 2A No 1c iii, iv.

2a. Scalar : mass, speed, distance
Vector : force, velocity, displacement.

bi. $u = 0$ $t = 12s$.
$v = 20 m/s$.

ii No. since it continues to travel at the same speed of 20 m/s.

iii. See pp. 2A No. 2 b ii)

c. before, forces

d.i. See pp. 2A No. 2 di

diii. int mom of $\theta = 0$ (since at rest)

diii. total mom after collision = total mom. bef coll. = $0 + 42 = 42\ kg\,m/s$

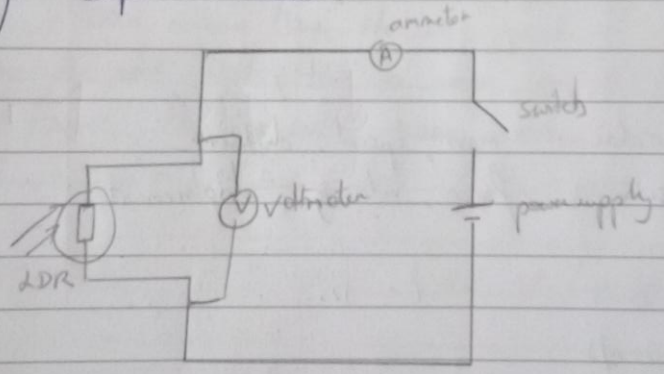
div. mom. after = $mv = 24 \times V = 42$

$V = 42/24 = 1.75\ m/s$.

dv. After a few seconds, A & B stop moving as by friction their energy is transferred into heat + sound and eventually all their KE is changed to 0.

3a. Light Dependent Resistor.

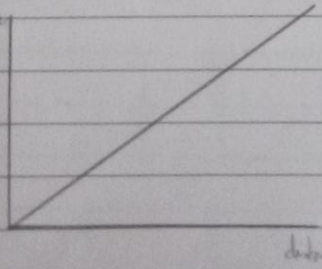
b.



c. cardboard tube

d. 3, 4, 2, 1

e



F. See Pg. 2A No. bvi

g i. T.R. = 5+5 = 10Ω.

ii, iii See pp 2A No. 3c i, ii

iv. I in circuit would be more since in parallel the total R would be less.

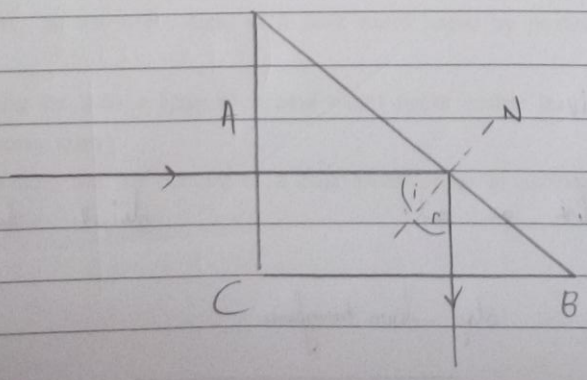
4ai Dispersion is the seperation of white light into the 7 colours.

ii. the 7 seven colours have the same speed of light in air, hence they can exist light, but as soon as they enter the glass block/prism, they seperate because each colour has a different speed in glass ∴ white light is dispersed

iii. γ radiation + X-rays (UV, IR, (visible light), radiowaves)

iv. γ radiation to treat cancer
X-rays to take images of bones.

b. i, ii



b iii. See paper 2A No 4 b iii.

c i (image should form 6cm away from lens on same side of O)

ii. virtual

iii. 6cm boxes → 12 cm away from lens since each box is 20 mm.

iv. $\text{mag} = \frac{h_i}{h_o} = \frac{d_i}{d_o} = \frac{120}{30} = 4$

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5 a i, ii. See paper 2A No. 5 ai, ii

b i. Magnet 4. repels magnet 5, like poles.

ii. See paper 2A No. 5 bii.

c i. 5, 3, 2, 1, 4

c ii A: South , B: North

c iii: steel

c iv. see paper 2A, 5 c iv.

d i. magnetic field lines are cut. diii, iv. See paper 2A No. 5 d iii, iv.

ii. 1200 ÷ 60 ∴ step-down transformer
