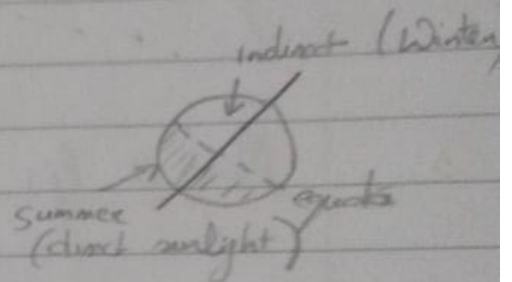
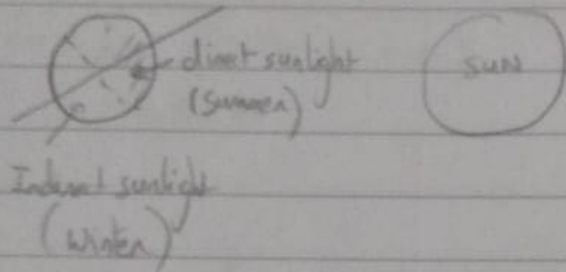


May 18 Pp. 1 No 1

a i) 24 hrs

ii) $365 \frac{1}{4}$ days

b



→ tilt of Earth remains always in same direction no matter position of Earth in relation with Sun.

→ the hemisphere in which there is direct sunlight → summer

→ " " " " " " indirect sunlight → winter

c i) Jupiter or Saturn.

c ii) it has a nearly round shape
it has cleared the neighbourhood around its orbit.

May 18 p. 1 No. 2

2 a) distance travelled = area under graph = $l \times b = 27 \times 1.7 = 45.9 \text{ m}$.

ii. BC, since steepest

iii. distance = area = $\frac{1}{2} b \times h = \frac{1}{2} (6.2 \times 33) = 102.3 \text{ m}$

iv. condition of road if slippery or not. If slippery it takes longer to come to rest (there are others such as brakes / mass / speed)

bi. momentum = $mV = 1024 \times 15.6 = 16,910 \text{ kg m/s}$.

ii. $Ft = mV - mu$

$$F(0.2) = (16910 \cdot 4 - 0)$$

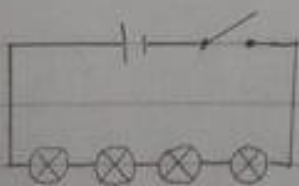
$$F = -84,552 \text{ N}$$

May 18 p. 1 No. 4

4a



b.



c) In series:

$$R_T = R_1 + R_2 + R_3 + R_4$$

$$R_T = 24 \times 4$$

$$R_T = 96 \Omega$$

d. Resistors in parallel

$$\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2}$$

$$\frac{1}{R_T} = \frac{1}{96} + \frac{1}{44} = 0.0331$$

$$R_T = 30.2 \Omega$$

e) $V_T \text{ for bulbs} = 0.3 \times 4 = 1.2 \text{ V}$
 $\therefore V_{\text{source}} = 1.2 \text{ V}$

May 13 P1 No 3

a. mass per unit volume, it is constant for 1 material

b. $V = l \times b \times h = 0.03 \times 0.04 \times 0.06 = 0.000072 \text{ m}^3$

c. $m = 7g = 0.007 \text{ kg}$ $\rho = \frac{m}{V} = \frac{0.007}{0.000072}$
 $V = ?$ $\rho = 97 \text{ kg/m}^3$

d. ρ remains the same, since material remains the same

e. float since ρ of wood is less than ρ of water

May 13 P1 No 5

a. on graph paper

b. $m = \frac{\Delta y}{\Delta x} = \frac{2.5 - 1}{0.005 - 0.002} = \frac{1.5}{0.003} = 500 \text{ V/A} = 500 \Omega$
(0.002, 1) (0.005, 2.5)

c. $V = 2.7$, from graph $I = 0.0054 \text{ A}$

d. (not done yet)

May 12, p 1 No. 6

a. $\beta \rightarrow$ - only charged, electrons
 $\gamma \rightarrow$ a wave, causes no change

b. α

c. h. life $_{I-131}$: 8 days. h. life $_{Tech-99}$ = 6 hrs

i) so that the radioactivity decays, and ionization damage is reduced. + eventually becomes insignificant

ii) since half life of I-131 is 8 days it takes much longer for the radiation to become negligible. Below you can understand better:

I-131 (8 days) \rightarrow 100%	Tech-99 100%
50%	6 hrs \rightarrow 50%
25%	6 hrs \rightarrow 25%
12.5%	6 hrs \rightarrow 12.5%
6.25%	6 hrs \rightarrow 6.25%

As can be seen, to reach the same % I-131 takes 32 days, whereas tech-99 takes 24 hrs (1 day).

d. in industry to detect leakages, to sterilize medical equipment in industry for quality control.

May 17 p. 1 No 7

a. Work = force multiplied by distance, \therefore a force causing movement while using energy

b. $s = 3.2 \text{ m}$ $W \cdot D = F \cdot s = 3.2 \times 700 = 2240 \text{ J}$
 $F = 700 \text{ N}$

c. chemical energy \rightarrow kinetic energy.

di. $m = 45 \text{ kg}$ $PE = mgh = 45 \times 10 \times 1.1 = 495 \text{ J}$
 $s = 1.1 \text{ m}$

ii. $t = 3 \text{ s}$ $P = \frac{E}{t} = \frac{495}{3} = 165 \text{ W}$
 $P = ?$

iii. $PE_{\text{lost}} = KE_{\text{gained}}$
 $495 = \frac{1}{2} m v^2$
 $495 = \frac{1}{2} (45) v^2$
 $\frac{495 \times 2}{45} = v^2$

$v = \sqrt{22} = 4.7 \text{ m/s}$

Energy cannot be created nor destroyed but it can be transferred from one form to another.

e. renewable : hydroelectric non-renewable : coal

May 18 Q. 1 No. 3.

a. magnetic, iron, steel



c. X is either not magnetised or it is the S of a magnet, since attraction occurred.

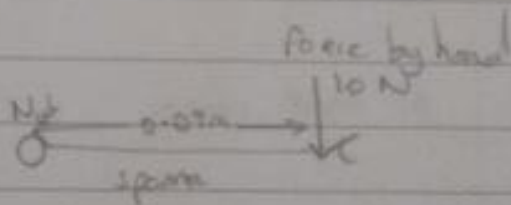
ii. Now move the South end of a magnet towards X. IF X attracts, then X must be a non-magnetised magnetic material.

IF X repels, then body X is a magnet's South.
 since only repulsion on pole a magnet.

May 18 Q. 1 No. 2

a. turning effect of a force

b. i. $s = 9\text{cm} = 0.09\text{m}$
 $F = 10\text{N}$



ii. $\text{Moment} = F \times s = 10 \times 0.09 = 0.9\text{Nm}$

c. i. since force decreased (halved), then he needs to apply a smaller force at a distance further away from pivot because moment of force and moment of distance.
 (finger > span)

cii. Ex. if $s = 0.18 \text{ m}$ (double the distance)
moment needs to remain same, $\therefore 0.9 \text{ Nm}$
 $\therefore F = ?$

$$M_{\text{rem}} = F \times s$$

$$0.9 = 0.18 \times F$$

$$F = 0.9 / 0.18 = 5 \text{ N} \quad (\text{which is half the original force applied}).$$

May 17 Pp. 1 No. 12

10 a. A = X-rays C = Infra Red
B = UV (ultraviolet)

b. all transverse waves, all carry energy from one point to another, ... (any of the 8 properties)

c. Radio waves.

d. to treat cancer

e. $\lambda = 0.0125 \text{ m}$

$$v = 3 \times 10^8 \text{ m/s}$$

$$f = ?$$

$$v = f \lambda$$

$$3 \times 10^8 = f \times 0.0125$$

$$f = 3 \times 10^8 / 0.0125$$

$$f = 24,000,000,000 \text{ Hz}$$

ii. the ball gained energy as it moves faster.