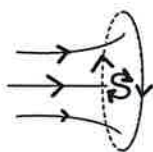# ICSE 2025 SPECIMEN
DRAFT MARKING SCHEME – PHYSICS (SCIENCE PAPER 1)

Question 1 [1x15]

(i) (a) positive

(ii) (c) momentum

(iii) (b) chemical to heat to mechanical to electrical

(iv) (c) 2

(v) (d) slows down less and refracts less

(vi) (d) total internal reflection

(vii) (b) away from the lens

(viii) (a) both A and R are true and R is the correct explanation of A.

(ix) (b) X will be grave and Y will be shriller
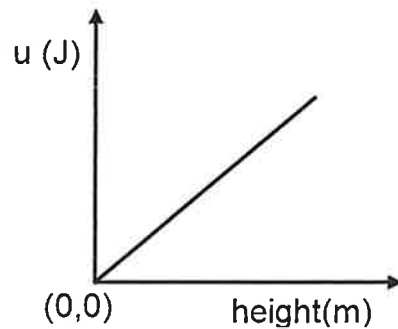
(x) (c) P

(xi) (b) green

(xii) (c)

(xiii) (b) energy needed to raise the temperature of a body by 1°C

(xiv) (c) latent heat of fusion

(xv) (c) protons = 93 , neutrons = 144

Question 2

(i) (a) Class II   [1]

   (b) decreases   [1]

   (c) becomes eight times   [1]

   (d) horse power   [1]

   (e) resistance, resistivity   [1+1]

(ii)   for proper labelling of axis U (J) and h(m) and   [1]

                 for nature of graph   [1]

u (J)

(0,0)   height(m)

(iii)   (a)   ultrasonic waves   [1]

      (b)   they travel long distance without deviation / not easily absorbed by the medium   [1]
OR can be confined to a narrow beam.

Question 3

(i)   (a)   2 images will be formed.   [1]

     (b)   concave lens.   [1]

(ii)   Circuit in A   [1]

In circuit A, metal case is earthed so the person won't get an electric shock but in circuit   [1]
B metal case is not earthed so the circuit will be completed through the body of the person
giving him a shock..

(iii)   (a)   Step down transformer   [1]

      (b)   less than 1   [1]

(iv)   By principle of mixtures   [1]

Heat lost = heat gained

$(m \times c \times \Delta T)_{metal} = (m\, c\, \Delta T)_{water}$ [1]

c' x 75 = 150 x 4.2 x 5

$c' = 42\ J\,K^{-1}$

(v)   (a)   Faraday's first law or principle of electromagnetic induction.   [1]

      (b)   It is used as a back-up for the lifts in tall buildings in case of electricity failure. /   [1]
(any use)

(vi)   (a)   gamma /γ   [1]

      (b)   No.   [1]

(vii) (a) Beta [1]

     (b) E [1]

     (c) Flemings left hand rule [1]

Question 4

(i) (a) Total internal reflection. [1]

     (b) 1. Converge [1]

          2. Diverge [1]

(ii) (a) X < 1.33 [1]

     (b) [1+1]

Reflection	TIR
Takes place in any medium, denser or rarer	Takes place only in a denser medium
Takes place for any angle of incidence.	Takes place only when the angle of incidence is greater than critical angle.

(iii) (a) Different points. [1]

     (b) Ultraviolet radiations [1]

     (c) Sterilization purposes / Detecting purity of gems, eggs/ in producing vitamin D [1]

     (d) Visible or infra-red or microwaves or radio waves. [1]

Question 5

(i) (a) Real, inverted [1]

     (b) $\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$ $\therefore \frac{1}{v} - \frac{1}{-24} = \frac{1}{8}$ [1]

            [1]

          (identifying 'U' and 'f' with correct sign convention)

          $\frac{1}{v} = \frac{3-1}{24}$ $\therefore v = 12 \ cm$ [1]

(ii) (a) Violet shows maximum angle of deviation [1+1]

          red shows minimum angle of deviation.

     (b) Green [1]

(iii)

Sr. No	Description	Label
a.	angle of incidence on the mirror	a
b.	a partially reflected ray in glass slab	U
c.	a critical angle	C
d.	a refracted ray	Q / T
e.	angle of refraction	90 − e

[1x4]

Question 6

(i) (a) Weight of AC < weight of BC [1]

(b) Even though the weights present are the same at both ends the torque arm of B is less than the torque arm of A. [2]

This means the moment of the weight of the rod acts from side B and the C.G. lies beyond 45. Thus, more weight is concentrated between C to B.

(ii) (a) No work is done. [1]

(b) Negative work is done. [1]

(c) Positive work is done. [1]

(iii) (a) $U = mgh = 0.2 \times 10 \times 5 = 10J$ [1]

(b) 10 J [According to Pr. of conservation of energy] [1]

(c) By principle of conservation of energy [1+1]

U at the top = K at the bottom
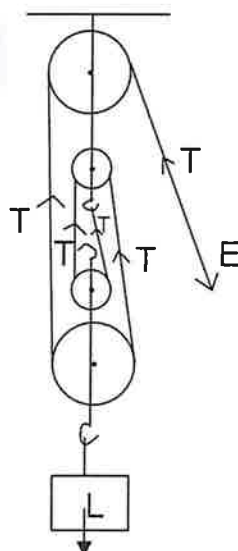
$\therefore 10 = 1/2 \times 0.2 \times v^2$

$\therefore v^2 = 100$

$\therefore v = 10 \text{ m s}^{-1}$

Question 7

(i)

(a) Pulleys drawn correctly with support

Correct connection of tackle, Marking load, effort with correct direction and tension [1+1]

(b) U = mgh = 100×10×5

U = 5000 J [1]

(ii) (a) d = (s×t)/2   ∴d=(336×3)/2 [1+1]

d =168×3=504 m

(b) d=(s×t) / 2 [1]

∴ d = (336×1.5)/2 = 168×1.5 = 252 m away.

(iii) (a) At A [1]

(b) Resonance [1]

(c) The natural frequency of the swing will match the frequency of the force applied by mother this will increase the amplitude. [1+1]

Question 8

(i) (a) Resistance of the tube2 < resistance of the tube 1 [1]

(b) The voltmeter reading for tube 1 is the same as the voltmeter reading for tube 2. [1]

(c) The specific resistance in both the cases is the same. [1]

(ii) (a) At the same place [1]

(b) Isotopes. [1]

(c) 80 [1]

(iii) (a) $R_1 = 5 + 3 = 8\Omega$ $R_2 = \dfrac{8\times2}{8+2}$ [1+1]

$R_2 = 1.6\Omega$ ∴ $R = 1.6 + 0.4 = 2\Omega$

(b) $I = \dfrac{E}{R} = \dfrac{4}{2} = 2A$ [1+1]

$I_{3\Omega} = \dfrac{2\times2}{10} = 0.4A$

Question 9

(i) Heat lost = heat gained [2+1]

m c Δt = m l + m c Δt

∴ 2100 × 4.2 × (75-25) = m × 336 + m × 4.2× (25-0) ---- (each side 1M)

∴2 100 × 4.2 × 50 = m × 4.2 (80+25)

∴2100×50 = 105 x m

∴m = (2100×50) / 105

= (100×50) / 5

∴m = 1000 g

(ii) (a) 150°C - [1]

(b) 150°C to 60°C [1]

(c) Every gram of ice can absorb 336 J heat more than ice-cold water due to its high specific latent heat. [1]

(iii) (a) A : positive and B : Negative [1]

(b) Magnetic field becomes stronger / strength increases/magnetic flux increases /intensity of magnetic field increases or implied. [1]

(c) 1. Interchange the polarity of the terminals of A and B / reversing the direction of the current (through the coil) [1+1]

2. Decreasing the strength of the current through the coil