

PHYSICS FORM 4 MARKING SCHEME

1. Linear Motion Equations (3 mks)

- $v = u + at$

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$$s = ut + \frac{1}{2}at^2$$

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$$v^2 = u^2 + 2as$$

2. Stopping Distance (3 mks)

- Thinking:

$$30 \times 0.3 = 9\text{m}$$

.

- Braking:

$$30(2) + 0.5(-15)(4) = 30\text{m}$$

.

- Total = 39 m.

3. Ticker Timer (3 mks)

- (Calculate acceleration from dot spacing).

4. Bomb Time (2 mks)

- $h = 0.5gt^2 \rightarrow 200 = 5t^2 \rightarrow t = 6.32\text{s}$

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5. Refraction

- (a) Snell's Law:

$$\frac{\sin i}{\sin r} = n$$

. (2 mks)

- (b) TIR Conditions: Denser to rarer;

$$i > c$$

. (2 mks)

- c) Colors: X = Red, Y = Violet. Explanation: Violet deviates most. (2 mks)

6. Machines & Energy

- (a) Effort: 106.67 N. (3 mks)
- (b) Speed: 0.52 m/s. (4 mks)

7. Capacitance

- (a) Factors: Area, Distance, Dielectric. (3 mks)
- (b) Charge: (Calculate based on diagram).
- (c) Distribution: Positive charges on outer surface.

8. Waves

- (a) Reflected waves: Diverge from focal point. (2 mks)
- (b) Deep to shallow: Wavelength decreases. (1 mk)
- (c) Property: Diffraction. (1 mk)

9. Electricity

- (a) Ohm's Law: Current directly proportional to potential difference. (2 mks)
- (b) Verification: Vary rheostat, plot graph. (4 mks)
- Resistors: (i)

$$R_{eff} = 10\Omega$$

. (ii)

$$I_{3\Omega} = 0.267A$$

. (iii)

$$V_{8\Omega} = 3.2V$$

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10. Electromagnetism

- (a) Demagnetization: Withdraw slowly from AC solenoid. (2 mks)
- (b) Graph explanation: Domains align linearly then saturate. (1 mk)

