**232/3**

**PHYSICS**

**PAPER 3**

**MARKING SCHEME**

(f)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Li0 | 15 | 30 | 45 | 60 | 75 |
| Lr0 | 9.0 | 18.0 | 24.0 | 30.0 | 33.0 |
| Sin i0 | 0.2588 | 0.5000 | 0.7071 | 0.8660 | 0.9659 |
| Sin r0 | 0.1564 | 0.3090 | 0.4067 | 0.5000 | 0.5446 |



GRAPH MARKS

 SCALE 1 MK

 AXES 1 MK

PLOTTING 2 MK

LINE 1 MK

TOTAL 5 MKS

g) Gradient = ΔSin i

 ΔSin r

 = 0.9 – 0.2

 0.5 – 0.15√1

 = 0.7

 0.45

 = 1.5556√1

 Equation: sin i = sin r√1

(i) h = sin i / sin r

 = 0.5

 0.33

 = 1.51 (at point X on the graph)

(j) Award 2mkS for the complete ray diagram.

**PART FOUR**

a) v=

b)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Length cm | 70 | 50 | 40 | 30 | 20 | 10 |
| p.d v (v) | 2.4 | 2.3 | 2.2 | 2.1 | 2.0 | 1.8 |
| Current I | 0.18 | 0.21 | 0.25 | 0.29 | 0.32 | 0.38 |

 @1/2

c) graph

d)From the graph

1. e.m.f of one cell

intercept=e.m.f of two cells in series🗸

=2.96V

e.m.f of one cell=

1. Internal resistance of one cell

E=V+Ir=V=-rI+E=gradient =-r

gradient=

internal resistance of one cell

1. When I=0.5A from the graph p.d=1.42V🗸
2. When p.d=1.0V from graph I=0.62A🗸

