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L2–PHYSR

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NZQA

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QUALIFY FOR THE FUTURE WORLD
KIA NOHO TAKATŪ KI TŌ ĀMUA AO!

Level 2 Physics, 2016

9.30 a.m. Tuesday 15 November 2016

RESOURCE SHEET
for 91170, 91171, and 91173

Refer to this sheet to answer the questions in your Question and Answer Booklets.

Check that this sheet is printed on the back.

YOU MAY KEEP THIS SHEET AT THE END OF THE EXAMINATION.

You may find the following formulae useful.

91170 Demonstrate understanding of waves

$$\frac{1}{f}=\frac{1}{d_o}+\frac{1}{d_i} \quad \text{or} \quad s_i s_o = f^2$$

$$m=\frac{d_i}{d_o}=\frac{h_i}{h_o} \quad \text{or} \quad m=\frac{f}{s_o}=\frac{s_i}{f}$$

$$n_1 \sin\theta_1 = n_2 \sin\theta_2 \qquad \frac{n_1}{n_2}=\frac{v_2}{v_1}=\frac{\lambda_2}{\lambda_1}$$

$$v = f\lambda \qquad f=\frac{1}{T} \qquad v=\frac{d}{t}$$

Speed of light in a vacuum $= 3.00\times10^{8}$ m s^{-1}

91171 Demonstrate understanding of mechanics

$$v=\frac{\Delta d}{\Delta t} \qquad a=\frac{\Delta v}{\Delta t} \qquad v_f = v_i + at$$

$$d = v_i t + \frac{1}{2}at^2 \qquad d=\frac{v_i+v_f}{2}t \qquad v_f^{\,2} = v_i^2 + 2ad$$

$$a_c=\frac{v^2}{r}$$

$$F = ma \qquad \tau = Fd \qquad F = -kx$$

$$F_c=\frac{mv^2}{r} \qquad p = mv \qquad \Delta p = F\Delta t$$

$$E_p=\frac{1}{2}kx^2 \qquad E_k=\frac{1}{2}mv^2 \qquad \Delta E_p = mg\Delta h$$

$$W = Fd \qquad P=\frac{W}{t}$$

where needed, use $g = 9.8$ m s^{-2}

91173 Demonstrate understanding of electricity and electromagnetism

$$E=\frac{V}{d} \qquad F = Eq \qquad \Delta E_p = Eqd$$

$$E_k=\frac{1}{2}mv^2$$

$$I=\frac{q}{t} \qquad V=\frac{\Delta E}{q} \qquad V = IR$$

$$P = IV \qquad P=\frac{\Delta E}{t}$$

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

$$F = BIL \qquad F = Bqv \qquad V = BvL$$

Charge on an electron $= -1.6\times10^{-19}$ C

Mass of an electron = 9.11×10^{-31} Kg