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L2–PHYSMR

992608

NZQA

NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

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

Ahupūngao, Kaupae 2, 2015

9.30 i te ata Rātū 17 Whiringa-ā-rangi 2015

PUKA RAUEMI
mō 91170M, 91171M, me 91173M

Tirohia tēnei puka hei whakatutuki i ngā tūmahi o tō Pukapuka Tuhinga, Tūmahi hoki.

Tirohia mēnā e tika ana te raupapatanga o ngā whārangi 2–3 kei roto i tēnei pukapuka, ka mutu, kāore tētahi o aua whārangi i te takoto kau.

KA TAEA TĒNEI PUKA TE PUPURI HEI TE MUTUNGA O TE WHAKAMĀTAUTAU.

Tērā pea e āwhina ēnei ture i a koe.

91170M Te whakaatu māramatanga ki te ngaru

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

$$m = \frac{d_i}{d_o} = \frac{h_i}{h_o} \qquad m = \frac{f}{s_o} = \frac{s_i}{f} \qquad \text{rānei}$$

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

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

Te tere o te aho i rō korehau = 3.00×10^8 m s $^{-1}$

91171M Te whakaatu māramatanga ki te pūhanga manawa

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

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

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

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

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

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

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

paenga porowhita = $2\pi r$

ina hiahiatia, whakamahia g = 9.8 m s^{-2}

91173M Te whakaatu māramatanga ki te hiko me te autō ā-hiko

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

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

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

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

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

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

Te hihiko ki te irahiko = -1.6×10^{-19} C

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

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

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

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

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

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

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

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

circumference of circle $= 2\pi r$

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

English translation of the wording on the front cover

L2–PHYSMR

Level 2 Physics, 2015

9.30 a.m. Tuesday 17 November 2015

RESOURCE SHEET
for 91170, 91171, and 91173

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

Check that this booklet has pages 2–3 in the correct order and that none of these pages is blank.

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