Penyelesaian Lengkap

soalan yang melibatkan pengiraan dalam Kertas 1

PRAKTIS 1

1 550kos/*cos* 66° = 223.7 N
Jawapan/*Answer*: **C**

3 900 – 1 200sin 30° – 180 = 120 N
Jawapan/*Answer*: **B**

7 $F = ma$
$= (10)(0)$
$= 0$ N
Jawapan/*Answer*: **D**

8 $F = ma$
$90 - 40 = (9 + 4)a$
$a = 3.85 \text{ m s}^{-2}$
Jawapan/*Answer*: **A**

9 $\frac{1}{2}kx^2 = \frac{1}{2}mv^2$

$v = \left(\sqrt{\frac{k}{m}}\right)x$

$= \left(\sqrt{\frac{60}{0.03}}\right)\left(\frac{25 - 18}{100}\right)$

$v = 3.13 \text{ m s}^{-1}$
Jawapan/*Answer*: **B**

11 $F = ma$
$3\,000 - 2\,250 = 300a$
$a = 2.5 \text{ m s}^{-2}$
Jawapan/*Answer*: **C**

PRAKTIS 2

3 $F = PA$
$= 200 \times 350$
$= 70\,000$ N
Jawapan/*Answer*: **D**

5 $\frac{F_1}{A_1} = \frac{F_2}{A_2}$

$F_1 = \frac{F_2}{A_2} \times A_1$

$= \frac{2\,500}{3 \times 10^4} \times 300$

$= 25$ N
Jawapan/*Answer*: **A**

PRAKTIS 3

3 $I = \frac{Q}{t}$

$I = \frac{9.0}{(3 \times 60)}$

$I = 0.05$ A
Jawapan/*Answer*: **A**

4 $R = 2 + 2 + 2$
$R = 6\ \Omega$

$I = \frac{V}{R}$

$I = \frac{6}{6}$

$I = 1.0$ A
Jawapan/*Answer*: **D**

7 $E = 2 \times 1.5$
$= 3.0$ V
$r = 2 \times 0.5$
$= 1.0\ \Omega$
$R = 20\ \Omega$
$E = I(R + r)$
$3.0 = I(20 + 1.0)$

$I = \frac{3.0}{21}$

$I = 0.143$ A
Jawapan/*Answer*: **C**

9 **X**
$E = 2 \times 3.0$
$= 6.0$ V
$r = 1.0 + 1.0$
$= 2.0\ \Omega$

$R = \frac{V^2}{P}$

$= \frac{6^2}{3}$

$= 12\ \Omega$
$E = I(R + r)$
$6.0 = I(12 + 2.0)$
$I = 0.43$ A
Y
$E = 3.0$
$r = 1.0$

$R = \frac{V^2}{P}$

$= \frac{6^2}{3}$

$= 12\ \Omega$

$E = I(R + r)$
$3.0 = I(12 + 1.0)$
$I = 0.231$ A
$I \approx 0.24$ A
Jawapan/*Answer*: **B**

10 $E = 15 + 20 + 15 + 20 + 15 + 25$
$E = 110$ kWh
Kos/*Cost* = (100 × RM0.20) + (10 × RM0.23)
= RM20 + RM2.30
= RM22.30
Jawapan/*Answer*: **B**

11 $P = \frac{E}{t}$
$E = Pt$
$E = 500 \times 2 \times 60$
$E = 60\,000$ J
Jawapan/*Answer*: **D**

12 $E = Pt$
$E = \left(\frac{40}{1\,000}\right)(20)$
$E = 0.8$ kWh
Kos/*Cost* = 0.8 × RM0.20
= RM0.16
Jawapan/*Answer*: **A**

PRAKTIS 4

10 $\frac{V_s}{V_p} = \frac{N_s}{N_p}$

$V_s = \frac{N_s V_p}{N_p}$

$I_s V_s = (I_p V_p)(0.8)$

$\frac{I_s}{I_p} = (0.8)\left(\frac{V_p}{V_s}\right)$

$\frac{I_s}{I_p} = (0.8)\left(\frac{V_p}{\frac{N_s V_p}{N_p}}\right)$

$\frac{I_s}{I_p} = (0.8)\left(\frac{V_s N_p}{N_s V_p}\right)$

$\frac{I_s}{I_p} = (0.8)\left(\frac{N_p}{N_s}\right)$

$\frac{I_s}{I_p} = (0.8)\left(\frac{100}{500}\right)$

$\frac{I_s}{I_p} = \frac{4}{25}$

$I_s : I_p = 4 : 25$
Jawapan/*Answer*: **D**

PRAKTIS 5

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

$v = \sqrt{\frac{2eV}{m}}$

$v = \sqrt{\frac{(2)(1.6 \times 10^{-19})(500)}{(9.10 \times 10^{-31})}}$

$v = 1.326 \times 10^7$ m s^{-1}
Jawapan/*Answer*: **B**

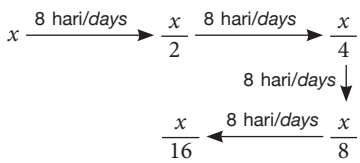
10 $V_2 = V - V_2$
$= 6 - 2.5$
$V_2 = 3.5$ V
Jawapan/*Answer*: **C**

PRAKTIS 6

8 $m = (235.043924 + 1.00867) - (139.921640943 + 93.915361312 + (2 \times 1.00867))$
$= 0.198251745$ u.j.a/*amu*
$= 0.198251745 \times 1.66 \times 10^{-27}$
$= 3.291 \times 10^{-28}$ kg

$E = mc^2$
$= 3.291 \times 10^{-28} \times (3.0 \times 10^8)^2$
$= 2.962 \times 10^{-11}$ J
Jawapan/*Answer*: **A**

9



$\frac{x}{16} = 12$
$x = 192$ g
Jisim yang telah mereput
Mass that has decayed
= 192 − 12
= 180 g
Jawapan/*Answer*: **B**

PRAKTIS 7

3 $K_{\text{maks}/max} = hf - W$
$= 6.63 \times 10^{-34} \times 8.5\ 10^{14} - 2.8 \times 10^{-19}$
$= 2.8 \times 10^{-19}$ J
Jawapan/*Answer*: **C**

4 $\lambda = \dfrac{h}{\sqrt{2meV}}$

$\therefore \lambda \propto \dfrac{1}{\sqrt{V}}$ ..... ①

$\lambda' \propto \dfrac{1}{\sqrt{2V}}$ ..... ②

$\dfrac{②}{①} : \dfrac{\lambda'}{\lambda} = \dfrac{\frac{1}{\sqrt{2V}}}{\frac{1}{\sqrt{V}}}$

$\lambda' = \dfrac{1}{\sqrt{2}}\lambda$

Jawapan/*Answer*: **B**

6 $E = hf$

$E = \dfrac{hc}{\lambda}$

$\lambda = \dfrac{hc}{E}$

$= \dfrac{6.63 \times 10^{-34} \times 3.0 \times 10^{8}}{1.3648 \times 10^{-19}}$

$= 1.46 \times 10^{-6}$ m

Jawapan/*Answer*: **D**

8 $P = nhf$

$= \dfrac{nhc}{\lambda}$

$n = \dfrac{P\lambda}{hc}$

$= \dfrac{110 \times 800 \times 10^{-9}}{6.63 \times 10^{-34} \times 3.0 \times 10^{8}}$

$= 4.42 \times 10^{20}$

Jawapan/*Answer*: **A**

9 $K_{\text{maks/}max} = 12 - 3.8$

$= 8.2$ eV

Jawapan/*Answer*: **C**

KERTAS MODEL SPM

6 $F = ma$

$20 = (m)(50)$

$m = \dfrac{20}{50}$

$m = 0.4$ kg

$m = 0.4 \times 1\,000$

$m = 400$ g

Jawapan/*Answer*: **A**

8 $r_P = 5r_Q$

$\dfrac{T_Q^{\,2}}{T_P^{\,2}} = \dfrac{r_Q^{\,3}}{r_P^{\,3}}$

$T_Q = \sqrt{\dfrac{(T_P^{\,2})(r_Q^{\,3})}{r_P^{\,3}}}$

$= \sqrt{\dfrac{(20^2)(r_Q^{\,3})}{(5r_Q)^3}}$

$= \sqrt{\dfrac{(400)(r_Q^{\,3})}{125r_Q^{\,3}}}$

$T_Q = 1.79$ minggu/*weeks*

Jawapan/*Answer*: **D**

9 $v = \sqrt{\dfrac{2GM}{R}}$

$v = \sqrt{\dfrac{(2)(6.67 \times 10^{-11})(5.97 \times 10^{24})}{(6.37 \times 10^{6})}}$

$v = 1.12 \times 10^{4}$ m s^{-1}

Jawapan/*Answer*: **C**

10 $Pt = mc\theta$

$c = \dfrac{Pt}{m\theta}$

$c = \dfrac{(0.3 \times 10^{3})(3 \times 60)}{(2.5)(34)}$

$c = 635.29$ J kg^{-1} °C^{-1}

Jawapan/*Answer*: **B**

13 $2T = 0.8$

$= \dfrac{0.8}{2}$

$T = 0.4$ s

$f = \dfrac{1}{T}$

$f = \dfrac{1}{0.4}$

$f = 2.50$ Hz

Jawapan/*Answer*: **C**

14 $x = \dfrac{\lambda D}{a}$

$= \dfrac{(6.5 \times 10^{-7})(3)}{(0.5 \times 10^{-3}}$

$x = 3.9 \times 10^{-3}$ m

$y = 3x$

$= (3)(3.9 \times 10^{-3})$

$y = 1.17 \times 10^{-2}$ m

Jawapan/*Answer*: **A**

17 $n_P \sin \theta_P = n_Q \sin \theta_Q$

$$\sin \theta_Q = \frac{n_P \sin \theta_P}{n_Q}$$

$$\sin \theta_Q = \frac{(1.33)\sin 30°}{(1.50)}$$

$$\sin \theta_Q = 0.4433$$

$$\theta_Q = \sin^{-1}(0.4433)$$

$$= 26.32°$$

$r = \theta_Q$

$= 26.32°$

Jawapan/*Answer*: **D**

22 $P = W$

$W = mg$

$P = mg$

$P = (15)(9.81)$

$P = 147.15$ N

Jawapan/*Answer*: **C**

25 $P_B = P_A$

$$P_B = \frac{10}{20}$$

$P_B = 0.5$ Pa

Jawapan/*Answer*: **A**

26 $F_B = 10 - 8$

$= 2\ N$

$V_x \rho g = 2$

$$V_x = \frac{2}{\rho g}$$

$$= \frac{2}{(1\ 000)(10)}$$

$V_x = 2 \times 10^{-4}\ \text{m}^3$

Jawapan/*Answer*: **D**

29 $R = 2 + \left(\frac{1}{2} + \frac{1}{2}\right)^{-1} + 2$

$= 5\ \Omega$

$$I_T = \frac{V}{R}$$

$$= \frac{6}{5}$$

$I_T = 1.20$ A

$$I = \frac{1.20}{2}$$

$I = 0.60$ A

Jawapan/*Answer*: **B**

30 $$P = \frac{V^2}{R}$$

$$R = \frac{V^2}{P}$$

$$= \frac{(240)^2}{50}$$

$R = 1\ 152\ \Omega$

Jawapan/*Answer*: **D**

38 $E = mc^2$

$= (0.018863 \times 1.66 \times 10^{-27})(3 \times 10^8)^2$

$E = 2.82 \times 10^{-12}$ J

Jawapan/*Answer*: **B**

40 $W = hf_0$

$$f_0 = \frac{W}{h}$$

$$= \frac{(3.1 \times 1.6 \times 10^{-19})}{(6.63 \times 10^{-34})}$$

$f_0 = 7.48 \times 10^{14}$ Hz

Jawapan/*Answer*: **A**