Date:

[redacted]

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1 IA 06

1. $\bar{u} = (-3, 8, 1)$
$\bar{v} = (3, 3, -3)$

$$\cos\theta = \frac{\begin{pmatrix}-3\\8\\1\end{pmatrix}\begin{pmatrix}3\\3\\-3\end{pmatrix}}{\sqrt{(-3)^2+8^2+1^2}\cdot\sqrt{3^2+3^2+(-3)^2}}$$

$$= \frac{\begin{matrix}-9\\24\\-3\end{matrix}}{\sqrt{9+64+1}\cdot\sqrt{9+9+9}}$$

$$= \frac{12}{\sqrt{74}\cdot\sqrt{27}} = 0,268$$

$\theta = 74,43$ (D.)

2. $F_1 = 20N$
$F_2 = 25N$
$\varnothing = 60°$

$$R = \sqrt{F_1^2 + F_2^2 + 2F_1 \cdot F_2 \cos\theta}$$
$$= \sqrt{20^2 + 25^2 + 2(20\cdot 25)\cos 60°}$$
$$= \sqrt{400 + 625 + 1000 \cdot \tfrac{1}{2}}$$
$$= 5\sqrt{61}$$
$$= 39,05 \rightarrow 39N$$ (A.)

3. $V = 840$ Km/jam $\rightarrow$ 14 Km/menit
$S = 15$ Km
$t = 35$ menit

$$\begin{matrix}14\\35\\\hline 70\\42\\\hline 490\end{matrix}$$ Km (A.)

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4. $S = S_0 + V_0 t + (1/2)at^2$ $S_0 = 50\,km$

$V_0 = 840\,km/jam$

$S = 840 \cdot 1/360 + 1/2 \cdot 21600 \cdot 1/360$

$= 2/3 + 1/12 = 28/12 + 1/12$

$= 29/12 = 2,42\,km$

$= 50 + 2,42 =$

$a = \frac{(900 - 840)}{10} = \frac{60}{10} = 6\,km/s^2$

$\frac{60}{1/360} = 21.600\,km/jam$

$\therefore 52,42\,km$ (A)

5. $V_0 = 0$ $\theta = V_t = V_0 + at$

$V = 11\,m/s$ $11 = 0 + a.5$

$t = 5$ $a = \frac{11}{5} = 2,2\,m/s$

$S = V_0 \cdot t + 1/2\,at^2$ $S_1 = \frac{55}{2} = 27,5\,m$

$= 0 + 1/2 \cdot 11/5 \cdot 5 \cdot 5$

$S_2 = V \cdot t$ $S_{tot} = S_1 + S_2$

$= 11\,10 = 110$ $= 27,5 + 110$

$= 137,5\,m$ (D)

6. $V_0 = 10\,m/s$ $V_t = 25\,m/s$

$a = 0,5\,m/s^2$

$S = \frac{(V_t^2 - V_0^2)}{2a} = \frac{25^2 - 10^2}{2(0,5)} = \frac{525}{1} = 525$ (C)

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7. $\omega = 1000$ rpm

$= 1000 \times \frac{2\pi}{60}$

$= 104.72$ rad/s

$r = \frac{48}{2} = 24\text{cm} = 0,24$ m

$t = 30$ menit $= 1800$ detik

$V = \omega \cdot r$

$= 104.72 \times 0,24$

$= 25.1328$ m/s

$S = V \cdot t$

$= 25.1328 \times 1800$

$= 45,24$ km (A.)

8. $W_{pot} = 500$ gr $= 5$ N $W_{keranglain} = W_N$

$W_{spot} = 5 \times 5 = 25$ N

$W_t = W_{spot} + W_{keranglain}$

$= 25 + 10$

$= 35$

$\Sigma F = 0$

$T - W_t = 0$

$T - 35 = 0$

$T = 35$ (B.)

9. $F = 30$ N

$\Delta X = 5$ m

$\phi = 53^\circ = 0,6$

$W = (F \cos \phi) \Delta X$

$= (30 \cos 53) \cdot 5$

$= (30 \cdot 0,6) \cdot 5$

$= 18 \cdot 5$

$= 90$ joule (B.)

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10. $h_0 = 10\ m \qquad \alpha = 30^\circ$

$V_0 = 10\ m/s$

$g = 10\ m/s^2$

$h = h_0 + V_0 \cdot \sin\alpha \cdot t - \frac{1}{2} \cdot g \cdot t^2$

$0 = 10 + 10 \cdot \sin 30^\circ \cdot t - \frac{1}{2} \cdot 10 \cdot t^2$

$0 = \frac{10 + 5t - 5t^2}{5}$

$(-t^2 + t + 2)$

$(t+1)(t-2) = 0$

$t = -1$ ~~tidak~~

$t = 2 \rightarrow t = 2\ s$