PART A: MULTIPLE CHOICE (10 MARKS)

1	2	3	4	5	6	7	8	9	10
d	d	b	d	a	b	c	a	c	b

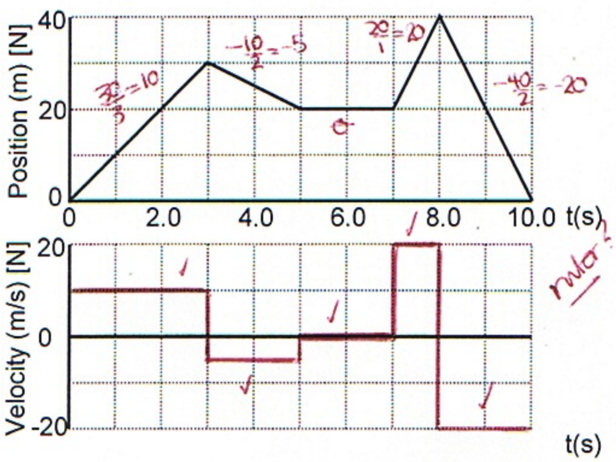
PART B: MATCH (5 MARKS)

1	2	3	4	5
D	I	F	H	E

PART C: SHORT ANSWER (20 MARKS)

Answer the following questions in the space provided.

1. An object moves as shown on the d-t graph.



{5} (a) Sketch the graph of velocity vs time.

{5} (b) Determine the object's:

① position at 7.0 s 20 m[N]

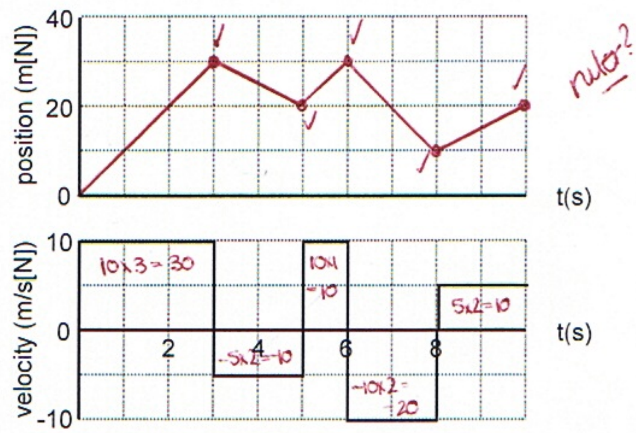
② total distance 100 m

③ total displacement 0 m[N]

④ average speed for entire trip 10 m/s (100/10)

⑤ average velocity for entire trip 0 m/s[N] (0/10)

2. An object moves as shown on the v-t graph.



{5} (a) Sketch the graph of position vs time.

{5} (b) Determine the object's:

① velocity at 7.0 s -10 m/s[N]

② total distance 80 m

③ total displacement 20 m[N]

④ average speed for entire trip 8.0 m/s

⑤ average velocity for entire trip 2.0 m/s[N]

PART D: PROBLEMS (15 MARKS)

Answer the following questions on a separate sheet of paper. You may use the back of this sheet if you wish.

{4} 1. A snowboarder starting from rest accelerates uniformly downhill at 2.7 m/s^2[fwd]. How long will it take the boarder to reach a point 95 m[fwd] from the starting position?

2. A plane travelling at 63 m/s[S] down a runway begins accelerating uniformly at 2.8 m/s^2[S].

{4} (a) What is the plane's velocity after 4.0 s?

{3} (b) How far has it travelled during this 4.0 s interval?

{4} 3. A flying saucer moving initially at 20 m/s[E] accelerates to 50 m/s[W] in 3.8 s. Find the saucer's average acceleration during the time interval. {Recall: $\vec{a} = \frac{\Delta\vec{v}}{\Delta t}$ and $\Delta\vec{v} = \vec{v}_2 - \vec{v}_1$}

SPH3U-2 PART D QUIZ #2

1.) * assume motion downhill as +ve

$v_1 = \phi$
$a = 2.7\ m/s^2$ ✓
$d = 95\ m$

$d = \cancel{v_1 t}^{0} + \frac{1}{2}at^2$
$95 = \frac{1}{2}(2.7)t^2$ ✓
$\frac{95}{1.35} = \frac{1.35t^2}{1.35}$ ÷1.35
$\sqrt{70.37} = \sqrt{t^2}$ √ both sides

$t = 8.388...$

$\boxed{t = 8.4 s}$ ✓✓ units,sd

2.) $v_1 = 63\ m/s$ [S] ↓
$a = 2.8\ m/s^2$ [S] ✓

a) $t = 4.0 s$

$v_2 = v_1 + at$ ✓
$= 63[S] + (2.8[S])(4)$
$= 74.2$ [S]

$\boxed{v_2 = 74\ m/s\ [S]}$ ✓✓ units,sd,dir

b) $d = v_1 t + \frac{1}{2}at^2$ ✓
$= (63[S])(4) + \frac{1}{2}(2.8[S])(4)^2$
$= 274.4$ [S]

$\boxed{d = 270\ m\ [S]}$ ✓✓ units,sd,dir

3.) $v_1 = 20\ m/s$ [E]
$v_2 = 50\ m/s$ [W] ✓
$t = 3.8 s$

$a = \frac{\Delta v}{\Delta t} = \frac{v_2 - v_1}{t}$
$= \frac{50[W] - 20[E]}{3.8}$ ✓
$= \frac{50[W] - {}^{-}20[W]}{3.8}$
$= \frac{70[W]}{3.8}$
$= 18.42...$ [W]

$\boxed{a = 18\ m/s^2\ [W]}$ ✓✓ units,sd,dir