



EXAM 2<sup>nd</sup> TERM  
14-03-2016



Name: ..... Nº: ..... 1º BAC- .....

1. (1 point). An object has a position vector given by:  $\vec{r}(t) = 10 \cdot t \vec{i} + (10 - 2 \cdot t - t^2) \vec{j}$  (S.I). Calculate the average velocity vector and its unit vector during the time interval  $t = 0$  s to  $t = 4$  s. Determine the equation of the trajectory.

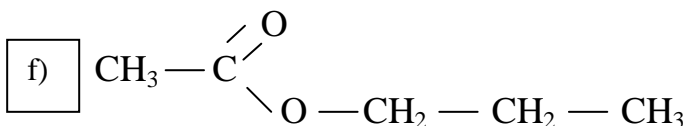
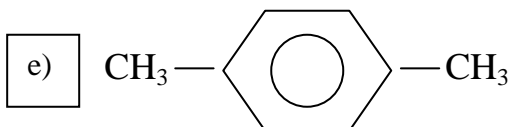
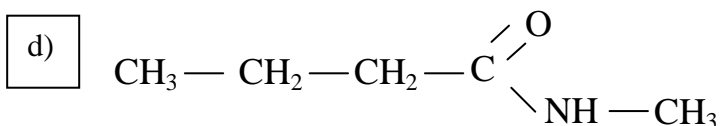
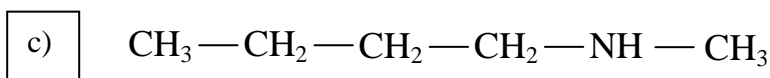
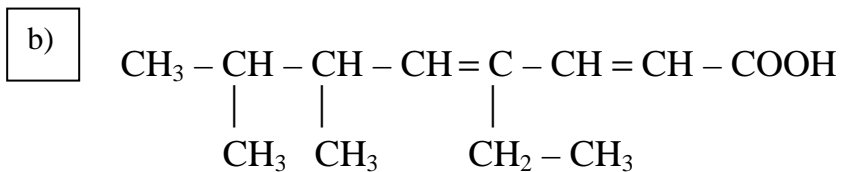
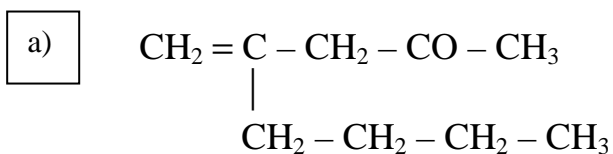
2. (1.5 points). A man drops an object off the top of a 100 m tall building. At the same time, another man, lying on the ground below the building, throws another object straight up at with an initial velocity of 45 m/s. a) Find the time at which both objects are at the same height above the ground. b) At this time, how high above the ground will they be? What is the velocity of each object?

3. (2 points). An object is fired with a speed of 50 m/s from a point that is 120 m above the ground, at an angle of  $30^\circ$  above the horizontal. a) Write the position and velocity vectors for the object. b) Find the horizontal distance it travels. c) What is the maximum height above the ground that the object will rise to?

4. (0.75 points). The blades of a fan turn at 250 rpm. If the blades are 25 cm long. Find: a) The angular and the linear speed of a point on the tip of the blades. b) Through what distance and angle (degrees) does the tip move in 4 s? How many revolutions does it make in this time?

5. (1,5 points). A body is moving with simple harmonic motion along the Y axis. The maximum velocity and maximum acceleration of the body are 6 m/s and  $18 \text{ m/s}^2$  respectively. The oscillation starts ( $t = 0$ ) when the displacement has its maximum positive value ( $y = +A$ ). Find: a) The equation of displacement for this motion,  $y(t)$ . b) the displacement ( $y$ ) when the velocity of the particle is 4.5 m/s. c) Its acceleration at  $t = 1,2$  s.

6 (3 points). I) Write the name for each compound.



II) Write the *formula* for each compound.

a) 2,4-octadiyne

b) 1,4-dichlorohexane

c) 2-ethyl-2,5-dimethyl-3-heptenal

d) 2-ethyl-2,5-dimethyl-3-heptyn-1,5-diol

e) 4-methyl-2,5-octadienenitrile

f) Ethyl methyl ether



**EXAME 2ª AVALIACIÓN**  
14-03-2016



Nome: ..... N.º: ..... 1º BAC- .....

1. (1 punto). Un obxecto ten un vector de posición dado por:  
 $\vec{r}(t) = 10 \cdot t \vec{i} + (10 - 2 \cdot t - t^2) \vec{j}$  (S.I.) Calcula o vector velocidade media e o seu vector unitario durante o intervalo de tempo que vai desde  $t = 0$  s a  $t = 4$  s. Determina a ecuación da traxectoria.

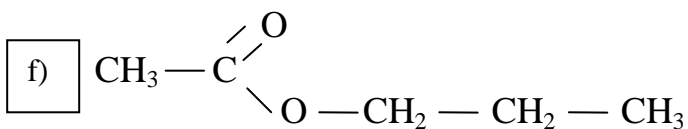
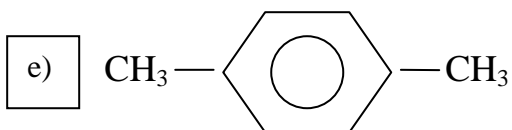
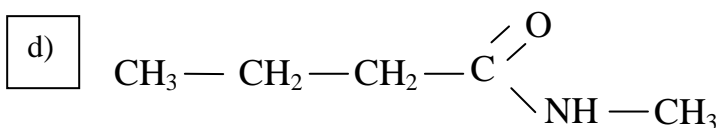
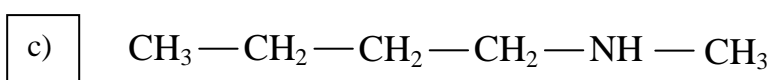
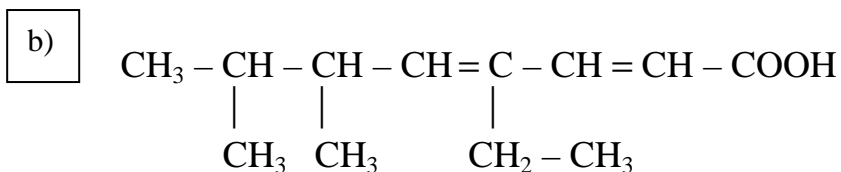
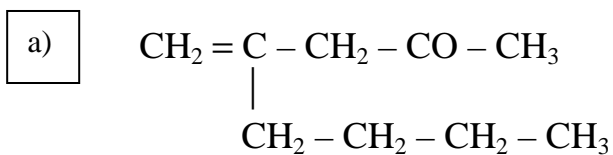
2. (1,5 puntos). Unha persoa deixa caer un obxecto dende o alto dun edificio de 100 m de altura. Ao mesmo tempo, outra persoa, desde o chan, dispara outro obxecto verticalmente cara arriba cunha velocidade inicial de 45 m/s. a) Calcula o tempo no que ambos obxectos están á mesma altura sobre o chan. b) Nese momento, a que altura sobre o chan están os obxectos? Cales son as velocidades de cada obxecto?

3. (2 puntos). Lánzase un corpo desde un punto situado a 120 m sobre o chan cunha velocidade de 50 m/s, formando un ángulo de  $30^\circ$  coa horizontal. a) Escribe os vectores de posición e velocidade en función do tempo. b) Cal é a distancia horizontal percorrida ata que volve a tocar o chan? c) Cal é a máxima altura acadada polo obxecto?

4. (0,75 puntos). As aspas dun ventilador xiran a 250 rpm. Si as aspas miden 25 cm de longo. Determinar: a) A velocidade angular e lineal dun punto situado no extremo exterior do aspa. b) Que desprazamento lineal e ángulo (en grados sesaxesimais) é descrito en 4 s? Cantas voltas xira nese tempo?

5. (1,5 puntos). Un corpo móvese describindo un movemento harmónico simple ao longo do eixe Y. A velocidade máxima e aceleración máxima son 6 m/s e  $18 \text{ m/s}^2$  respectivamente. O corpo comeza a oscilar ( $t = 0$ ) cando a elongación é máxima ( $y = +A$ ). Calcula: a) A ecuación do movemento,  $y(t)$ . b) A elongación ( $y$ ) cando a velocidade da partícula é de 4,5 m/s. b) A aceleración para  $t = 1,2$  s.

6 (3 puntos). I) Escribe o *nome* de cada composto.



II) Escribe a *fórmula* para cada composto:

a) 2,4-octadiino

b) 1,4-diclorohexano

c) 2-etil-2,5-dimetil-3-heptenal

d) 2-etil-2,5-dimetil-3-heptin-1,5-diol

e) 4-metil-2,5-octadienonitrilo

f) Etil metil éter