GP1-LQA1 學號:_____ 系級:_____姓名: _____ 得分:_____

填充,計算題須寫出計算過程,並且將答案填入空格。

Problem 1

For a one-dimensional motion with constant acceleration a, the initial position, velocity of the object is x_0 and v_0 respectively. Find the equations of kinematics for this motion. (03小題)

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01 (a)if $a > 0$ the object will be accelerated to a velocity of v at time t=_____ [x_0,v_0,a,v] 分數= 5

02 (b)find time t, when the object reach x(\gt x_0\), t=_____ [x,x_0,v_0,a] 分數= 5

03 (c)Find the position x at which its velocity is 2v_0, x=_____ [x_0,v_0,a] 分數= 5

Problem 2

A car accelerates with constant acceleration from rest to 30 m/s in 10 s. It then continues at constant velocity. Find: (a) its acceleration; (b) how far it tavels while speeding up; (c) the distance it covers while its velocity changes from 10 m/s to 20 m/s. (03小題) 04 (a)a=_____ m/s^2 分數= 5 05 (b)the distance it travels when speeding up=_____ m 分數= 5 06 (c)the distance it travels when v changes from 10 to 20 =_____ m 分數= 5

Problem 3

A person throws a ball upward into the air with an initial velocity of 15.0 m/s. Calculate (a) how high it goes, and (b) how long the ball is in the air before it comes back to the hand. calculate at what time t the ball passes a point 8.00 m above the person's hand. 一個人以15.0 m/s的初始速度向空中扔一個球。 計算(a)球飛行的最高點，(b)球在飛回>手前在空中的時間。 計算在什麼時間t球經過人的手上方8.00 m的一點。 (04小題) 07 (a)h=_____ m 分數= 5 08 (b)t=_____ s 分數= 5 09 (c)on its way up and passing y=8 m, t=_____ s 分數= 5 10 (d)on its way down and passing y=8 m, t=_____ s 分數= 5

Problem 4

A speeder moves at a constant 20 m/s in a school zone. A police car starts from rest just as the speeder passes it. The police car accelerates at 3 m/s^2 until it reaches its maximum velocity of 24 m/s. Where and when does the speeder get caught? (02小題) 11 (a)the time the speeder get caught, t=_____ s 分數= 5 12 (b)the position the speeder get caught, x=_____ m 分數= 5

Problem 5

Two balls are thrown toward each other: ball A at 16.0 m/s upward from the ground, ball B at 9.00 m/s downward from a roof 30.0 m high, one second later. (a) Where and (b)when do they meet? (c) What are their velocities on impact? (04小題) 13 (a)when? t=___ s 分數= 5 14 (b)where? y=____ m 分數= 5 15 (c)speed of A, $|v_A|$=____ m/s 分數= 5 16 speed of B, $|v_B|$=____ m/s 分數= 5

Problem 6

A tennis ball is dropped from a height of 5 m and rebounds to a height 4 m. If it is in contact with the floor for 0.05 s, what is its average acceleration during this period? (01小題) 17 average acceleration=_____ m/s^2

分數= 10

Problem 7

An object is moving in one dimension and its position as a function of time is given as $x(t) = A\cos(wt + b)$. Find its velocity and acceleration as a function of time. (02小題)

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18 (a)$v(t)$=_____ [A, w, t, b] 分數= 5

19 (b)$a(t)$=_____ [A, w, t, b] 分數= 5

Problem 7

A particle can accelerate from 0 to 60 km/h in 5.4 s. (a)What is its average acceleration, in m/s^2, during this time? (b) How far will it travel during the 5.4 s, assuming its acceleration is constant? (c) From rest, how much time would it require to go a distance of 0.25 km if its acceleration could be maintained at the value in (a)? (03小題) 20 (a)a_{avg}=_____ m/s^2 分數= 5 21 (b)x=____ m 分數= 5 22 (c) t=____ s 分數= 5

Problem 7

Suppose a rocket ship in deep space moves with constant acceleration equal to $9.8\mathrm{m}/\mathrm{s}\hat{}2$,which gives the illusion of normal gravity during the flight. (a) If it starts from rest, how long will it take to acquire a speed one-tenth that of light, which travels to $3 * 10^{8} m/s$? (b) how far will it travel in so doing?

(02小題) 23 (a)_____s 分數= 3 24 (b)_____m 分數= 2