Physics UTS exam made by Michael Marchenko in November of 2017

Edited at 4pm 4 November 2017.

s is your student number. k = s mod 10000. T = s mod 100. m = s mod 35. a = s mod 25.

L = s mod 10. $d\_{2}=\frac{T-L}{10}$. e = s mod 8. m7 = s mod 7. m6 = s mod 6. m5 = s mod 5. m4 = s mod 4.

m3 = s mod 3. m2 = s mod 2. u = s + 10000.

1. How many significant figures are there in your student number?

2. How many significant figures are in your T number?

3. Calculate the compound errors for x = s, dx = 1/T; y = T, dy = 1/k.

http://physics16.weebly.com/uploads/5/9/8/5/59854633/compound\_errors.txt

4. Find velocity and acceleration for one-dimensional motion with the equation

x = -k + Lt + Tt2.

5. Add, subtract and multiply the vectors (T, k) and (L, s).

6. Solve the elastic collision problem for u1 = k, u2 = k/2, m1 = k, m2 = 2k.

7. Find the acceleration of a simple pulley for two masses: L kg and T kg.

8. Find acceleration of a mass at the inclined plane with A = T degrees and the friction coefficient μ =1/T.

9. Find x and y for projectile with x0 = y0 = 0, v0 = T m/s, t = T seconds, A = T degrees.

Find maximum distance and maximum height.

10. Find the angular speed and total acceleration for the rotational motion of the material point around the circumference with radius of T meters and constant linear speed of s meters per second.

11. Find gravity acceleration g, orbital velocity Vo and escape velocity Ve for planet with mass s billion tons and radius s millimeters.

https://physics18.weebly.com/uploads/5/9/8/5/59854633/g1orbital1velocity1escape1velocity13oct2017.txt

12. Calculate the Schwarzschild radius for the k grams desk.

http://physics16.weebly.com/uploads/5/9/8/5/59854633/radius4schwarzschild.txt

13. Find the displacement of a harmonic oscillator after s seconds with amplitude k, frequency k and initial phase k/2.

http://physics16.weebly.com/uploads/5/9/8/5/59854633/harmonic4oscillator.txt

14. Solve the string oscillatory equation for v = T, frequency = L, Amplitude = T.

Find the displacement after s seconds at m meters.

https://physics18.weebly.com/uploads/5/9/8/5/59854633/string1wave1oscillation22oct2017.txt

15. The thermal expansion rate α is 1/k. The temperature change is T degrees.

a. Find the extension of m meters rod due to the temperature change.

b. Find the approximate volume change of m meters cubed cube due to the temperature change.

http://physics16.weebly.com/uploads/5/9/8/5/59854633/thermal4expansion.txt

16. There are two bodies in a thermodynamically isolated system: C1 m1 T1 and C2 m2 T2. Find the resulting temperature T. m1 = k, m2 = 2k. C1 = k/11, C2 = k/222, T1 = k/111, T2 = k/22

http://physics16.weebly.com/uploads/5/9/8/5/59854633/result4temperature.txt

17. Estimate the distances between the atoms of element number T in the periodic table of elements.

http://physics16.weebly.com/uploads/5/9/8/5/59854633/distance\_between\_particles.txt

18. Find the force between two charges of L and T Coulombs for the distance apart of m meters.

http://physics16.weebly.com/uploads/5/9/8/5/59854633/coulomb\_force.txt

19. Solve the simplified Maxwell Equations for c = 300000000-s, frequency = L, Amplitude = T.

Find the intensity of electric field after s seconds at m meters.

https://physics18.weebly.com/uploads/5/9/8/5/59854633/maxwel1wave1oscillation22oct2017.txt

20. Improve your project.