UTS in physics made by Michael Marchenko in October of 2019.

Edited at 1pm 16.10.2019.

s is your student number.

Write your student number: s = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Write your name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

s is your student number.

k = s mod 10000. T = s mod 100.

m35 = s mod 35. m25 = s mod 25. m20 = s mod 20.

m10 = s mod 10. m9 = s mod 9. m8 = 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.

1. Describe your project.

Choose topic and write research paper about it.

2. Find F = ma, M = Jε, for m = a = J = ε = T.

3. 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.

https://physics16.weebly.com/uploads/5/9/8/5/59854633/projectile309task2019.txt

4. 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.

https://physics16.weebly.com/uploads/5/9/8/5/59854633/omega\_acceleration309task2019.txt

5. 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

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

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

7. Solve oscillation problem y'' + yT2 = 0.

https://www.wolframalpha.com/input/?i=y%27%27+%2B+16y+%3D+0

8. 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

9. Solve the string oscillatory equation for v = T, frequency = L = m10, Amplitude = T.

Find the displacement after s seconds at m meters.

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

10. 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

11. 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

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

https://physics16.weebly.com/uploads/5/9/8/5/59854633/distance\_between\_particles\_for\_many\_atoms2019oct.txt

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

13. Scattering:

m3 = 0: What color is the Sun?

m3 = 1: Why are clouds white?

m3 = 2: Why is the sky blue?

14. Find the force between two charges of L and T Coulombs, m meters apart.

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

15. Solve the simplified Maxwell Equations for c = 300000000-s, red light. Take amplitude 1 V/m. Find the intensity of electric field after s seconds at m meters.

http://physics16.weebly.com/uploads/5/9/8/5/59854633/maxwell\_equations\_solution.txt

16. Find the hangover for the s blocks in the blocks stacking problem.

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

17. Suppose a star has a surface temperature of 4k degrees. What are the wavelength and the color this star appears?

http://physics16.weebly.com/uploads/5/9/8/5/59854633/color4black4body.txt

18. Calculate the final speed after absolutely inelastic collision of two balls of masses L kg and T kg, moving with velocities s m/s and k m/s respectively.

http://physics16.weebly.com/uploads/5/9/8/5/59854633/inelastic4collision.txt

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

http://physics16.weebly.com/uploads/5/9/8/5/59854633/linear2elastic4collision.txt

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

http://physics16.weebly.com/uploads/5/9/8/5/59854633/problem4pulleys.txt

21. Find acceleration of a mass at the inclined plane with

A = T degrees and the friction coefficient μ = 1/T.

http://physics16.weebly.com/uploads/5/9/8/5/59854633/inclined4plane.txt

22. Find the center of mass of k equal masses k meters apart located on a straight line.

http://physics16.weebly.com/uploads/5/9/8/5/59854633/center\_of\_mass\_of\_k\_masses.txt

23.

m4 = 0: What visible light is the fastest? Why?

m4 = 1: What visible light is the most noticeable? Why?

m4 = 2: What visible light has the most energy? Why?

m4 = 3: What visible light is the most absorbed? Why?

L = 6: 24. What is quantum money?

L = 7: 25. Are massless or mass-full particles used in quantum information? Why?

26. Find V1 for the transformer if V2 = T volts, N1 = k and N2 = s.

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

27. T kilowatts of electric power is sent to a town from a power plant. The transmission lines have the total resistance of 0.1T Ohms. Calculate the power loss if the power is transmitted at:

(a) 0.03k Volts (b) s Volts

http://physics16.weebly.com/uploads/5/9/8/5/59854633/losses4transmitting4power.txt

28. A circular coil of wire has a diameter of 0.002k cm and contains 10 loops. The current in each loop is 3A, and the coil is placed into 2TESLA external magnetic field. Determine the maximum and minimum torque exerted on the coil by the field.

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