task in physics of mid-October 2019.

Edited at 10am 11 oct 2019.

s is your student number.

For group task s = 19107089.

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. Why do you need physics?

2. Do what you like in physics.

3. Will moving or static egg crack? Explain dynamic coefficient and attack vs. defense.

4. Explain efficiency of truck and trolley.

5. Do big or small wheals give more power?

6. Why does cat sit on its curved legs?



7. Do your project.

8. What is physics of social media?

9. Study physics of songs.

10. Solve Zimmermann problem:

http://74.72.151.186/Contest/Nearness

http://azspcs.com/Contest/Nearness

Solve for m20 + 6.

Improve these solutions:

https://physics16.weebly.com/uploads/5/9/8/5/59854633/4students\_reversing\_nearness\_sep2019.docx

If you cannot register here then submit your solutions to me.

11. What is fractal?

https://en.wikipedia.org/wiki/Fractal

12. Explain Magnus effect.

https://en.wikipedia.org/wiki/Magnus\_effect

13. Apply for American citizenship:

https://www.dvlottery.state.gov/

14. Apply for scholarships, grants, fellowships of USA, Europe, Canada, Australia, Japan, etc.

15. Study

https://physics15.weebly.com/

https://physics16.weebly.com/

https://physics18.weebly.com/

16.Study math as method of physics.

17. What is least constraint principle?

https://en.wikipedia.org/wiki/Gauss%27s\_principle\_of\_least\_constraint

18. Discuss physics news.

https://en.wikipedia.org/wiki/Physics

https://en.wikipedia.org/wiki/Capital\_of\_Indonesia

https://en.wikipedia.org/wiki/UEFA\_Euro\_2020\_qualifying

https://en.wikipedia.org/wiki/Yemeni\_Civil\_War\_(2015%E2%80%93present)

https://en.wikipedia.org/wiki/Kashmir\_conflict

https://en.wikipedia.org/wiki/2019\_Abqaiq%E2%80%93Khurais\_attack

https://en.wikipedia.org/wiki/Islamic\_State\_of\_Iraq\_and\_the\_Levant

https://en.wikipedia.org/wiki/Al-Qaeda

https://en.wikipedia.org/wiki/Taliban

https://en.wikipedia.org/wiki/Rohingya\_people

https://en.wikipedia.org/wiki/Uyghurs

https://en.wikipedia.org/wiki/Kosovo\_War

https://en.wikipedia.org/wiki/Jamal\_Khashoggi

https://en.wikipedia.org/wiki/Basuki\_Tjahaja\_Purnama

https://en.wikipedia.org/wiki/May\_1998\_riots\_of\_Indonesia

https://en.wikipedia.org/wiki/Indonesian\_mass\_killings\_of\_1965%E2%80%9366

https://en.wikipedia.org/wiki/Brexit

https://en.wikipedia.org/wiki/Julian\_Assange

https://en.wikipedia.org/wiki/Chelsea\_Manning

https://en.wikipedia.org/wiki/Edward\_Snowden

https://en.wikipedia.org/wiki/Noam\_Chomsky

https://en.wikipedia.org/wiki/Annexation\_of\_Crimea\_by\_the\_Russian\_Federation

https://en.wikipedia.org/wiki/War\_in\_Donbass

https://en.wikipedia.org/wiki/Ukrainian\_crisis

19. Study general concepts of mechanics, oscillation, fluid mechanics, thermodynamics, optics, electromagnetism, quantum physics and cosmology.

https://en.wikipedia.org/wiki/Mechanics

https://en.wikipedia.org/wiki/Oscillation

https://en.wikipedia.org/wiki/Fluid\_mechanics

https://en.wikipedia.org/wiki/Thermodynamics

https://en.wikipedia.org/wiki/Optics

https://en.wikipedia.org/wiki/Electromagnetism

https://en.wikipedia.org/wiki/Quantum\_mechanics

https://en.wikipedia.org/wiki/Cosmology

20. How is physics used in computer science?

-

2 section:

21. What is Bernoulli principle?

https://en.wikipedia.org/wiki/Bernoulli%27s\_principle

22. What is econophysics?

https://en.wikipedia.org/wiki/Econophysics

23. What is solid mechanics?

https://en.wikipedia.org/wiki/Solid\_mechanics

24. Explain drone physics.

https://en.wikipedia.org/wiki/Unmanned\_aerial\_vehicle

25. Give mechanics conservation laws.

https://en.wikipedia.org/wiki/Conservation\_law

26. Explain physics of quantum cryptography and public key cryptography.

27. Prepare to Dota2 gaming competition:

http://www.dota2.com/international/overview/

28. What is chaos?

https://en.wikipedia.org/wiki/Chaos\_theory

29. Give Newton laws.

https://en.wikipedia.org/wiki/Newton%27s\_laws\_of\_motion

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

31. 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

32. 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

33. 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

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

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

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

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

36. 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

37. 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

38. 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

39. 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

40. Enjoy physics.

-

3 section:

41. Is black or white clothes warmer? Why?

42. How does guitar string move?

43. Explain power pyramid: USA, UK, EU, Australia, New Zealand, Japan, Korea, Singapore, Malaysia, Indonesia, China, India, Russia, etc.

44. Why are some civilizations more successful than the others?

45. Why are some people very massive?

46. What are Brownian motion, random walk and how are they linked to Zimmermann problem?

47. Predict results of 2019 rugby world cup:

https://en.wikipedia.org/wiki/2019\_Rugby\_World\_Cup

48. Explain good country index.

https://en.wikipedia.org/wiki/Good\_Country\_Index

49. 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

50. Solve number puzzle for 3 + m8 digits.

https://discrete4math.weebly.com/uploads/2/5/3/9/25393482/codesums0-9.txt

https://discrete4math.weebly.com/uploads/2/5/3/9/25393482/code1-9sums.txt

https://discrete4math.weebly.com/uploads/2/5/3/9/25393482/1-8code1-8sums.txt

https://discrete4math.weebly.com/uploads/2/5/3/9/25393482/0-6codesums.txt

https://discrete4math.weebly.com/uploads/2/5/3/9/25393482/1dx4de5dnumberpuzzle.txt

https://discrete4math.weebly.com/uploads/2/5/3/9/25393482/2dx3de5dnumberpuzzle.txt

https://discrete4math.weebly.com/uploads/2/5/3/9/25393482/code1-9numberpuzzles.txt

https://discrete4math.weebly.com/uploads/2/5/3/9/25393482/code0-8numberpuzzles.txt

https://discrete4math.weebly.com/uploads/2/5/3/9/25393482/code1-8numberpuzzles.txt

https://discrete4math.weebly.com/uploads/2/5/3/9/25393482/code0-6numberpuzzles.txt

https://discrete4math.weebly.com/uploads/2/5/3/9/25393482/code1-6numberpuzzles.txt

https://discrete4math.weebly.com/uploads/2/5/3/9/25393482/code1-5numberpuzzles.txt

https://discrete4math.weebly.com/uploads/2/5/3/9/25393482/code1-4numberpuzzles.txt

51. Hack password.

https://calculus1only.weebly.com/

https://calculus1only.weebly.com/uploads/5/9/8/5/59854633/password-hacking-game-rules.docx

https://calculus1only.weebly.com/uploads/5/9/8/5/59854633/guessinput.txt

52. Why can crazy people be good for physics?

53. Who is internet troll?

54. Analyze these topics:

https://en.wikipedia.org/wiki/Greta\_Thunberg

https://en.wikipedia.org/wiki/2019\_Papua\_protests

https://en.wikipedia.org/wiki/2019\_Trump-Ukraine\_controversy

55. Why is there less freedom in the world?

56. Will Trump be impeached? Why?

57. How do we help Indonesia?

58. Scattering:

m3 = 0: What color is the Sun?

m3 = 1: Why are clouds white?

m3 = 2: Why is the sky blue?

59. 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

60. 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

-

4 section:

61. Why is there terror? Why is monopoly bad?

62. Explain physics Nobel Prize 2019.

63. Do Bernoulli experiment.

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

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

65. Use 3T mod n to pass secret.

Calculate 3T mod 19 and exchange secret information with your friend.

https://www.dcode.fr/modular-exponentiation

66. Calculate the largest prime number.

https://discrete4math.weebly.com/uploads/2/5/3/9/25393482/primes2find.txt

67. Do prime factorization of s.

https://discrete4math.weebly.com/uploads/2/5/3/9/25393482/prime4factorization4of4numbers.txt

-

68. 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

69. 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

70. 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

71. 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

72. 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

73. 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

74. Explain tensor of inertia for drone, etc.

75.

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: 76. What is quantum money?

L = 7: 77. Are massless or mass-full particles used in quantum information? Why?

78. 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

79. 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

80. 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

Deadline is 20.10.2019.