B group task in physics:

Edited at 7am 20.3.2017.

Measures:

1. Link kurtosis to precision. Link systematic error to accuracy.

2. Give the 7 base units.

Kinematics:

3. What is kinematics?

4. Give the main equation for the kinematics in one dimension.

Vectors:

5. What is a vector?

6. Add, subtract and multiply the vectors (2, 8) and (3, -7).

Projectile:

7. Write the equations for the projectile motion in two dimensions.

8. Explain the projectile problem.

9. Find x and y for projectile with x0 = y0 = 0, v0 = 88 m/s, t = 88 seconds, A = 88 degrees.

Find maximum distance and maximum height.

Rotation:

10. What is kinematics of rotation?

11. Give equations of kinematics of rotation.

12. Find angular velocity and linear acceleration for v = 88 m/s and R = 89 meters.

13. What is the linear velocity in Indonesia due to the rotation of the Earth?

Dynamics:

14. Explain dynamics.

15. Explain forces and torques.

16. Solve Newton differential equation for the projectile with x0 = y0 = 0, v0 = 88 m/s, A = 88 degrees.

17. What is material point?

18. Explain momentum (linear momentum, angular momentum).

19. What is moment of inertia?

20. Explain center of mass and velocities center.

21. What are the limits of application of classical mechanics in velocity and distance?

22. Give the laws of Newton.

23. Explain oscillations, double pendulum, chaos, and fractal.

How can double pendulum and fractals be used in cryptography?

24. Which of the two colliding identical eggs will crack, the moving or the egg at rest? Why?

25. Is a moving or a stationary body stronger? How many times?

26. Give the equation for the moment of force.

27. Is the moment of force better to be allied to the heavier loaded wheels of a car or to less loaded wheels?

28. Give the recommendations to the food vendors and the tricyclists to make their work easier.

29. Is the wheal with the smaller or larger radius easier to roll? Why?

Deadline: 25.3.2017.