

**Year 1**  
**Big Test Questions**  
**Oral Part**

**1. SI UNITS**

- a) Characterize basic physical quantity, symbols and units
- b) Derive units, Multiply with prefixes
- c) Scalar, vector physical quantity (characterize, examples)

**2. MECHANICS**

- a) Name and define 2 basic parts of mechanics
- b) Distance, Path – find all differences
- c) Division of motion according to the path and velocity (practical examples)
- d) Define mass point

**3. UNIFORM MOTION**

- a) What's mechanical motion?
- b) Compare speed and velocity (physical understanding, units, symbols)
- c) Characterize uniform motion (distance, velocity, time)
- d) Basic equations

**4. NON-UNIFORM MOTION**

- a) Write the equation for the uniformly accelerated/decelerated motion
- b) What does mean initial velocity, initial distance
- c) Give 2 examples of non-uniform motion

**5. VECTORS**

- a) Name 3 vector's physical quantity
- b) +, -, \* of vectors
- c) Resolve the vector into components

**6. FREE FALL**

- a) Define what is free fall (use the medium resistance)
- b) Basic equations for distance and velocity
- c) What's happen with the energy during this motion

**7. MASS & WEIGHT**

- a) Compare all differences between mass and weight
- b) Law of conservation of mass
- c) Trip on the Moon

**8. NEWTON'S LAWS**

- a) Define 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> Newton's law
- b) Give examples
- c) Momentum conservation principle

**9. CIRCULAR MOTION**

- a) What is circular motion
- b) define 1 radian – (convert radian and degrees)
- c) Centripetal force – (formulae wit angular velocity, frequency, period....)

### ***10. MECHANICAL WORK***

- a) Define mechanical work (max, min)
- b) Basic formula and derive formulae using velocity, time, angle  $\alpha$ ,  $\beta$
- c) Define 1 Joule

### ***11. POWER***

- a) Power than physical quantity
- b) Basic formula and derive formulae
- c) Basic unit and derive units

### ***12. MECHANICAL ENERGY***

- a) Characterize mechanical energy
- b) How can we divided mechanical energy ( $E_k$ ,  $E_p$  - characteristic)
- c) Why is  $E_k$  changing into  $E_p$  during motion?

### ***13. KINETIC THEORY OF MATTER***

- a) Brownian motion (explain use the experiment- pollen grains)
- b) Diffusion (explain use the experiment- ink)
- c) Surface tension (explain use the experiment - coin)

### ***14. THREE STATES OF MATTER***

- a) Solids (lattice, shape, volume....)
- b) Liquids (lattice, shape, volume....)
- c) Gases (lattice, shape, volume....)