

PHY401A: Weekly Quizzes (Odd semester: 2022-23)

Total points: $5 \times 10 = 50$ Date: Tuesday Time: 13h15-13h25

Quiz no. 1 (more than one answer may be correct)

1. Which of the following is not a dynamical theory?

- (a) Electromagnetic theory
- (b) Special theory of relativity
- (c) Quantum mechanics
- (d) First law of thermodynamics

Ans: (d)

2. For a particle with variable mass (continuously varying with time)

- (a) Newton's second law is valid
- (b) The momentum is proportional to the velocity
- (c) The force is proportional to the acceleration
- (d) The torque is zero when the force is parallel to the radius vector of the particle

Ans: (a), (b), (d)

3. In one dimensional motion, what is represented by $\frac{d^3x}{dt^3}$ in a $v - t$ graph?

- (a) Slope
- (b) Rate of change of slope
- (c) Area under the curve
- (d) Curvature

Ans: (b), (d)

4. If for three arbitrary variables x , y and t , $y = t^2$ and $x = y^2$, then

- (a) y is an explicit function of t
- (b) x is an explicit function of t
- (c) y is an explicit function of x
- (d) x is an implicit function of t

Ans: (a), (b), (c)

5. For the work-energy principle to be true,

- (a) the force needs to be conservative
- (b) the force should be a central force
- (c) the body should have non-zero kinetic energy when it starts
- (d) none of the above is necessary

Ans: (d)

