

The exam will have 13 questions, of which you will choose any 10 to answer. All equations and constants will be provided. The types of questions will be mostly mathematical and some short answer. Have a calculator ready and be able to use it.

terms you should understand

1. velocity (v)
2. acceleration (a)
3. force (F)
4. inertia
5. work (W)
6. power (P)
7. energy
8. momentum (p)
9. impulse (J)

* Know the appropriate units!

concepts you should understand

1. scientific method
2. weights & measures
3. absolute & relative motion
4. balanced & unbalanced forces
5. Newton's 3 laws of motion
6. mass - weight relationship
7. universal law of gravitation
> two factors affecting the magnitude of (g)
8. universal gravitational constant
9. inverse-square law
10. potential & kinetic energy types
11. transformation & conservation of energy
12. work - energy theorem
13. impulse delivered = change in momentum

Below is what will be provided on the last page of the exam.

$$v = d/t \quad v = \frac{v_i + v_f}{2} \quad a = \frac{v_f - v_i}{\Delta t} \quad v_f = a\Delta t \quad F = ma \quad W = mg \quad 1 \text{ N} = 1 \text{ kgm/s}^2 \quad g = 9.8 \text{ m/s}^2$$

$$d = v_i t + \frac{1}{2}at^2 \quad F_g = \frac{GM_1M_2}{d^2}$$

$$W = Fd \quad P = \frac{W}{t} \quad PE = mgh \quad KE = \frac{1}{2}mv^2 \quad \text{conservation of energy: } \Delta PE = \Delta KE$$

$$\text{work-energy theorem: } Fd = \frac{1}{2}mv^2 \quad \text{work-energy theorem: } Fd = mgh$$

$$\text{momentum (p)} = mv \quad \text{impulse (J)} = F\Delta t \quad J = F\Delta t = \Delta p$$

$$\text{conservation of momentum: } m_1v_{1i} + m_2v_{2i} = m_1v_{1f} + m_2v_{2f}$$