ANSWER KEY DATE: AUG 25, 2023

ASSIGNMENT XI – PHYSICS

CASE STUDY BASED QUESTIONS:

Q1. (i) (d)

(ii) (c) Because acc. is zero, observed weight = actual weight

(iii) (b) Net force $= mg - R = m\left(\frac{g}{4}\right)$

$$R = \frac{3mg}{4} = \frac{3\times 60}{4} g$$

$$= 45gN.$$

(iv) (b) Net force $= mg - R = mg$

$$R = 0N.$$

(v) (b) Net force $= R - mg = \frac{mg}{2}$

$$R = \frac{3mg}{2} = \frac{3\times 60}{2} g = 90gN.$$

Q2. (i) (a)

(ii) (c)

(iii) d

(iv). (d) $ma \le f \qquad f = \mu_s R$

$$ma \le \mu_s R$$

$$a \le \mu_s g \Rightarrow a_{max} = \mu_s g = 0.15 \times 10 = 1.5\ m/s^2$$

(v) (b) Let the mass of block C is m.

For block A, $R = (m_1 + m)$

$$T = f_s = \mu R = \mu(m_1 + m)g$$

To avoid slipping of A, for block B

$$T = m_2 g$$

$$\mu(m + m_1)g = m_2 g$$

$$0.2(m + 10) = 5$$

$$m = 15\ kg$$