

BOARD OF INTERMEDIATE & SECONDARY EDUCATION, SAKHIAL

SUBJECT: Physics EXAM 2nd Annual 20 22 CLASS: XII
GROUP: II DATE: 13/12/22

(GENERAL INSTRUCTIONS FOR MARKING KEY)

Question No. 8: (a) One for definition, one for diagram and three for correct explanation and relation

for $\Delta\lambda = \frac{h}{m_0c} (1 - \cos\theta)$

(b) One mark for each quantity

$$\epsilon = \frac{\Delta\lambda}{\lambda} = 6.0 \times 10^{-4}, \quad Y = \frac{\sigma}{\epsilon} = \frac{F/A}{\epsilon} = 1.66 \times 10^{10} \text{ Pa}$$

$$W = \frac{1}{2} F \Delta l = 7.5 \times 10^{-2} \text{ J}$$

Question No. 9: (a) One for $mvr = \frac{n h}{2\pi}$ and four marks for

derivation $r_n = \frac{n^2 h^2}{4\pi^2 k m e^2}$ and $r_1 = \frac{h^2}{4\pi^2 k m e^2} = 0.053 \text{ nm}$

(b) One for formula

and two marks for calculation

$$\Delta m = [Z m_p + (A - Z) m_n] - m_{\text{nucleus}} = 3.9754 \times 10^{-30} \text{ kg}$$

$$\text{B.E.} = \Delta m c^2 = 3.5729 \times 10^{-13} \text{ J} = 2.23 \text{ MeV}$$

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