

Air shower

Part A. Electromagnetic shower (2.0 points).

A.0 (0.2pt)

$$d_e =$$

A.1 (0.4pt)

$$n_{\max} =$$

A.2 (0.4pt)

$$l_e =$$

A.3 (0.2pt)

$$N_{\max} =$$

A.4 (0.8pt)

$$Q_e =$$

Part B. Hadronic shower (2.0 points).

B.1 (0.4pt)

$$n_{\text{hadr}}^{\max} =$$

B.2 (1.0pt)

$$n_{\text{EM}}^{\max} =$$

B.3 (0.6pt)

$$\beta_{\text{miss}} =$$

Part C. Air shower (3.0 points).

C.1 (1.3pt)

$$h_{\text{stop}} =$$

C.2 (0.5pt)

$$\beta^{\text{EM}} =$$

C.3 (0.2pt)

$$R_{\text{stop}} =$$

C.4 (0.2pt)

$$S =$$

C.5 (0.8pt)

$$\Delta t =$$

Part D. Data Analysis (3.0 points).

D.1 (1.0pt)

$$\kappa =$$

D.2 (0.5pt)

$$E_0 =$$

D.3 (1.5pt)

$$\rho_{\text{atm}} =$$