$$\frac{\Gamma(x) = \tau}{\Gamma \vdash x : \tau} \text{ (T-1)} \qquad \frac{}{\Gamma \vdash () : \mathsf{unit}} \text{ (T-2)} \qquad \frac{\Gamma \vdash e_1 : \tau_1 \to \tau_2 \qquad \Gamma \vdash e_2 : \tau_1}{\Gamma \vdash e_1\ e_2 : \tau_2} \text{ (T-3)}$$

$$\frac{\Gamma, x : \tau \vdash e : \tau'}{\Gamma \vdash \lambda x : \tau . e : \tau \to \tau'} \text{ (T-4)} \qquad \frac{\Gamma \vdash e_1 : \tau_1 \qquad \Gamma \vdash e_2 : \tau_2}{\Gamma \vdash (e_1, e_2) : \tau_1 \times \tau_2} \text{ (T-5)} \qquad \frac{\Gamma \vdash e : \tau_1 \times \tau_2}{\Gamma \vdash \mathsf{fst}\ e : \tau_1} \text{ (T-6)}$$

$$\frac{\Gamma \vdash e : \tau_1 \times \tau_2}{\Gamma \vdash \mathsf{snd}\ e : \tau_2} \text{ (T-7)} \qquad \frac{\Gamma \vdash e : \tau_1}{\Gamma \vdash \mathsf{inl}\ e : \tau_1 + \tau_2} \text{ (T-8)} \qquad \frac{\Gamma \vdash e : \tau_2}{\Gamma \vdash \mathsf{inr}\ e : \tau_1 + \tau_2} \text{ (T-9)}$$

$$\frac{\Gamma \vdash e : \tau_1 + \tau_2 \qquad \Gamma, x : \tau_1 \vdash e_1 : \tau \qquad \Gamma, y : \tau_2 \vdash e_2 : \tau}{\Gamma \vdash \mathsf{case}\ e\ \mathsf{of}\ \{x.e_1; y.e_2\} : \tau} \text{ (T-10)} \qquad \frac{\Gamma \vdash e : \mathsf{void}}{\Gamma \vdash \mathsf{abort}\ e : \tau} \text{ (T-11)}$$

$$\frac{}{()\ \mathsf{val}} \text{ (V-1)} \qquad \frac{}{\lambda x : \tau . e\ \mathsf{val}} \text{ (V-2)} \qquad \frac{v_1\ \mathsf{val} \qquad v_2\ \mathsf{val}}{(v_1, v_2)\ \mathsf{val}} \text{ (V-3)} \qquad \frac{v\ \mathsf{val}}{\mathsf{inl}\ v\ \mathsf{val}} \text{ (V-4)} \qquad \frac{v\ \mathsf{val}}{\mathsf{inr}\ v\ \mathsf{val}} \text{ (V-5)}$$

$$\frac{e_1 \mapsto e_1'}{e_1\ e_2 \mapsto e_1'\ e_2} \text{ (S-1)} \qquad \frac{e_2 \mapsto e_2'}{(\lambda x : \tau . e)\ e_2 \mapsto (\lambda x : \tau . e)\ e_2'} \text{ (S-2)} \qquad \frac{v\ \mathsf{val}}{(\lambda x : \tau . e)\ v \mapsto [v/x]e} \text{ (S-3)}$$

$$\frac{e_1 \mapsto e_1'}{(e_1, e_2) \mapsto (e_1', e_2)} \text{ (S-4)} \qquad \frac{v_1\ \mathsf{val} \qquad e_2 \mapsto e_2'}{(v_1, e_2) \mapsto (v_1, e_2')} \text{ (S-5)} \qquad \frac{e \mapsto e'}{\mathsf{fst}\ e \mapsto \mathsf{fst}\ e'} \text{ (S-6)} \qquad \frac{v_1\ \mathsf{val} \qquad v_2\ \mathsf{val}}{\mathsf{fst}\ (v_1, v_2) \mapsto v_1} \text{ (S-7)}$$

$$\frac{e \mapsto e'}{\mathsf{snd}\ e \mapsto \mathsf{snd}\ e'} \text{ (S-8)} \qquad \frac{v_1\ \mathsf{val} \qquad v_2\ \mathsf{val}}{\mathsf{snd}\ (v_1, v_2) \mapsto v_2} \text{ (S-9)} \qquad \frac{e \mapsto e'}{\mathsf{inl}\ e \mapsto \mathsf{inl}\ e'} \text{ (S-10)} \qquad \frac{e \mapsto e'}{\mathsf{inr}\ e \mapsto \mathsf{inr}\ e'} \text{ (S-11)}$$

$$\frac{e \mapsto e'}{\mathsf{case}\ e\ \mathsf{of}\ \{x.e_1; y.e_2\} \mapsto \mathsf{case}\ e'\ \mathsf{of}\ \{x.e_1; y.e_2\}} \text{ (S-12)} \qquad \frac{v\ \mathsf{val}}{\mathsf{case}\ \mathsf{inl}\ v\ \mathsf{of}\ \{x.e_1; y.e_2\} \mapsto [v/x]e_1} \text{ (S-13)}$$

$$\frac{v\ \mathsf{val}}{\mathsf{case}\ \mathsf{inr}\ v\ \mathsf{of}\ \{x.e_1; y.e_2\} \mapsto [v/y]e_2} \text{ (S-14)} \qquad \frac{e \mapsto e'}{\mathsf{abort}\ e \mapsto \mathsf{abort}\ e'} \text{ (S-15)}$$