a)

```
&CONTROL
  calculation = 'vc-relax',
  prefix = 'Si',
  pseudo_dir = './',
  outdir = './',
  etot_conv_thr=1.D-7,
  forc_conv_thr=2.D-6,
 nstep=150,
/
```

b)

```
&SYSTEM
  ibrav = 2,
  celldm(1) = 10.26221 ,
  nat = 8,
  ntyp = 1,
  ecutwfc = 40,
  ecutrho = 320,
  occupations = 'smearing',
  smearing = 'gaussian',
  degauss = 0.02,
  input_dft = 'WC',
/
```

c)

```
&ELECTRONS
  electron_maxstep = 150,
  diagonalization = 'david',
  conv_thr = 1.0d-7,
  mixing_beta = 0.20,
```

d)

```
/
&IONS
/
&CELL
  press = 0.0,
/
```

e)

```
ATOMIC_SPECIES
Si  28.0855   si_pbe_v1.uspp.F.UPF

ATOMIC_POSITIONS (crystal)
Si        0.125   0.125   0.125
Si        0.125   0.625   0.625
Si        0.625   0.125   0.625
Si        0.625   0.625   0.125
Si        0.875   0.375   0.375
Si        0.875   0.875   0.875
Si        0.375   0.375   0.875
Si        0.375   0.875   0.375
```

f)

```
K_POINTS {automatic}
10 10 10 0 0 0
```