1. Survival data were collected from patients with advanced lung cancer. The following data were recorded:

```
inst:       Institution code
time:       Survival time in days
status:     censoring status 1=censored, 2=dead
age:        Age in years
sex:        Male=1 Female=2
ph.ecog:    ECOG performance score (0=good 5=dead)
ph.karno:   Karnofsky performance score (bad=0-good=100) rated by physician
pat.karno:  Karnofsky performance score as rated by patient
meal.cal:   Calories consumed at meals
wt.loss:    Weight loss in last six months
```

The data were analysed using a Cox regression model and the following output was obtained:

```
Call:
coxph(formula = SurvObj ~ age + sex + ph.ecog + ph.karno + pat.karno +
    meal.cal + wt.loss, data = lung)

               coef exp(coef)  se(coef)     z      p
age        1.06e-02  1.01e+00  1.16e-02  0.92 0.3591
sex       -5.51e-01  5.76e-01  2.01e-01 -2.74 0.0061
ph.ecog    7.34e-01  2.08e+00  2.23e-01  3.29 0.0010
ph.karno   2.25e-02  1.02e+00  1.12e-02  2.00 0.0457
pat.karno -1.24e-02  9.88e-01  8.05e-03 -1.54 0.1232
meal.cal   3.33e-05  1.00e+00  2.60e-04  0.13 0.8979
wt.loss   -1.43e-02  9.86e-01  7.77e-03 -1.84 0.0652

Likelihood ratio test=28.3  on 7 df, p=0.000192
n= 168, number of events= 121
```

(a) State the form of the hazard function used in the Cox regression model.

(b) Explain why the model is also called the Cox proportional hazards model.

(c) Comment on the effect of sex on the hazard of patients.

(d) Provide a concise summary of the fitted model.