Answer

Solution:

(9.4)

(a) The maximum number of terms in a linear regression model that you can fit to these data is:

⇒ Since there are 7 variables excluding the dependent variable (V) in the dataset, we can have maximum 7 independent variables.

(b) The predictor variables, for the presence of colinearity:

⇒ Using R code,

code:

```
data_7Dec = read.csv(file.choose(), header=T)
round(cor(data_7Dec), 2)
```

output:

	Year	V	I	D	W	G	P	N

Year	1.00	0.02	−0.20	−0.12	−0.31	0.31	−0.18	−0.32
V	0.02	1.00	0.35	0.50	−0.09	0.23	−0.33	0.15

I	-0.20	0.35	1.00	0.82	0.39	0.14	0.12	0.27
D	-0.12	0.50	0.82	1.00	0.29	0.32	-0.07	0.28
W	-0.31	-0.09	0.39	0.29	1.00	-0.22	0.65	0.27
G	0.31	0.23	0.14	0.32	-0.22	1.00	-0.58	0.26
P	-0.18	0.33	0.12	-0.07	0.65	-0.58	1.00	-0.17
N	-0.32	0.15	0.27	0.28	0.27	0.26	-0.17	1.00

In the above matrix all the values are hagher than 0.6 (or) less than -0.6, indicate that those pairs are Collinear.

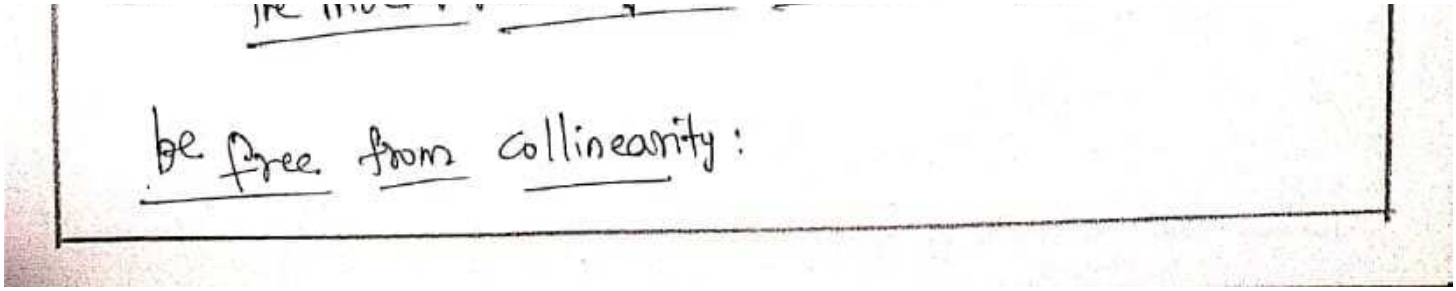
(c) The subsets of variables that are colinear are:

⇒ The colinear pairs are:

(D, I)

(P, W)

(d) The model relating to set of predictors found to



(d)

model2 = lm(V~D+P,data=data_7Dec)

summary(model2)

```
Call:
lm(formula = V ~ D + P, data = data_7Dec)

Residuals:
      Min        1Q    Median        3Q       Max
-0.101121 -0.036838 -0.006987  0.019029  0.163250

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept)  0.514022   0.022793  22.552  1.2e-14 ***
D            0.043134   0.017381   2.482   0.0232 *
P           -0.006017   0.003891  -1.546   0.1394
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.06442 on 18 degrees of freedom
Multiple R-squared:  0.3372,  Adjusted R-squared:  0.2636
F-statistic: 4.579 on 2 and 18 DF,  p-value: 0.02468
```

Likes: 1 **Dislikes: 0**