A

1- $P(A) = 0{,}3 \xrightarrow{Ind} P(A \cap B) = 0{,}12$ B

$P(B) = 0{,}4$

2- A

3- B $P(D)=,10$ $P(S)=,12$ $P(D \cup S)=,18$ $P(D \cap S)=,04$

4- A

5- D

2- A- $P(F) = P(F|\bar{D})P(\bar{D}) + P(F|D)P(D) = ,95 \times ,20 + ,05 \times ,80 = 0{,}23$

B- $P(D|F) = \frac{P(D \cap F)}{P(F)} = \frac{P(F|D) \times P(D)}{P(F)} = \frac{0{,}19}{0{,}19 + 0{,}04} = 82{,}6$

C- $P(F|D) \neq P(F) \rightarrow$ No

D- $P(F \cap D) \neq 0 \rightarrow$ No

3- a) $10 \pm 1{,}71 \frac{8}{\sqrt{25}}$ $10 \pm 2{,}736$ $(7{,}264, 12{,}736)$

b) The probability that the calculated CI contains the mean is either zero or one.
By repeating the sampling process, CIs will contain the population mean in 90% of the times.

c) $10 \pm 1{,}64 \frac{8}{\sqrt{25}}$

D) Same interpretation. Now the interval is smaller as we know the population standard deviation & use the standard Normal distribution.

E) $\frac{x-9}{8} \geq 1{,}64 \rightarrow x \geq$ 22.12

4-

A)

$H_0: \sigma^2 \leq 28$

$H_a: \sigma^2 > 28$

$$\chi^2 = \frac{(22-1)\,40}{28} = 30$$

The value of the test statistic $\chi^2 = 30$ provides an area between ,10 and ,05 in the upper tail hence p-value < α = ,10 and we can reject the null hyp.

B) the probability of obtaining a value for χ^2 greater than 30 is less than ,10 and greater than ,5

C) We still rejec the null hypothesis, the p-value will be even less as χ^2 increses.