MS Module 10 Confidence interval for difference in proportions practice exam questions

(The attached PDF file has better formatting.)

The observations and successes for a treatment group and a control group are

	treatment	control
observations	80	101
successes	56	67

The difference in the probability of success is the probability of success for the treatment group minus the probability of success for the control group.

Question 10.1: Sample difference in the probability of success

What is the sample difference in the probability of success between the two groups?

Answer 10.1: 56 / 80 − 67 / 101 = 0.0366

Question 10.2: Variance of the difference

What is the sample variance of the difference in the probability of success between the two groups?

Answer 10.2: (56 / 80 × (1 − 56 / 80)) / 80 + (67 / 101 × (1 − 67 / 101)) / 101 = 0.004836

Question 10.3: Standard deviation of the difference

What is the sample standard deviation of the difference in the probability of success between the two groups?

Answer 10.3: $0.004836^{0.5}$ = 0.0695

Question 10.4: *z* value for confidence interval

What is the *z* value for the 90% two-sided confidence interval for the difference in the probability of success for the two groups?

Answer 10.4: 1.645

(the *z* value for the 90% two-sided confidence interval is the *z* value for the 95% one-sided test)

Question 10.5: Upper bound of confidence interval

What is the 90% two-sided confidence interval for the difference in the probability of success for the two groups?

A. 0.0446
B. 0.0428
C. 0.1258
D. 0.1510

E. 0.2654

Answer 10.5: 0.0366 ± 1.645 × 0.0695

! lower bound: 0.0366 − 1.645 × 0.0695 = -0.0777
! upper bound: 0.0366 + 1.645 × 0.0695 = 0.1509