This is worth 30 points of extra credit.

I. The proposition “The night is young, and you’re so beautiful” is a substitution instance of which of the following propositional forms? (6 pts)

1. p
2. q
3. p & q
4. p & r
5. p & q & r
6. p & p
7. p or q

II. Which of the following propositions is a substitution instance of “p & q & q”? (2 pts. each)

1. YES / NO – The night is young, and you’re so beautiful, and my flight leaves in thirty minutes.
2. YES / NO – The night is young, and you’re so beautiful, and my flight leaves in thirty minutes, and my flight leaves in thirty minutes.
3. YES / NO – You’re so beautiful, and you’re so beautiful, and you’re so beautiful.

III. For each of the following claims, determine whether it is true or false. (2 pts each)

1. T / F – An argument that is a substitution instance of a valid argument form is always valid.
2. T / F – An argument that is a substitution instance of an invalid argument form is always invalid.
3. T / F – An invalid argument is always a substitution instance of an invalid argument form.

IV. Are the following arguments valid in virtue of their propositional form? (3 pts each)

1. Mary got married and had a child. Therefore, Mary had a child. Valid – Yes
2. John and Tom are equally tall. Therefore, John is tall. Invalid – No

V. Put each of the following sentences in symbolic form. (3 pts each)

1. He won’t arrive on time.
   \[ \neg p \]
2. He might not arrive on time.
   \[ p \]