Problem set 25,26

Graded

Student

Total Points

100 / 100 pts

Question 1

exit form receipt

30 / 30 pts

✔ **– 0 pts** Correct

– 20 pts missing email from snapshot

– 30 pts no answer

– 30 pts illegible

– 30 pts wrong problem

– 5 pts not @myhunter email

Question 2

Exercise 10.5.15

10 / 10 pts

✔ **– 0 pts** Correct

– 10 pts no answer / incorrect

– 10 pts illegible

– 10 pts wrong problem

– 10 pts not a graph

– 5 pts should be 7 vertices

– 5 pts should be 4 edges

– 5 pts should not contain a circuit

Question 3

Exercise 10.5.16

10 / 10 pts

✔ **– 0 pts** Correct (does not exist because |E| should be |V|-1)

– 10 pts no answer

– 10 pts illegible

– 10 pts wrong problem

– 10 pts has a circuit so is not a tree

– 10 pts should be 12 vertices

– 10 pts should be 15 edges

Question 4

Exercise 10.5.17

10 / 10 pts

✔ **– 0 pts** Correct

– 10 pts incorrect template

– 10 pts no answer

– 10 pts illegible

– 10 pts wrong problem

– 4 pts should be 6 vertices

– 4 pts should be 5 edges

– 2 pts provided a valid tree

Question 5

Exercise 10.5.18

10 / 10 pts

✔ **– 0 pts** Correct (does not exist because total degree should be 2(|V|-1)

– 10 pts no answer

– 10 pts illegible

– 10 pts wrong problem

Question 6

Exercise 10.5.19

10 / 10 pts

✔ **– 0 pts** Correct

– 10 pts incorrect

– 10 pts no answer

– 10 pts illegible

– 10 pts wrong problem

– 5 pts nust have 10 verstices

– 5 pts must hae 9 edges

– 5 pts must have a circuit of length at least 3

Question 7

Exercise 10.5.20

10 / 10 pts

✔ **– 0 pts** Correct

– 10 pts no answer

– 10 pts illegible

– 10 pts wrong problem

– 5 pts should have 6 vertices

– 5 pts should have 6 edges

– 5 pts should be connected

– 5 pts must not have loops or multiedges

Question 8

Exercise 10.5.21

10 / 10 pts

✔ **– 0 pts** Correct

– 10 pts no answer/incorrect

– 10 pts illegible

– 10 pts wrong problem

– 5 pts there should be 12 edges for degree 24

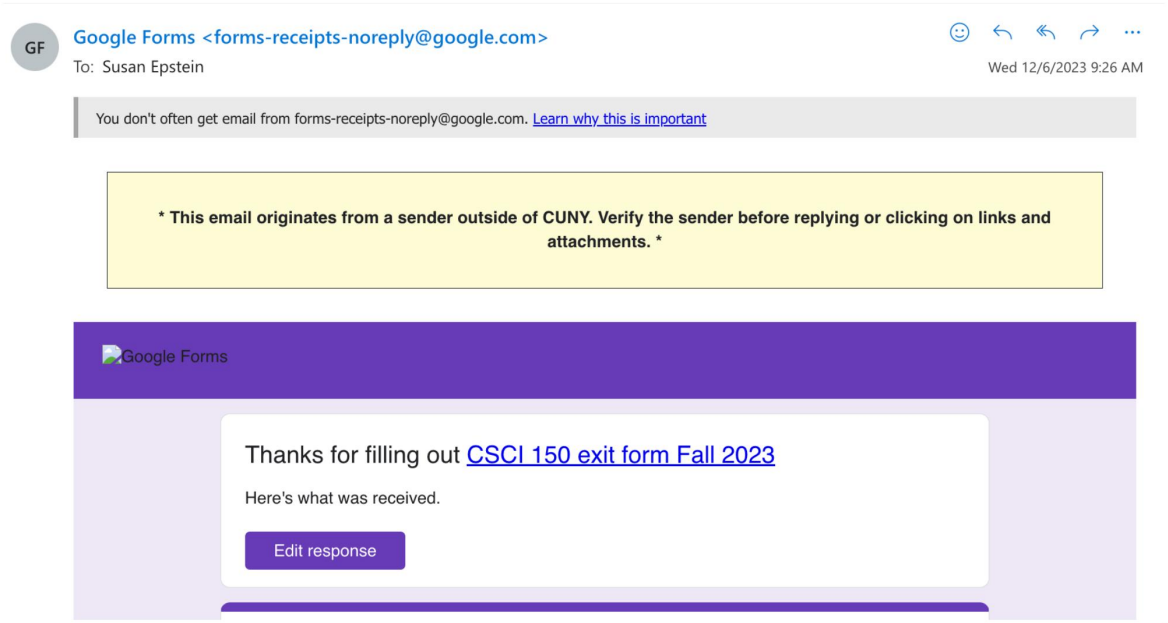
– 5 pts should have 10 vertices

– 5 pts must be connected

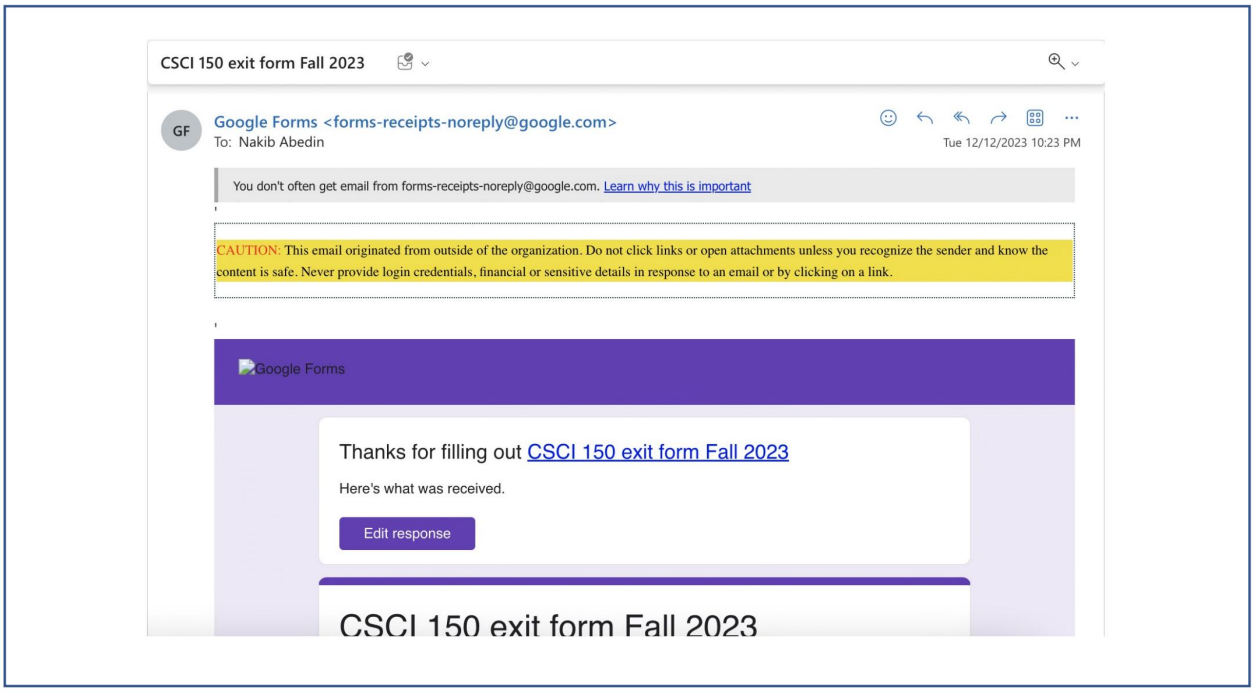
– 5 pts must not contain a circuit

Put your answer in each indicated box. Answers must be handwritten, legible and use correct notation.
Study the answers in Appendix A to similar problems so you know what your approach should be.
Larger boxes indicate that you are expected to provide substantial detail.

1. This question is **worth 30 points** because the Department really cares about this course. Please be as thoughtful and honest as you can with your answers. Complete the CSCI 150 exit form at https://forms.gle/patydMJn3zhoRipZ8 **using your @myhunter address**. Once you do this correctly you will get email at your @myhunter address that begins something like this:

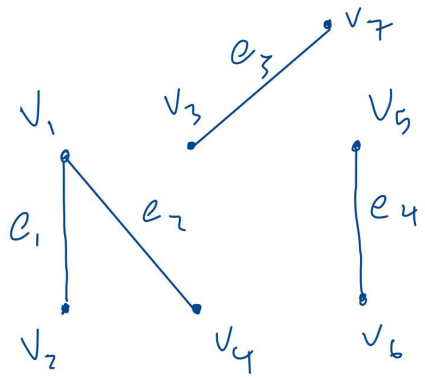


Your answer will receive **full credit only if you snapshot and then insert into the box below exactly this portion of the email you receive after you submit the form correctly**. (Do not put the full email here, just the portion that is shown.) Instead, information about me, **your snapshot must have material that indicates that you did it**.



In all the remaining problems, if you draw a picture, be sure you draw VERY clearly.

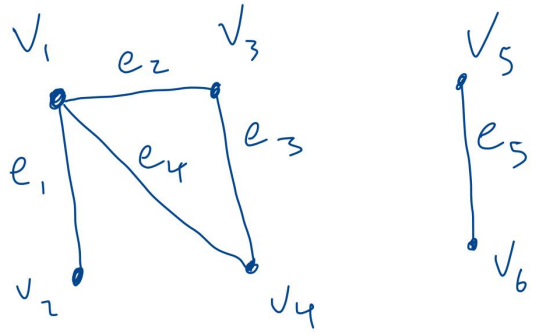
2. Exercise 10.5.15



3. Exercise 10.5. 16

By definition, if a given graph is a tree, then $|V| - |E| = 1$. For this question, we are told to draw a tree with 12 vertices and 15 edges. $|V| - |E| = 12 - 15 = -3$. Since $-3 \neq 1$, we have a contradiction and no such graph is possible.

4. Exercise 10.5.17



5. Exercise 10.5.18

Total degree $= |E| \cdot 2$

$10/_2 = |E|$

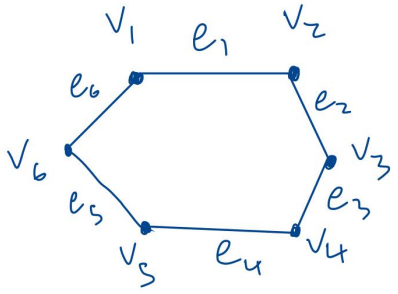
$E = 5$

We have five edges and five vertices but our graph needs to be a tree. A property of a tree is that $|V| - |E| = 1$ Since $|V| - |E| = 5 - 5 = 0$ and $0 \neq 1$, we have a contradiction and our graph can not be a tree

6. Exercise 10.5.19 (A non-trivial circuit has length at least 3.)

The number of vertices is greater than the number of edges. Since the graph must be connected, there will only be enough edges to visit every other vertex in the graph but there needs to be at least one more edge to go back to the vertex where the circuit began.

7. Exercise 10.5.20



8. Exercise 10.5.21

total degrees $= |E| \cdot 2$ $\quad |V| = 10$

$24 = |E| \cdot 2$

$|E| = 12$

In a tree, $|V| - |E|$ should equal 1. However, in our case, $|V| - |E| = 10 - 12 = -2$. Since $-2 \neq 0$, we have a contradiction and no tree can be constructed based on the given parameters.