ECE313 S2020 GHW 1 (10 points) Your Name:_____

Work alone. Upload pdf to Canvas by 11:59pm W 15 Jan.
No partial credit on this GHW—all must be correct in (1) for 5pts and in (2) for 5pts.
Areas in Venn Diagrams must be marked very clearly by shading or crosshatch.

(1)(5pts)

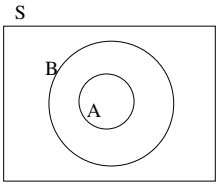

Figure 1: Venn Diagram

Fig. 1 is a Venn Diagram showing $A \subset B$. Prove Thm 1.4(d) in the text by the following steps:

1. Mark the area for $B \cap A^c$ in fig. 1.
2. Is this a correct expression for B as the union of disjoint subsets: $B = A \cup (B \cap A^c)$? Circle YES NO
3. Which axiom or theorem in the text lets you write $P(B) = P(A) + P(B \cap A^c)$?
4. Which axiom or theorem in the text lets you write $P(A) + P(B \cap A^c) \geq P(A)$?

(2)(5pts) Fig. 2(a) is the Venn Diagram for three events (subsets) E, F, G in S.

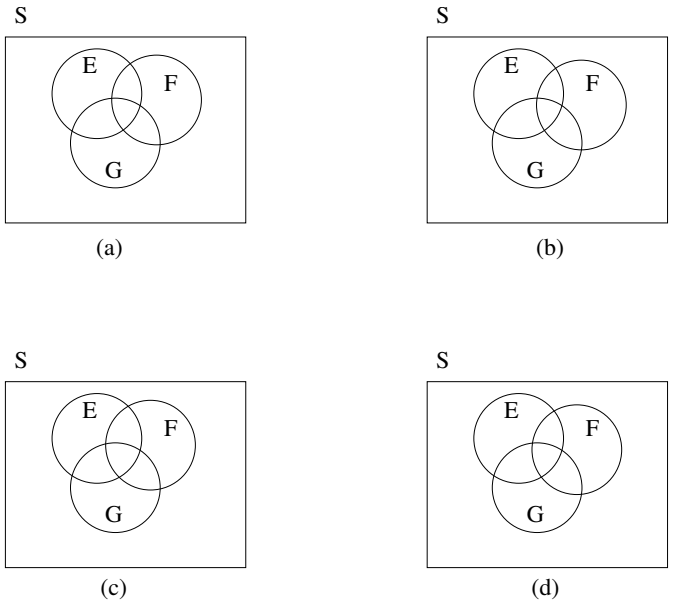

Figure 2: Venn Diagram

1. Mark the area for "at least one of the three events occurs" in fig. 2(b).
2. Mark the area for "at least two of the three events occur" in fig. 2(c).
3. Mark the area for "exactly two of the three events occur" in fig. 2(d).