Jahnavi Bonagiri 367 HW 1.

① ✓ABCD ✓BACD CABD ✓DABC
✓ABDC ✓BADC CADB ✗✓DACB
✗✓ACBD ✗BCAD CDAB ✓DBAC
✓ADBC ✗BCDA CDBA ✗DBCA
✗✓ADCB ✓BDAC CBAD DCBA
✗✓ACDB ✗BDCA CBDA DCAB

② a. $|\Omega| = 2^5 = 32$.
b.
(TTTTH) (TTTHH) (TTHHH) (THHHH) (HTHTH)
(THTHT) (HHHHH) (HHHHT) (HHHTT) (HHTTT)
(HTTTT) (TTTTT) (HHTHH) (TTHTT) (HTTHT)
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(THTHH) (THTTH) (HTHHT) (HTHTT) (THTHH)
(HHHTH) (TTTHT)

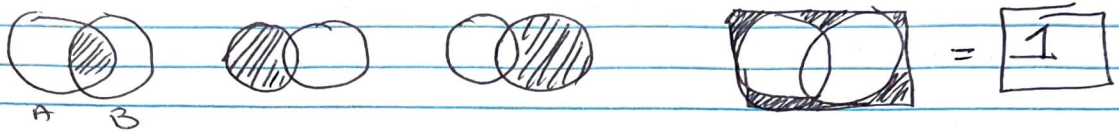
b. 3/32.
c. 2/32
d. 8/32

③ $|\Omega| = 6 \times 6 = 36$.
a. $P(A) = 1/36$
b. $P(B) = (3,4)(4,3)(6,1)(1,6)(5,2)(2,5) = 6/36$.
c. $P(C) = 18/36$.
d. $P(D) = 18/36$.
e. $P(E) = 18/36$
f. $P(A \cup B) = 1/36 + 6/36 = 7/36$.
g. $P(A \cap B) = 0/36$
h. $P(A \cup C) = 1/36 + 18/36 = 19/36$.

i) $P(C \cap D \cap E) = 0/36$

j) $P(B \cup D^c) = 6/36 + 18/36 = 24/36.$

(4) $P(A \cap B) + P((A \setminus B) \cup (B \setminus A)) + P(\bar{A} \cap \bar{B}) = 1$



(5)

Domain	Range
$\|a\|$	$\to 1$
$\|b\|$	$\to 1$
$\|c\|$	$\to 1$
$\|\{a,b\}\|$	$\to 2$
$\|\{a,c\}\|$	$\to 2$
$\|\{b,c\}\|$	$\to 2.$
$\|\{a,b,c\}\|$	$\to 3$
$\|\{\emptyset\}\|$	$\to 1$

The number of subsets is 8.
f is not an injection / 1-1 because 2 elements in domain correspond with the same range of f.

$f: \mathbb{Q} \Rightarrow \mathbb{Z}$

$q \in \mathbb{Q}$ $\quad z \in \mathbb{Z}$

(6) Domain: Range

$q = \frac{4}{2} \rightarrow 2 \swarrow z$

$q = \frac{6}{3} \rightarrow 2 \swarrow z$

That rule is not a function and is not well defined because multiple domain values (q) map onto the same range y values. Each x is not uniquely mapped to a y value making this function not well-defined.

(7) A) $P(A) + P(B) - P(A \cap B) = .5 + .3 - (.15) = \boxed{.65}$

B) $P(C) = 1 - P(A \cup B) = 1 - .8 = \boxed{.2}$

(8) $P(A) + P(B) - P(A \cap B)$

$.8 + .7 - .6 = \boxed{.9}$