Hand your completed quiz in before the due date. Do not forget to write down your name and student ID number. Marks will be awarded for this quiz based on the clarity of your answers. The marker will pay close attention to the logic of your answers. Please show all your working.

Q.1 300 students at FILA were asked if they were satisfied with Stat1 lectures in the last semester.

<table>
<thead>
<tr>
<th></th>
<th>Gender</th>
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<tbody>
<tr>
<td></td>
<td>Female</td>
<td>Male</td>
<td></td>
</tr>
<tr>
<td>Satisfied</td>
<td>80</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>Not Satisfied</td>
<td>120</td>
<td>45</td>
<td></td>
</tr>
</tbody>
</table>

When one student is randomly selected from these 300 students, find

(a) $P(\text{satisfied})$.
(b) $P(\text{satisfied} | \text{female})$.
(c) $P(\text{satisfied} | \text{male})$.

Q.2 Let $A$ and $B$ be events.

(a) If $P(A) = 0.6$ and $P(A \text{ and } B) = 0.4$, find $P(B | A)$.
(b) If $P(A) = 0.7$ and $P(B | A) = 0.4$, find $P(A \text{ and } B)$.

Q.3 Determine whether each of the following pairs of events is independent:

(a) Rolling a pair of dice and getting a “1” on the first dice and a “1” on the second dice.
(b) Drawing a “spade” from a deck of playing cards and then drawing another “spade” without replacing the first card.
(c) Same as part (b), except the first card is returned to the deck before the second drawing.
(d) Studying for an exam and passing the exam.

Q.4 Let $A$ and $B$ are independent events with $P(A) = 0.7$ and $P(B) = 0.4$. Find $P(A \text{ and } B)$.

Q.5 Suppose $P(A) = 0.3$, $P(B) = 0.4$, and $P(A \text{ and } B) = 0.12$.

(a) What is $P(A | B)$?
(b) What is $P(B | A)$?
(c) Are $A$ and $B$ independent?