VALID argument or explanation:
(1) It’s impossible for all the reasons to be true and the conclusion false.
(2) It’s impossible for any argument identical in form or any explanation identical in form to have all the premises true and the conclusion false.

<table>
<thead>
<tr>
<th>Sufficient Condition</th>
<th>Necessary Condition</th>
<th>FORM</th>
</tr>
</thead>
<tbody>
<tr>
<td>IF (there is a fire), THEN (there is oxygen).</td>
<td>IF F, THEN O.</td>
<td></td>
</tr>
</tbody>
</table>

VALID ARGUMENT         VALID FORM
Affirming a sufficient condition.       Affirming a sufficient Condition.
Reason (2) affirms the sufficient condition expressed in the conditional statement.
(1) If there is a fire, then there is oxygen.                   (1) If F, then O.
(2) There is a fire.                                                        (2) F.
So, (3) there is oxygen.                                         So, (3) O.

VALID ARGUMENT         VALID FORM
Denying/negating a necessary condition.       Denying/negating a necessary condition.
Reason (2) denies/negates the necessary condition expressed in the conditional statement.
(1) If there is a fire, then there is oxygen.                   (1) If F, then O.
(2) There is NO oxygen.                                             (2) not-O.
So, (3) there is NO fire.                                        So, (3) not-F.

INVALID ARGUMENT         INVALID FORM
Affirming a necessary condition.       Affirming a necessary condition.
Reason (2) affirms the necessary condition expressed in the conditional statement.
(1) If you have health insurance, then you are secure.            (1) If H, then S.
(2) You are secure.                                                                  (2) S.
So, (3) you have health insurance.                                    So, (3) H.

CE by ANALOGY proving that all arguments or explanations having this form are invalid:
(1) If there is a fire in this room, then there is oxygen in this room.   TRUE
(2) There is oxygen in this room.                                     TRUE
So, (3) there is a fire in this room.                                  FALSE

CE by POSSIBLE CONJUNCTION proving that this specific argument is invalid:
It’s possible that:
if you have health insurance, then you are secure; AND [All the reasons are granted.]
you are secure; AND [All the reasons are granted.]
you have billions of dollars and are in good health; AND [understand how P’s can be true & C false]
you do NOT have health insurance.                                      [The conclusion is negated.]

INVALID ARGUMENT         INVALID FORM
Denying/negating a sufficient condition.       Denying/negating a sufficient condition.
(1) If he has the queen of hearts, then I’ll make my bid.         (1) If Q, then B.
(2) He does NOT have the queen of hearts.                         (2) not-Q.
So, (3) I will NOT make my bid.                                    So, (3) not-B.

CE by ANALOGY proving that all arguments or explanations having this form are invalid:
(1) If there is a fire in this room, then there is oxygen in this room.   TRUE
(2) There is NO fire in this room.                                    TRUE
So, (3) there is NO oxygen in this room.                              FALSE