

8. Express these system specifications using the propositions p “The user enters a valid password,” q “Access is granted,” and r “The user has paid the subscription fee” and logical connectives (including negations).

- a)** “The user has paid the subscription fee, but does not enter a valid password.”
- b)** “Access is granted whenever the user has paid the subscription fee and enters a valid password.”
- c)** “Access is denied if the user has not paid the subscription fee.”
- d)** “If the user has not entered a valid password but has paid the subscription fee, then access is granted.”

34. Five friends have access to a chat room. Is it possible to determine who is chatting if the following information is known? Either Kevin or Heather, or both, are chatting. Either Randy or Vijay, but not both, are chatting. If Abby is chatting, so is Randy. Vijay and Kevin are either both chatting or neither is. If Heather is chatting, then so are Abby and Kevin. Explain your reasoning.