9. Which of the following is **not** a definition of an acid?

An acid

(a) contains replaceable hydrogen.
(b) is a proton donor.
(c) reacts with all metals.
(d) produces protons when added to water.

A group of students conducted a series of titrations to determine the concentration of acetic acid in vinegar using the following steps:

i. A sample of vinegar was pipetted into a volumetric flask that had been rinsed with the vinegar and then deionised water added up to the mark.
ii. The volumetric flask was stoppered, and the diluted solution mixed thoroughly.
iii. Aliquots of the diluted vinegar solution were pipetted into conical flasks that had been rinsed with deionised water and a few drops of indicator added to each flask.
iv. A standardised sodium hydroxide solution was added to a burette that had been rinsed with deionised water.
v. Two samples of diluted vinegar were titrated against the sodium hydroxide solution and both values were used to calculate the concentration of the vinegar.

6. Phenolphthalein was chosen as the indicator for the titration. Which of the following **best** explains why this was an appropriate indicator?

(a) The titration was between a strong base and a weak acid, so the final solution would be slightly basic.
(b) Phenolphthalein changes colour in the basic range, at a similar pH to the equivalence point of the titration.
(c) Phenolphthalein is pink in the acidic range and colourless in the basic range, and so the end point is easy to identify.
(d) At the equivalence point $[OH^-] > [H^+]$; therefore, phenolphthalein is an appropriate indicator as its colour change occurs at a basic pH.