

**Marks**  
**6**

- Solution A consists of a 0.050 M aqueous solution of benzoic acid,  $C_6H_5COOH$ , at 25 °C. Calculate the pH of Solution A. The  $pK_a$  of benzoic acid is 4.20.

pH =

What are the major species present in solution A?

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Solution B consists of a 0.050 M aqueous solution of ammonia,  $NH_3$ , at 25 °C. Calculate the pH of Solution B. The  $pK_a$  of  $NH_4^+$  is 9.24.

pH =

What are the major species present in solution B?

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**THIS QUESTION CONTINUES ON THE NEXT PAGE.**