

BACHELOR OF PHARMACY HONOURS - LEVEL 03 - 2018/19
BPU1110- GENERAL CHEMISTRY
FINAL EXAMINATION

INDEX NO:

Part B –Five (05) Short Answer Questions (answer all questions)

(40 marks)

Write answers in the space provided.

1. a) What is the electron configuration of Cu^+ ion? (Atomic number of Cu= 29) (04 marks)

b) Why is Zn not considered as a transition metal? (05 marks)

c) Name three (03) metals which activate enzymes. (03 marks)

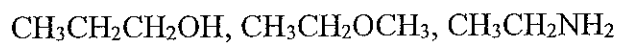
d) List three (03) toxic elements which are harmful to human body (03 marks)



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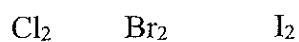
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2. a) Which of the following compounds will have intermolecular hydrogen-bonding? (02 marks)



- b) Ethanol ($\text{C}_2\text{H}_5\text{OH}$) and Dimethyl ether (CH_3OCH_3) have the same molar mass. Which one has a higher boiling point? Explain your answer. (05 marks)

- c) Arrange the following compounds in the order of **increasing** boiling point. (03 marks)



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Part C –Essay Questions

(30 marks)

Answer any 02 questions.

1. a) Write the expression for the solubility product, K_{sp} , of saturated solution of a metal hydroxide $M(OH)_2$.
b) If the pH of the solution is 9.88, calculate the pOH.
c) Calculate the hydroxyl ion concentration in the solution.
a) Calculate the K_{sp} for the metal hydroxide.

(15 marks)

2. Potassium permanganate ($KMnO_4$) can be used in the analysis of Fe (II) content of an iron supplement in the market. In acidic medium, $KMnO_4$ readily reacts with Fe (II). A sample of iron supplement (1.750 g) was dissolved in water and diluted up to 25.0 mL with dilute sulfuric acid. This solution was titrated against 0.0244 M $KMnO_4$ solution. The volume required to reach the end-point was 36.5 mL.
a) Write the balanced half-reactions for both $KMnO_4$ and Fe (II) in acidic medium.
b) Write the balanced redox reaction between permanganate ion and Fe (II) in the acidic medium.
c) Calculate the number of moles of $KMnO_4$ consumed in the titration.
d) Calculate the number of moles of Fe (II) titrated.
e) What is the mass percentage of Fe (II) in the iron supplement sample? (Atomic mass of iron is 56 g/mol)

(15 marks)



3. A gravimetric analysis was done to determine the mass percentage of silver ion of an impure sample of silver nitrate (AgNO_3) as follows. A 1.50 g of sample was dissolved in 50.00 mL of distilled water. Then a solution of sodium chloride (NaCl) was gradually added to the above mixture to precipitate the silver ions as AgCl . Sodium chloride was added until no more precipitate was seen to form. The precipitate was filtered, washed and dried. The mass of the dried precipitate was 1.62 g.
- Write an equation for the precipitation reaction.
 - Calculate the moles of AgCl precipitated. Atomic mass of $\text{Ag} = 107.8 \text{ g/mol}$,
 $\text{Cl} = 35.4 \text{ g/mol}$
 - Calculate the mass of silver present.
 - Calculate the percentage composition of silver in the original sample.

(15 marks)

————— **END** —————

