Uganda Martyrs University

FACULTY OF EDUCATION
SEMESTER ONE EXAMINATIONS 2022/23
BACHELOR OF EDUCATION (PRIMARY) YEAR THREE
PHYSICAL SCIENCE EDUCATION
PSC3101 ACIDS, BASES, AND SALTS

DATE: Fri 13/01/2023 **Time: 9:30 am-12:30 pm**

Instructions:

- **Follow instructions on this question paper and answer booklet carefully.**
- **Write your registration number on each page of this question paper.**
- **Section A is compulsory (20 Multiple-Choice Questions)**
- **Attempt any four Questions in Section B and write answers in the answer booklet provided, beginning each selected question on a new page in the answer booklet.**
- **Illustrate appropriately in Section B.**
- **Copy the answer table below in your answer booklet and neatly fill in the correct alternative to each Section A question.**

ANSWER TABLE FOR SECTION A (Copy and complete it in your answer booklet)

Q	A	Q	A	Q	A	Q	A
1		6		11		16	
2		7		12		17	
3		8		13		18	
4		9		14		19	
5		10		15		20	

SECTION A

For each of the multiple-choice questions, write the best choice that you believe is right in the answer table that you have drawn in the answer booklet.

Qn.#1. Which of the following is a weak acid?

A. HBr
B. HI
C. HF
D. HCl

Qn.#2. Which of the following is not a raw material for manufacturing washing soda?

A. Ammonia
B. Slaked lime
C. Sodium chloride
D. Limestone

Qn.#3. If the pH of the solution is 8, it means that it is

A. Strongly acidic
B. Weakly acidic
C. Weakly basic
D. Strongly Basic

Qn.#4. Which of the following gives CO_2 on heating?

A. Soda ash
B. Slaked
C. Quick lime
D. Limestone

Qn.#5. A solution turns blue litmus red, its pH is likely to be

A. 14
B. 7
C. 10
D. 3

Qn.#6. In an aqueous solution of HCl which of the following is absent?

A. Cl^-
B. H^+
C. OH^-
D. HCl

Qn.#7. Aqueous solutions of acids conduct electricity. This shows that

A. They contain OH^- ion
B. They contain cations and anions
C. They contain both H^+ and OH^- ions
D. They contain H^+ ions

Qn.#8. An acid can reacts with

A. Na_2CO_3
B. $PbSO_4$
C. Na_2SO_4
D. AgCl

Qn.#9. Self-dissociation of water produces

A. H+ and OH^- ions in equal amounts
B. H+ and OH^- ions in unequal amounts
C. a large number of H^+ ions
D. a large number of OH^- ions

Qn.#10. An aqueous solution with pH-zero is

A. Amphoteric
B. Acidic
C. Alkaline
D. Neutral

Qn.#11. A drop of the liquid sample was put on a pH paper; the paper turned blue. The liquid sample must be of

A. Ethanoic acid
B. Lemon Juice
C. HCl
D. Sodium_bicarbonate

Qn.#12. In any aqueous basic solution

A. $[H^+] = 0$
B. $[H^+] > [OH^-]$
C. $[H^+] < [OH^-]$
D. $[H^+] = [OH^-]$

Qn.#13. Lemon juice contains

A. lactic acid
B. tartaric acid
C. ascorbic acid

acetic acid

For Qn.#14 – Qn.#20. Mark the following statements as True (T) or False (F)

Qn.#14. H_2 gas is produced when acids react with metal oxides…...

Qn.#15. When the pH of the rainwater become more than 5.6 it is called acid rain. …..

Qn.#16. Aqueous solutions of all the salts are neutral in nature, that is, neither acidic nor basic in nature…….

Qn.#17. Acids furnish H^+ ions only in the presence of water……

Qn.#18. Lime water turns red litmus blue ……

Qn.#19. HF is a weak acid……

Qn.#20. Corrosive action of acids is due to OH^- ions present in them……

SECTION B: ATTEMPT ANY FOUR QUESTIONS

(All Questions Carry Equal Marks)

Qn.#21.

a) What is an acid? (1 mark)

b) Give three examples of acids found in food particles. (3 marks)

c) State five properties of acids. (5 marks)

d) i) Distinguish between strong and weak acids. (2 marks)

ii) State two examples of each. (4 marks)

Qn.#22.

a) Define the following terms

(i) Molar solution (1 mark)

(ii) Standard solution (1 mark)

b) What volume of 0.10 M sodium hydroxide solution.

(i) contains 4g of sodium hydroxide? (4 marks)

(ii) neutralizes $20cm^3$ of 0.05 M sulphuric acid solution. (4 marks)

(iii) Calculate the pH of the acid in b(ii) above. (4 marks)

c) Name at least three common indicators and indicate their colour changes in acidic and basic medium. (1 mark)

Qn.#23.

a) What are indicators? (1 mark)

b) What is the colour of methyl orange indicator in

) An acidic medium (2 marks)

(ii) A basic medium (2 marks)

c) Write down the reaction between zinc and sulphuric acid. (3 marks)

d) Give five importance of acids to our lives. (5 marks)

e) Why do solutions of acids and bases conduct electricity? (2 marks)

Qn.#24.

a) Use the following parameters as a basis to give differences between bases and acid as listed in the table. Copy and complete the table in your answer booklet. (12 marks)

S.N	Basis	Base	Acid
1	pH value		
2	Litmus paper		
3	Strength		
4	Characteristics		
5	Dissociation		
6	Arrhenius definition		

b) i) What is the name given to the reaction between an acid and a base? (2 marks)

ii) What are the products formed in such reactions. (1 mark)

Qn.#25.

a) i) What is pH? (1 mark)

ii) What happens to the pH if the hydroxyl ion concentration in the solution increases? (1 mark)

iii) What do you understand by the term 'a universal indicator'? (1 mark)

iv) What is the importance of pH for humans and animals, and our digestive system? (2 marks)

b) Distinguish between a base and a salt. (2 marks)

c) What is meant by acid rain? (1 mark)

d) i) How are salts obtained from an acid? (2 marks)

ii) Mention two uses of bases in our everyday life. (2 marks)

e) Give chemical name and chemical formula of

(i) Table salt (ii) Washing soda (iii) Baking soda (3 mark)

END