



GRETSA UNIVERSITY - THIKA

UNIVERSITY EXAMINATIONS SEPTEMBER – DECEMBER 2021 SEMESTER

BRIDGING COURSE IN CHEMISTRY

COURSE CODE: GUBC 013

COURSE TITLE: BRIDGING CHEMISTRY

DATE: 17 NOVEMBER 2021

TIME: 11:30 AM – 1:30 PM

INSTRUCTIONS TO CANDIDATES

1. SECTION A IS **COMPULSORY**.
2. SECTION B: ANSWER ANY OTHER **THREE** QUESTIONS.
3. **DO NOT** WRITE ANYTHING ON THIS QUESTION PAPER AS IT WILL BE AN EXAM IRREGULARITY.
4. ALL ROUGH WORK SHOULD BE AT THE BACK OF YOUR ANSWER BOOKLET AND CROSSED OUT.

CAUTION: *All exam rooms are under CCTV surveillance during the examination period.*

**SECTION A: COMPULSORY
MULTIPLE CHOICE QUESTIONS [1-5]**

[ONE MARK EACH]

- Which of the following are chemical changes?
 - Cooking of Food
 - Digestion of Food
 - Freezing of water
 - Water is heated up
- Which of the following is balanced chemical equation of the following reaction $Mg+O_2=?$
 - $2Mg + O_2 \rightarrow 2MgO$
 - $2Mg + O \rightarrow 2MgO$
 - $2Mg + O \rightarrow MgO_2$
 - $2Mg + O_2 \rightarrow MgO_2$
- Which of the following is NOT a compound?
 - Ammonia
 - Milk
 - Sodium Chloride
 - Chalk
- In metals, the charge carriers are
 - Electrons
 - Protons
 - Neutrons
 - Amperes
- The neutral atoms of all of the isotopes of the same element have
 - Different numbers of protons.
 - Equal numbers of neutrons.
 - The same number of electrons.
 - The same mass numbers.
 - The same masses.

SHORT ANSWER QUESTIONS: (ANSWER ALL QUESTIONS IN THIS SECTION)

- Outline any 5 roles of Chemistry in society **[5 marks]**
- Differentiate between saturated and unsaturated hydrocarbons. **[5 marks]**
- Differentiate between chemical and physical changes **[5 marks]**
- Outline 5 physical properties of matter **[5 marks]**
- Outline any 2 apparatus used for the following function **[4 marks]**

- i. Apparatus for measuring Volume
 - ii. Apparatus for measuring mass
6. State any 5 uses of halogens [5 marks]
7. Draw the structural formula for each of 2,3-dichlorobutane [3 marks]
8. Outline any 3 properties of water [3 marks]

SECTION B

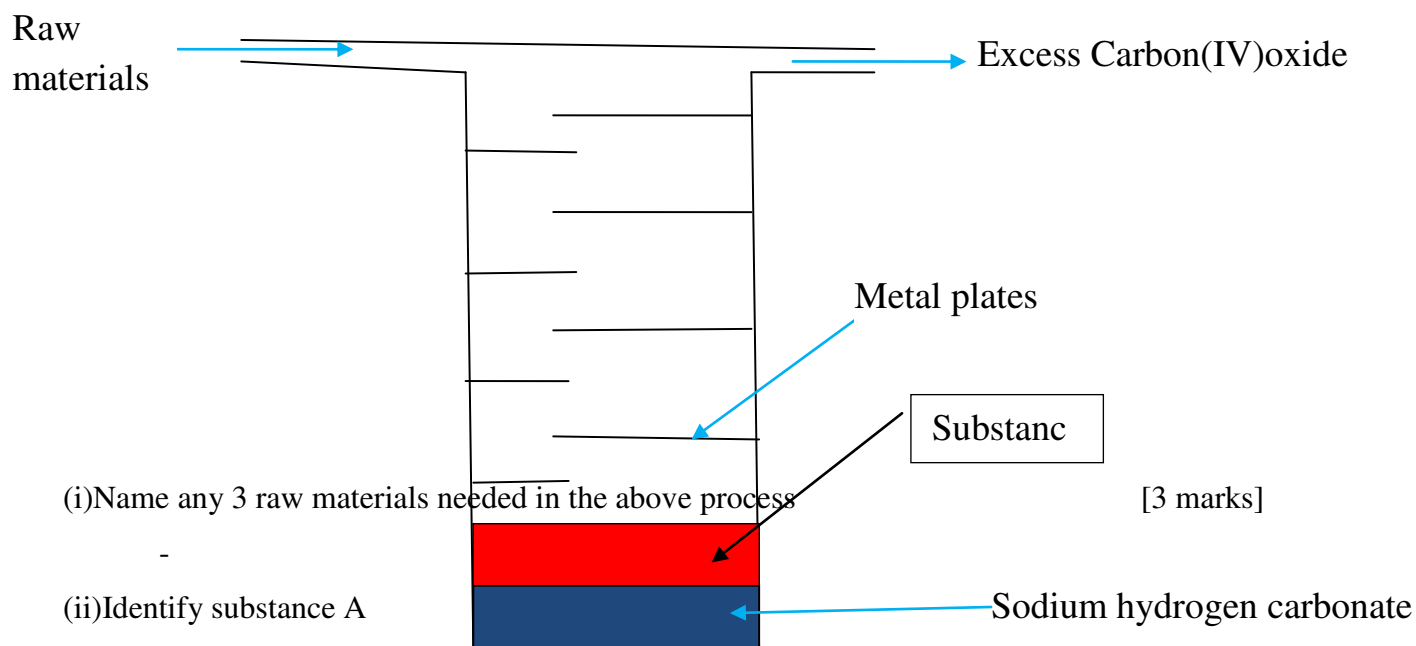
[CHOOSE ANY THREE QUESTIONS]

QUESTION ONE

- a) Explain briefly how a mixture of iron fillings and sulphur can be separated [4 marks]
- b) Explain 4 Applications of solvent extraction process [8 marks]
- c) Explain briefly the classification of mixtures [6 marks]

QUESTION TWO

- a) The diagram below shows a simple ammonia soda tower used in manufacturing sodium carbonate . Use it to answer the questions that follow:



(i) Name any 3 raw materials needed in the above process [3 marks]

(ii) Identify substance A

(iii) Write the equation for the reaction taking place in:

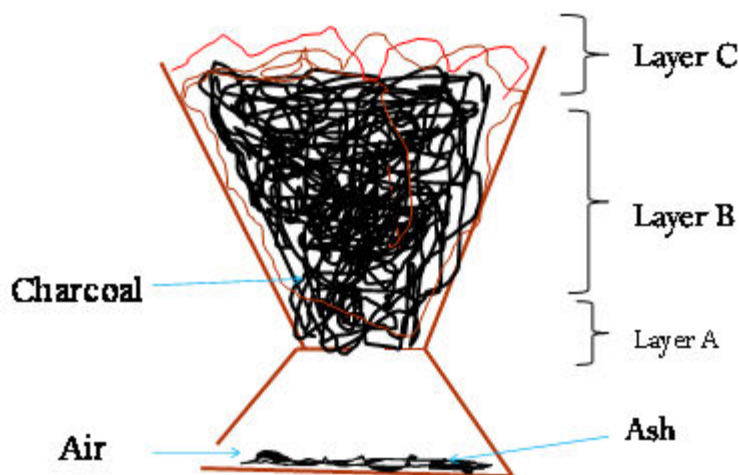
- a) Tower. [2 marks]
- b) Production of excess carbon (IV)oxide. [2 marks]
- c) The regeneration of ammonia [2 marks]

(iv) Give 2 reasons for having the circular metal plates in the tower. [2 marks]

(v) Name any gas recycled in the process illustrated above. [1 mark]

b) Describe how you would differentiate between carbon (IV) oxide and carbon(II)oxide using chemical method. [3 marks]

c) The diagram below shows a common charcoal burner .Assume the burning take place in a room with sufficient supply of air.



(a) Explain what happens around:

(i) Layer A [1 mark]

(ii) Layer B [1 mark]

(b) State and explain what would happen if the burner is put in an enclosed room. [2 marks]

d) The Colours of various commercial indicators behave differently in acids and bases. Use the knowledge of indicators, bases and acid to answer the questions that follow.

Indicator	Colour in.		
	Neutral	Base	Acid
1. Litmus;	i	Blue;	ii
2. Phenolphthalein;	Colourless;	ii	Colourless;
3. Methyl orange;	Orange	Yellow	iv
4. Bromothymol blue	Blue	v	vi

e) Indicate the colours of the labeled indicators shown by number i-vi [6 marks]

f) Explain the physical and chemical properties of acids [8 marks]

g) A colorless liquid was added anhydrous copper (II) sulphate (VI) which turned blue. Why is it wrong to conclude the liquid was pure water? [3 marks]

- h) Explain 3 uses of basis [3 marks]

QUESTION THREE

- a) Explain any 5 sources of Alkanes [5 marks]
- b) Discuss the characteristics of homologous series of Alkanes has the following [5 marks]
- c) Discuss the rules for naming Alkanes [5 marks]
- d) Explain the chemical properties of Alkenes [5 marks]

QUESTION FOUR

Carbon exists as an amorphous compound. Use the knowledge on carbon (IV) oxide to answer the question that follow

- a) Write the equation for the reaction for the school laboratory preparation of carbon (IV)oxide gas. [2 marks]
- b) What method of gas collection is used in preparation of Carbon(IV)oxide gas. Explain. [2 marks]
- c) Explain the effect Carbon(IV)oxide on lime water. [5 marks]
- d) Dry and wet litmus papers were separately put in a gas jar containing dry carbon (IV)oxide gas. State and explain the observations made on each paper. [5 marks]
- e) Describe the test for the presence of Carbon (IV)oxide. [3 marks]
- f) State three main uses of Carbon (IV)oxide gas [3 marks]

3.) Draw the structural formula for each of the following compounds:

(a) 2-methylheptane.

(b) 3-ethylhexane.

(c) 2,2,4-trimethylpentane.

(d) 2,3-dichlorobutane.