CHEMISTRY

1. (a)State what is meant by the following terms:
   i). Lattice energy (02marks)
   ii). Hydration energy (02marks)
   iii). Enthalpy of solution (02marks)

(b) Describe the experiment that can be carried out to determine the enthalpy of solution of calcium iodide (05marks)

c) Some chemical data is shown below

Enthalpy of atomisation of iodine=+106.8kJmol^{-1}

First ionisation energy of calcium=+590kJmol^{-1}

Second ionisation energy of calcium=+1145kJmol^{-1}

Enthalpy of atomisation of calcium=+178.2kJmol^{-1}

Enthalpy of formation of calcium iodide=-533.5kJmol^{-1}

Electron affinity of iodine=-295.4kJmol^{-1}

(i) Draw an energy level diagram for the formation of calcium iodide and use it to calculate the lattice energy of calcium iodide (4½marks)

(ii) Calculate the enthalpy of solution of calcium iodide (1½marks)

(The hydration energies of calcium and iodide ions are-1562 and -307kJmol^{-1} respectively)

(iii) Comment on the solubility of calcium iodide. (01mark)

(iv) State the two factors that affect the magnitude of lattice energy (02marks)

2. 10cm^3 of a hydrocarbon X was exploded with 70cm^3 of oxygen gas and cooled to room temperature. The final volume was 55cm^3. The volume of the gaseous mixture then reduced to 15cm^3 when it was passed through concentrated sodium hydroxide solution.

a)(i) Write a well balanced equation for the reaction when the hydrocarbon x was exploded in oxygen. (1½marks)

(ii) determine the molecular formula of X (03marks)

(b) Write all the possible isomers of X (01mark)

(c) X does not react with ammonia cal copper(I) chloride solution

(i) Identify X (½mark)

(ii) Write the equation and a mechanism for the reaction between X and water in presence of sulphuric acid and mercury sulphate at 60^{0}C (04marks)

(iii)Write equations and conditions to show how X can be prepared from butan-2-ol (04marks)

(d) Name the reagent that can be used to distinguish between the following pairs of organic compounds and in each case state what would be observed if each compound was treated separately with the reagent you have named.

(i)CH_3CH_3 and CH_2CH_2 (03marks)

(ii) CH_3CCH and CH_3CCCH_3 (03marks)

ICT

1. (a) A modem uses the technology of modulation and demodulation, explain the two terms.
   (b) Explain the following differences between the following terms as used in data transmission giving their advantages and disadvantages.
      (i) Asynchronous transmission
      (ii) Synchronous transmission
2. (a) Explain the factors that affect the rate of data transmission on a network.
   (b) Differentiate between manual data transmission and electronic data transmission
   (c) List and explain the disadvantages of electronic data transmission over manual data transmission.
3. Differentiate between the following data transmission medias
   i). Physical data transmission media – giving examples

ii). Wireless data transmission media – giving examples

CRE 2

Compare the anointment of Jesus Christ in the gospels of John and Mark.

LITERATURE IN ENGLISH – 2

Discuss the theme of retribution as portrayed in Richard III.

LUGANDA

Walabyeki Magoba mu muzannyo gwe Namulanda yagenderera kutumanyisa ki?

GEOGRAPHY P250/2

To what extend has limited capital hindered the development of the forestry industry in any one tropical African country. (25marks)

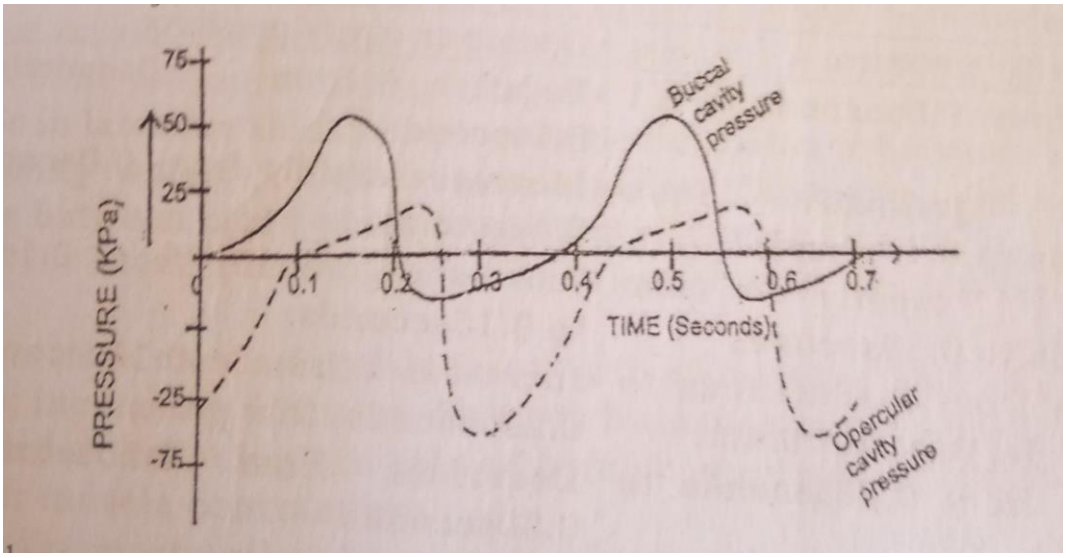
GEOGRAPHY P250/3

1. For any field work you have carried out as a group or an individual,
a) State the topic (2mks)
b) State the objectives of the study. (5mks)
c) Describe how you use any three methods to collect data in the field (9mks)
d) Drawasketchmapoftheareastudiedshowingphysicalandhumanfeatures(6mks)
e) Outline the merits of using observation method (3mks)

2. Asses the contributions of the forestry sector to the development of Uganda. (25mks)

BIOLOGY

1. The figure below shows the pressure changes in the buccal and opercular cavities of a teleost fish obtained by using hypodermic tubing connected to a pressure recorder.



Negative pressure indicates expansion while positive pressures mean contraction of the cavities.

(a) Describe the pressure changes in the buccal cavity for the first 0.5seconds. (12 marks)

(b) Compare the pressure changes in the buccal cavity and opercular cavity in the first 0.4 seconds. (06 marks)

(c) Explain the observed changes in the buccal cavity and opercular cavity from 0.2 seconds to 0.6 seconds. (09 marks)

The table below summarizes the features of gills in three species of teleost fish **A**, **B** and **C**

Fish Species	Thickness of lamellae/um	Distance between lamellae /um	Distance between blood and surrounding water/um
A	35	75	6
B	15	40	3
C	5	20	1

(d) Use the information provided in the table above to answer questions.

(i) Comment on the relationship of thickness of the lamellae and distance between blood and surrounding water. (02 marks)

(ii) Explain how lamellae thickness relates to the level of activity of the fish species. (09 marks)

(iii) Blood in the lamellae of the teleost fish flows in opposite direction to that of water. Comment on the efficiency of this mechanism in gas exchange. (02 marks)

ART AND DESIGN

INSTRUCTIONS:

You have been given 40 questions to answer. Make sure you do this work in your Note books and do research where you feel challenged.

WEEK 1

1. What is art?
2. What is an art studio?
3. Define studio Technology?
4. What are some of the things found in an art studio?
5. What is a craft?
6. Describe two categories of crafts.
7. Differentiate between an tool and a material.
8. What is the difference between two dimensional art and three dimensional art?
9. Explain the following disciplines in art with examples.
    I. Graphics design
    II. Drawing from living person
    III. Drawing from nature
    IV. Drawing from still life
    V. Original imaginative composition
10. Define the following art terms.
    I. Marquette
    II. Applique
    III. Assemblage
    IV. Casting
    V. Mold
    VI. Quilting
    VII. Focal point
    VIII. Gradation
    IX. Perspective
    X. Monochrome

11. Define elements of art and design.
12. Why are elements of art and design important?
13. Define the following elements of art with examples.
    I. Line, shape, texture, space, color, value
    II. Distinguish between;
    III. Shape and form
    IV. Value and tone,
    V. Organic shapes and geometric shapes
14. What are principles of art?
15. Distinguish between symmetrical balance and asymmetrical balance with examples.
16. Define the following principles of art.
    I. Emphasis
    II. Unity
    III. Rhythm
    IV. Variety
    V. Harmony
17. How useful are principles of art in design?
18. Distinguish between linear and aerial perspective.
19. What are secondary colors? give examples
20. What is the difference between visual texture and artificial texture?

WEEK 2

21. Define clay.
22. Distinguish between residual clay and sedimentary clay.
23. Explain the three main qualities of good clay.
24. List 5 importance of clay as a means of expression.
25. Why is it important to sieve clay for ceramics in the preparation process?
26. Write short notes on the Following.
    I. Grog
    II. Slab method
    III. Kneading
    IV. Slip casting
    V. Slaking
    VI. Throwing
    VII. Handwork
    VIII. Terracotta
    IX. Green ware
    X. Pinching method
27. Define the following clay decorating techniques.
    I. Stamping
    II. Slip trailing
    III. Burnishing
    IV. Embossing
    V. Inlaying

VI. Painting
VII. Glazing
VIII. Incising

28. What is the difference between additive method and subtractive method of sculpture?
29. List the tools and materials used in pottery.
30. Examine the uses of pottery in your community.
31. Define the term fabric decoration.
32. List examples of items made in fabric decoration.
33. Define batik.
34. List four techniques used in batik.
35. Outline the general procedure of making batik
36. Differentiate between tie and dye and batik.
37. Explain the following tie and dye techniques with illustrations
    I. Spirals
    II. Stitching
    III. Stripes
    IV. Pleats
38. What are the advantages and disadvantages of tie and dye?
39. What is a motif?
40. Outline the basic procedure of making a motif with illustrations.

END