

Total = $12\frac{1}{2} + 15 = 27\frac{1}{2}$
50

DEPARTMENT OF PHARMACEUTICAL AND MEDICINAL CHEMISTRY
 COLLEGE OF PHARMACY,
 AFE BABALOLA UNIVERSITY
 2022/2023 Session (Second Semester)
 PCH 202 (Inorganic Pharmaceutical Chemistry) Mid-Semester Test

ATTEMPT ALL 50 QUESTIONS.

TIME ALLOWED: 1 HOUR

Student Matric No: _____

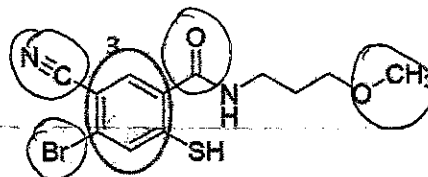
3rd May, 2023

PART A

For questions 1 – 6, fill out the correct geometry and bond angle for each hybridization stated in the table below.

Hybridization	Geometry	Bond angle
sp	1. tetrahedral linear ✓	2. 180° ✓
sp ²	3. pyramidal X	4. 112.5° X
sp ³	5. tetrahedral ✓	6. 109.5° ✓

For questions 7 – 10, clearly circle and name any four functional groups present in the structure below, e.g. 3. Aromatic ring (Note: Do NOT repeat the given example).



$12\frac{1}{2}$
25

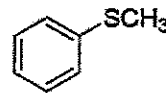
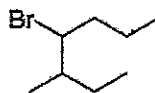
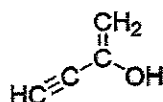
7. Amide group ✓
8. Methyl group (alkane) X
9. Halogen group ✓
10. Carboxylic group X

Provide the IUPAC names for the structures below.

A

B

C



11. A: X
12. B: X
13. C: X

For questions 14 – 21, write the full words (True or False) not (T or F) based on the statements.

14. All organic molecule contain atoms connected via σ -bonds, and π -bonds if multiple bonds are present. True ✓

15. A triple bond consists of two σ -bonds and a π -bond. *True* X
16. The difference between inductive effect and mesomeric effect is that inductive effect is mediated via π -bonds; while mesomeric effect is mediated via σ -bonds. *False* ✓
- *17. A single Lewis structure is not sufficient to represent molecules that are in resonance. *False* X
18. According to IUPAC nomenclature, carboxylic acids are considered to be of lower priority to aldehydes. *False* ✓
- *19. Electronegativity is the ability of an atom to draw electrons away from itself. *False* ✓
20. In assigning IUPAC names to organic molecules, lower priority functional groups are treated as the main group, while higher priority functional groups are treated as substituents. *False* ✓
21. Covalent bonding involves electron sharing while ionic bonding involves electron transfer. *True* ✓

Write the option that best answers the questions 22 – 24 from the options listed below.

- a. A complete overlap between two hybridized orbitals
b. A partial overlap between two unhybridized p orbitals
c. A triple bond
d. A weak overlap between a sigma bond and an adjacent empty/partially-filled p orbital
22. What option best describes hyperconjugation? *(a)* X
23. What option best describes a sigma (σ) bond? *(b)* X
24. What option best describes a pi (π) bond? *(d)* X

For questions 25, select the option that best answers the question.

25. Which of the following is not a polar effect in organic molecules?
- a. Electromerism b. Mesomerism *(c)* Hybridization d. Hyperconjugation

PART B

For questions 26 – 50, select the option that best answers the question.

26. An element with valency of 2 forms an ion having 8 protons. How many electrons does the ion have?
(A) 10 *(B) 8* (C) 6 (D) 2
27. The larger the atomic radius the harder it is to remove the valence electrons.
A. True *(B) False*
28. In a chemical bonding, an atom M with 5 valence electrons gained electrons to attain octet configuration. What is the valency of M
(A) 5 B. 6 C. 8 D. 3
29. _____ provides a set of rules for determining the ground state electronic structures of atoms
A. Octet rule B. Schrodinger's theory C. Bohr's theory *(D) Aufbau principle*
30. The p orbitals have _____ and _____ electrons
(A) 2 subshells/maximum of 8 electrons B. 3 subshells/maximum of 6 electrons

MATRIC No.: _____

c. Enumerate at least 5 advantages of high-performance liquid chromatography technique for chemical assays.

4.) An aqueous solution of exsiccated ferrous sulphate was prepared by adding 41.50 g of FeSO_4 to enough water to make 1000 mL of solution at 18°C . The density of the solution is 1.0375 and the molecular weight of FeSO_4 is 151.9. Calculate:

(i) The molarity and molality

(ii) The mole fraction of FeSO_4 , the mole fraction of water, and the mole percent of the two constituents and

(iii) The percentage by weight of FeSO_4 .

5.) Write short notes on each of the following concepts of organic systems:

i. Electronegativity

ii. Polarity/polarization effect in organic compounds

iii. Resonance and conjugation

6.)

(a) Explain the rationale behind the combination of dried aluminium hydroxide and magnesium trisilicate in Jawasil® antacid suspension.

(b) Mention any three compounds of magnesium and state one pharmaceutical importance of each compound.

7.)

(a) Give the IUPAC name (show your working) and identify the coordination sphere of the following coordination compounds:

(i) $\text{Na}_4[\text{PtCl}_6]$

(ii) $\text{K}_4[\text{Fe}(\text{CN})_6]$

(iii) $[\text{Co}(\text{NH}_3)_6]\text{Cl}_3$

(b) Enumerate the different types of ligands in complexes.

Part B = 15/25

C. 5 subshells/maximum of 10 electrons D. 6 subshells/maximum of 6 electrons

31. Which of the following increases across the period in the periodic table?

☒ (A) Atomic radius (B) Metallic character (C) Atomic size ☒ (D) Electronegativity

32. Elements that have metallic and non-metallic properties are called

(A) Actinides (B) B family elements (C) Transition metals ☒ (D) Metalloids

33. Which of the following element has a valency of 2?

(A) Nitrogen ☒ (B) Oxygen (C) Lithium (D) Boron

34. Alkali metals react with water to form

(A) hydroxides ☒ (B) oxides (C) hydrides (D) epoxides

35. Which of the following statement is correct?

(A) Atomic radius increases across the period and decreases down a given a given group

(B) Electronegativity decreases across the period and increases down the group

☒ (C) Ionization energy increases across the period and decreases down the group

(D) Elements are arranged in the order of decreasing atomic number in the periodic table

36. Electron affinity increases across a given period and decreases down the group

☒ (a) True (b) False

37. Identify the correct statement(s) about group VIA elements

(A) They are non-metals (B) they are bivalent ☒ (C) they occur as gases ☒ (D) A and B

38. All except one is no longer recommended in therapeutics because of their high toxicity risks

(A) Zinc ☒ (B) Lead (C) Arsenic (D) Antimony

39. One of the primarily uses of sulphur containing drugs is as

(A) Antiviral agent (B) Keratolytic agent ☒ (C) Analgesic (D) Anticonvulsant

40. Pauli Exclusion Principle states that

(A) Orbitals are filled in order of energy with the lowest energy orbitals being filled first.

(B) in any atom, no two electrons may have identical sets of all four quantum numbers

☒ (C) if there is a set of degenerate orbitals, pairing of electrons in an orbital cannot begin until each orbital in the set contains one electron

(D) the principal quantum number tells about the shape of an orbital

41. Which is the correct electronic configuration of calcium ion?

(A) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^4 s^2$ ☒ (B) $1s^2 2s^2 2p^6 3s^2 3p^6$ (C) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^2$ (D) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^2 4s^2$

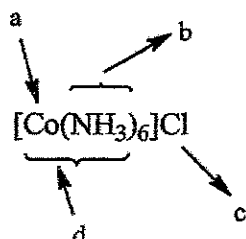
42. All but one of the following is not a type of ligand in complexes

(A) Unidentate ligands (B) polydentate ligands ☒ (C) superdentate ligands (D) ambidentate

43. Mention one pharmaceutical importance of EDTA

It is used as a 25% chemotherapeutic substance

Use the structure below to answer questions 19 and 21



44. "a" and "b" in the coordination compound above are known as

- ☒ Coordination sphere and Ligand (B) Coordination sphere and ionization sphere
☒ Central atom and ligand (D) Ligand and coordination sphere
45. "d" is known as
- ☒ Coordination sphere (b) Coordination bond (c) Anion (d) Central atom
46. The coordination number of cobalt in the compound is
- (A) 1 (B) 3 ☒ 6 (D) 9
47. The importance of EDTA in complexometric analysis is due to its ability to form chelates with
- (A) only group IA elements (B) group IA and IIA metals ☒ nearly all metals
 (D) nearly all elements
48. One of the following compounds of magnesium is not used as antacid
- (A) sulphate (B) hydroxide ☒ carbonate (D) trisilicate
49. The major rationale for the combination of aluminium hydroxide and magnesium trisilicate in some antacid preparation is
- (a) to enhance the digestion of the drug (a) to improve the taste of the drug
☒ to increase tolerability of the drug (d) to enhance the absorption of the drug
50. NH_3 is an example of a
- (a) neutral ligand ☒ unidentate ligand (c) anionic ligand (d) A and B

10/20

PMB 212 SECOND SEMESTER MID-TERM TEST (TYPE A)

INSTRUCTION: Answer ALL questions by filling the correct answer in the gap. TIME: 15 MINS.

MATRIC NO:---

1. Mention three precautions you should take to avoid contaminations during microbiological procedures.

- Transferring of agar from conical flask should be done near a flame via a spirit lamp to ensure a microbe-free atmosphere.
- Talking during experiments is highly prohibited so as to avoid introduction of foreign organisms into agar, etc.
- Work surfaces should be properly sanitized with alcohol or ethanol to avoid transportation of germs via use of hands.

2. Write out the full meaning of the following abbreviations:

- TMTC - Too many to count
- MIC - Minimum Inhibitory Concentration
- MR-VP - Methyl Red - Voges Proskauer agar

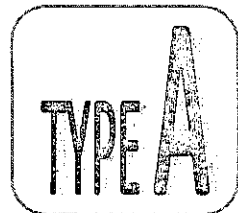
3. You are provided with an empty McCartney bottle, measuring cylinder and a glass rod.

Describe how you will sterilize these glass wares using the hot air oven.

An hot air oven is a microbiological laboratory equipment used to sterilize items that are used in the laboratory to carry out experiments. Items listed above like McCartney bottle, measuring cylinder are used to be sterilized by the hot air oven. To do so, the door to the hot air oven is open by the handle or latch, after which the items to be put in are sterilized. Then the door is shut and turned on at the power button and left to increase to a temperature of 42°C after which the hot air oven will be left for about 15 minutes. Then the items to be sterilized are brought out and used to carry out whatever duties they are meant to be used for.



AFE BABALOLA
UNIVERSITY (ABUAD)
KAL. S.S. AFE BABALOLA WAY,
ADOLU, EKITI STATE, NIGERIA.
P.M.B 5555 ADOLU, EKITI.



COLLEGE OF PHARMACY
PHARMACEUTICAL MICROBIOLOGY/BIOTECHNOLOGY DEPARTMENT
COURSE TITLE: PHARMACEUTICAL MICROBIOLOGY PRACTICAL I
COURSE CODE: PMB 212

SECOND SEMESTER TEST, 2022/2023 SESSION

15th May, 2023

INSTRUCTION: Answer ALL questions by filling the correct answer in the gap. TIME: 15 MINS.

MATRIC NO:-----

1. Name the instrument labeled A and state one major sterilizing activity done on the instrument before use. The instrument labelled A is an Inoculating loop and the sterilizing activity done on it is flaming.
2. What is the instrument labeled C used for? The instrument labelled C is used for picking up reagents and measurement of small amount of liquids.
3. What method of isolation of pure culture is this instrument used for? The method of isolation of pure culture it is used for is spread plate method of isolation.
4. The instrument labeled D is called A spreader
5. What is the equipment labeled F used for? The equipment labelled F is used for sterilization of equipment using dry heat.
6. You are provided with a 24 hours bacteria culture, describe the morphology of its colony using the table below.

S/N	Shape	Size	Colour	Elevation	Margin	Surface
1	irregular large	large	yellow	elevated	entire elevated	rough
2	irregular small	small	creamy	elevated	entire elevated	smooth

7. Carefully study the slide under the microscope labeled 'G' and name the cell arrangement of the simple stained bacteria on the slide.

The arrangement of the cells in the simple stained bacteria are rod shaped cells.
(74) (74)



AFE
BABALOLA
UNIVERSITY
ADO-EKITI (ABUAD)
P.M.B. 5454, ADO-EKITI

COLLEGE OF PHARMACY

DEPARTMENT OF PHARMACEUTICS AND PHARMACEUTICAL TECHNOLOGY
200 LEVEL PHARM D. MID-SEMESTER TEST SECOND SEMESTER 2022/2023 SESSION

COURSE: PCT 212 (DISPENSING PRACTICAL II)

GROUP: 2A

DATE: Monday May 16, 2023

TIME: 2.30 pm – 4.30 pm

VENUE: PCT. Lab

MATRIC NO.:

Answer ALL Questions in Sections A and B

SECTION A

INSTRUCTIONS^{A4}: Preparation of product is required in this section. The attention of the Examiner must be drawn to any **poison** detected and the **poison book** duly signed afterwards. All calculations, table of quantities used, quantities dispensed, type of container, label, auxiliary label and specimen label must be clearly shown on the answer booklet. **The method of preparation and comment should only be given where required.**

- R_x

Chloroform water double strength	150 ml
Syrup	30 ml
Tragacanth	0.2%
Chalk	6 g
Concentrated cinnamon water	1.2 ml
Water for preparation to	300 ml

Make a preparation. Send 60 ml to eleven months old Baby Sam Duke
Label: Two dessertspoonful b.i.d
- Send 90 ml of 1 in 1000 potassium permanganate solution to Hospital ward B. Label appropriately with an instruction to use as mouthwash t.i.d.
You are to make use of 1% w/v stock solution of potassium permanganate.

SECTION B

INSTRUCTIONS: Preparation of products is not required in this section. All calculations, table of quantities used, quantities dispensed, type of container, label, auxiliary label and specimen label must be clearly shown on the answer booklet. **The method of preparation and comment should only be given where required.**

- R_x

Diazepam	0.03g
Water	1 ml
Chloroform Spirit	10%
Syrup to	20ml

Make a syrup. Send twenty two doses to Mr. Abdul Musa.
Label one tablespoonful nocte.

DEPARTMENT OF PHARMACEUTICAL AND MEDICINAL CHEMISTRY

COLLEGE OF PHARMACY,

AFE BABALOLA UNIVERSITY

2022/2023 Session, Second Semester Examination

PCH 202: Inorganic Pharmaceutical Chemistry

5th JUNE, 2023

Matric. Number:.....

Time allowed: Three hours

Section A: Answer all questions in Section A and ANY four(4) questions from section B.

Section A: Answer all questions in this section. Each question carries 20 marks.

- 1) An assay is an investigative procedure for qualitatively assessing and quantitatively measuring the presence or amount or the functional activity of a target entity (the analyte) which can be a drug or a biochemical substance or organic sample.
 - a. Explain the concept of chemical assays in pharmaceutical analysis.
 - b. Briefly explain the principle of microbiological assays and list at least two methods employed in microbiological assays.
 - c. Enumerate the characteristics of a good assay method and briefly explain any two of them.
 - d. What is the molality of a solution containing 0.25 mol of potassium bromide, KBr, in 1.25 kg of water?
- 2) (a) (i) Write short note on ligands (ii) State the limitations of Werner's postulate on coordination compounds.
(b) Discuss citing appropriate examples what you understand by (i) covalent bond (ii) heterolytic cleavage

Section B Answer ANY four (4) questions from this section. Each question carries 15 marks.

- 3) As an analytical chemist in the Pharmaceutical and Medicinal Chemistry Laboratory resident in the College of Pharmacy, Afe Babalola University, Nigeria;
 - a. Briefly discuss the principles of bioassays in pharmaceutical analysis.
 - b. Differentiate between Molarity and Normality.



DEPARTMENT OF PHARMACEUTICS AND PHARMACEUTICAL TECHNOLOGY
COLLEGE OF PHARMACY
AFE BABALOLA UNIVERSITY, ADO EKITI

200 LEVEL PHARM D. SECOND SEMESTER EXAMINATION 2022/2023 SESSION

COURSE: PCT 202 (Pharmaceutical Preparations and Calculations)

DATE: Friday May 26, 2022 TIME: 9.00 am – 12.00 pm (3 hours)

Matric No.

There are three sections in this question paper, Section A (Multiple Choice Questions), Section B (Short answer questions), Section C (Essay Questions). You are to answer the questions as specified under each section.

SECTION B (Short Answer Questions)

Instructions:

- Answer all questions in Section B in the answer booklet provided
 - Answer each question on a fresh page of the answer booklet
 - Each question carries 5 marks.
- ✓ 1. Define the following terms as it relates to Phase Equilibria:
- a) Equilibrium
 - b) Phase
 - c) Phase Equilibrium
 - d) Eutectic Mixture
 - e) Sublimation
- ✓ 2. Describe what happens when a cell is placed in hypotonic solution.
- ✓ 3. Briefly (few sentences) explain the following terms with an example:
- i. Completely miscible liquids
 - ii. Practically immiscible (or insoluble) liquids
 - iii. Partially miscible liquids
 - iv. "Common ion effect" of additional substance on solubility of solids in liquids.
 - v. "Salting out" (Solubility of gases in liquids)
- ✓ 4. Give five (5) examples of powders that are usually dispensed in bulk form.
5. R_x Gentian Violet solution 360 ml
- Make a solution such that 50 ml diluted to 5 liter equals a 1:5000 w/v solution.
- Sig: Apply undiluted to the affected area
- i. How many liters of a 15% w/v stock solution of Gentian violet should be used in preparing the prescription?
 - ii. List two benefits of E-Prescription and two methods of specific gravity determination.

SECTION C (Essay Questions)

Instructions:

- Answer ANY THREE (3) QUESTIONS in Section C in the answer booklet provided
- Answer each question on a fresh page of the answer booklet
- Each question carries 15 marks.

1. a) A pharmacist receives an order for 60 ml of a suspension containing Cefuroxime axetil 40 mg/ml. She had available 50 ml bottle of suspension containing Cefuroxime axetil 500 mg/5 ml and a diluent of sorbitol solution. Calculate the amount of the suspension needed to fill this order.

- b) Rx Hydrocortisone 2.5%
Petrolatum ad. 240 g
Sig: Apply to child's affected area t.i.d.

If you have 5 mg/g hydrocortisone cream available, how many milligrams of it and hydrocortisone powder would you require in filling the prescription? (Solve by allegation and method of proportionality)

- c) Mention one pharmaceutical and one clinical application of specific gravity.
2. Discuss extensively the different types of topical pharmaceutical preparations with examples.
3. Discuss five (5) Applications of the distribution laws in Pharmacy.
- ✓ 4. a) What are the advantages and disadvantages of oral powders?
b) What are capsules? Give five (5) advantages they have.

END OF PAPER. BEST WISHES.

SECTION B: STEEPLE CHASE**TIME: 8 MINS****INSTRUCTIONS:**

- i. Answer **ALL** questions in this Section
- ii. Move to next question after the beep of the stop watch.

1. Give the names of the instruments labelled A-C
2. How is the knob of this instrument labelled 'D' closed?
3. Mention 2 precautions that should be observed when handling this equipment.
4. What is the function of the part of the instrument labelled 'E'?
5. Carefully study the slide under the microscope labeled 'F' of the Gram-stained organism and describe the viewed result.
6. Observe the results of the following biochemical tests in the test tubes labelled and state if the result is positive or negative.

S/N	Biochemical test	Positive/negative
1	Citrate	
2	Methyl red	

7. An agar jar is placed before you, calculate the of grams you would weigh to prepare the agar solution to be poured into a petri dish.
8. The solution before you is a Gram stain reagent, state if the reagent is a Primary or Secondary stain.

SECTION C:**TIME: 15 MINS****INSTRUCTIONS:**Answer **ALL** questions in this Section

1. Using the materials provided, you are expected to isolate a pure culture of organism from the cultured plate into the fresh agar plate by using the streak plate method.
2. Study the culture plate (labelled G and H) of the susceptibility test before you, measure the zones of inhibition and use the chart provided to provide an inference.



**AFE BABALOLA UNIVERSITY ADO-EKITI
COLLEGE OF MEDICINE & HEALTH SCIENCES
DEPARTMENT OF MEDICAL BIOCHEMISTRY
PHARMACY AND OPTOMETRY**

COURSE: MEDICAL BIOCHEMISTRY II

DATE: 30TH MAY, 2023

INSTRUCTION: ANSWER ALL QUESTIONS

COURSE CODE: BCH 204

TIME ALLOWED: 2 HOURS

QUESTION ONE

- a. State the two (2) fundamental conditions for life
- b. List the six (6) classes of enzymes
- c. Using a well-drawn pathway, explain the urea cycle [20 Marks]

QUESTION TWO

- a. Define minerals and explain five (5) of their functions in the human body [6 marks]
- b. List 5 examples each of macro- and micro- elements [5 marks]
- c. What are the major biological functions and sources of calcium [9 marks]

QUESTION THREE

- a. Define hemoglobin and state 3 of its functions [8 marks]
- b. Write short notes on normal and abnormal hemoglobin derivatives [6 marks]
- c. List 3 ways in which hemoglobinopathy can be treated [6 marks]

QUESTION FOUR

- a. What is glycolysis? Show only the regulatory steps of glycolysis.
- b. What is substrate level phosphorylation? Show the substrate level phosphorylation steps in glycolysis and TCA cycle.
- c. State five (5) significance of glycolysis.
- d. Calculate the total number of ATP generated per molecule of glucose in the TCA cycle only. Show how you arrived at your answer.

[20 Marks]

AFE BABALOLA UNIVERSITY
COLLEGE OF MEDICINE AND HEALTH SCIENCES
ANATOMY DEPARTMENT
SECOND SEMESTER EXAMINATION
2022/2023 ACADEMIC SESSION

COURSE CODE: ANA 252

COURSE TITLE: Neuro Anatomy

DATE: 2nd JUNE, 2023

TIME ALLOWED: 120 Minutes

INSTRUCTION: Answer any Four (4) questions

- 1a) Write short note on Three (3) Regions of the cerebrum
- 1b) Highlight on the event of Cerebrospinal Fluid circulation using a clear diagram where necessary.
- 1c) Enumerate on the formation of Spinal Nerves
- ~~2a) Write short note on the hormones of the pituitary gland and their functions~~
- ~~2b) Mention Eight (8) functions of Sympathetic and Parasympathetic Nervous system~~
- 2c) Enumerate on Cerebrospinal Fluid absorption
- ~~3a) Write short note on Circle of Willis using a well labelled diagram~~
- ~~3b) Highlight on Five (5) Endocrine Organs and the function of the hormone(s) they produce~~
- ~~3c) Write short note on Two-(2) Disease conditions that can affect the Brain and its blood supply~~
- ~~4a) Enumerate on main Arteries that Supplies the brain using a clear diagram~~
- ~~4b) Highlight on the Differences between Endocrine and Exocrine glands with Five (5) examples of each.~~
- ~~4c) Write short note on the Circulation of Cerebrospinal Fluid~~
- ~~5a) Write short note on the Division of Blood Supply to the brain using a labelled diagram~~
- ~~5b) Enumerate on the functions of Cerebellum~~
- ~~5c) Using Two (2) Examples, write short on the Differences between Somatic and Autonomic Nervous system~~