



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 302 (Rheology)

DATE: Monday June 05, 2023 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. Describe the forces required to make fluid flow through a pipe
  2. a) Explain thixotropy.  
b) Define these terms and state their units:
    - i) Shear stress
    - ii) Shear rate
    - iii) Viscosity and fluidity
    - iv) State their relationship
  3. a) Mention three (3) factors that contribute to the rheological properties of an emulsion.  
b) State the effects of temperature on activation energy, viscosity, fluidity and diffusion of a liquid substance.
  4. Mention five (5) examples each of these classes of viscosity modifiers:
    - i. Natural gums
    - ii. Cellulose Derivatives
  5. Give the working Principle of a cone and plate rotational viscometer with a labelled diagram.

**Please turn over to Page 7 for Section C**



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**DEPARTMENT OF PHARMACOLOGY & TOXICOLOGY  
COLLEGE OF PHARMACY, AFE BABALOLA UNIVERSITY-ADO EKITI.  
AUTONOMIC/NEUROPHARMACOLOGY (PCO-302)**

**COURSE UNITS – 3 UNITS**

**2ND SEMESTER EXAMINATION      2022/2023 SESSION**

**PAPER TWO - ESSAY**

**INSTRUCTIONS: The two questions in Section "A" are COMPULSORY.**

**Answer one question each in Sections "B", "C" and "D"**

**Time Allowed: 2 hours**

*Handwritten note: 1 hour 15 minutes*

**SECTION A: COMPULSORY**

**Question 1.**

Guanethidine, alpha-methyl-DOPA, alpha-methyl-P-tyrosine, Reserpine, desipramine, submutanol and phentolamine are drugs affecting adrenergic transmission. Using appropriate scheme, describe the point of action of each drug.

**Question 2.**

- a) Enumerate:
- i) The functions of the kidneys
  - ii) Renal processes
- b) Briefly describe the functions of Diuretics
- c) Classify diuretics by their site of action
- d) Discuss fully any one class.

**SECTION B: ANSWER ONLY ONE QUESTION**

**\*Question 3.**

- a) Explain the mechanism of action of atropine
- b) List three (3) Pharmacological actions and three (3) side effects of atropine.
- c) Mention three (3) therapeutic uses of any muscarinic antagonist you know.

**Question 4.**

- a) Classify muscarinic agonist and list one example from each class.
- b) Explain the mechanism of action of neuromuscular blockers.
- c) Differentiate between depolarizing and non-depolarizing neuromuscular blockers.

**SECTION C: ANSWER ONLY ONE QUESTION**

**Question 5.**

Write short notes on cough stating

- a) its definition
- b) its types
- c) categorization of its medication giving 2 examples of each category
- d) List the classes of drugs used in the treatment of bronchial asthma, give two examples of each category, and describe the mechanism of action of three of them

**\* Question 6.**

Write short notes on Nitric Oxide stating

- a) its synthesis
- b) its role in neurodegenerative diseases
- c) its role in the reproductive system
- d) its role in cardiovascular diseases
- e) its role in digestive system

**SECTION D: ANSWER ONLY ONE QUESTION**

**Question 7.**

- a) Define Emetics, listing two examples
- b) List the limitations of Emetics
- c) Anti-emetics are drugs used for the prevention and reduction of nausea and vomiting; classify them giving an example in each class
- d) Briefly describe adjuvant anti-emetics

**Question 8.**

- a) List the disorders related to the GIT
- b) Describe the factors involved in ulcer formation
- c) Classify fully anti-ulcer agents giving example in each class
- d) Discuss fully any one class of anti-ulcer drugs



- b. Give a brief explanation of your design in another slide separate from the designed slide. (5marks)
- c. To retain the exact content of your design, convert your design from powerpoint to pdf (using the link - <https://online2pdf.com/convert-pptx-to-pdf>). (5marks)

2. The Department of Social and Administrative Pharmacy, College of Pharmacy, Afe Babalola University has just subscribed to the Product to Pharmacist (P2P) Database Management System and would like to have Database Administrators. You have been shortlisted as a potential Database Administrator of its P2P DBMS and you are required to be examined to know how well you are familiar with Database Management System. Log in to the P2P DMBS using the link (<https://phamart.ng>). The username is [pharmaseyist@gmail.com](mailto:pharmaseyist@gmail.com) and password is oluwaseyi. Type the answers to the following questions in a word document.

- a. After your exploration of the P2P DBMS, deduce four (4) functions that it can perform. (4marks)
- b. Identify six (6) features of the P2P DBMS. (3marks)
- c. What are the characteristics of the P2P that make it a DBMS? (4marks)
- d. Identify two features that can be used for data abstraction in the P2P DBMS. (2marks)
- e. Identify an entity on the P2P DBMS and attribute(s) attached to the entity. (2marks)
- f. Identify the P2P database administrator(s) view. From your identification, state some responsibilities of the Database administrator (as it relates to P2P). (4marks)
- g. Who are the end-users of the P2P DBMS? State the reasons for your answer. (3marks)
- h. Assume you are a System Analyst and Application Programmer, think of features (that is/are not present) that you would like to add to improve the P2P DBMS. (3marks)





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018-284-6000/018-284-6001

COLLEGE OF PHARMACY  
DEPARTMENT OF PHARMACOGNOSY

MID - SEMESTER TEST 2021/2022 SESSION

PCG 301 – PHARMACOGNOSY I

UNIT: 2

INSTRUCTION: ANSWER ALL QUESTIONS

TIME: 40 mins

- Internal and External*
- ✓ 1). Mention the factors that are involved the production of crude drugs. *Climate, Temperature, Rainfall, Altitude, Day-length, Soil*
- 2). The growth and development of plants along with the *Nature*..... and *Quantity*..... of secondary metabolites, are affected by temperature, rainfall, length of day including quality of light and altitude.
- 3). Seeds of Cannabis grown in England rich in *Cannabinoid*..... and devoid of *Tetrahydrocannabinol*....., when cultivated in Sudan began to produce THC in the first generation and in the second generation contained up to 3.3% THC is an example of *Climate*....., a factor affecting crude drug production.
- 4). Temperature is a major factor that controls the *Development*..... and *Metabolism*..... of plants.
- 5). Many tropical and subtropical plants will grow in temperate regions during *Summer*..... months....., but lack *frost resistance*..... to withstand the *winter*.....
- 6). Continuous rain can lead to a loss of *Water Soluble Substances*..... from leaves and roots by *leeching*..... and this is peculiar to some *Alkaloid*.....
- 7). Light has been shown as a factor that determines the amount of *Glycosides*..... or *alkaloids*..... produced.
- 8). To achieve success in medicinal plant cultivation, it is important to study the conditions under which the *Plant flourishes*..... in the wild state and *Reproduce*..... those conditions or improve on them.
- ✓ 9). Soil has three important basic characteristics thus: *Physical*....., *Chemical*..... and *Microbiological*..... properties.

## 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) Discuss two reasons why the velocity of fluid at the center of a pipe is more than at the surface (6 Marks)  
b) Find the mass flow rate of a fluid with density  $350 \text{ kg/m}^3$ , flowing at a velocity of  $20 \text{ m/s}$  in a pipe with cross-sectional area of  $15 \text{ cm}^2$  (9 marks).
2. a) What are non-Newtonian fluids? Classify non-newtonian fluids.  
b) With the aid of **labeled line-graphs** explain fully the behaviours / properties of non-newtonian fluids
3. a) Discuss an experiment to demonstrate the viscosity of a liquid contained between two large parallel plates.  
b) Highlight five (5) applications of rheology in Pharmacy.
4. With relevant diagrams and mathematical equations, where necessary, give the working principle of the following viscometers:
  - a) Falling sphere viscometer
  - b) Capillary viscometer
  - c) Coaxial cylinder rotational viscometer

**END OF PAPER. BEST WISHES.**



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**DEPARTMENT OF SOCIAL AND ADMINISTRATIVE PHARMACY  
COLLEGE OF PHARMACY  
SECOND SEMESTER EXAMINATIONS 2022/2023 SESSION**

**Course:** ICT 302

**Level:** 300

**Title:** Information and Communication Technology In Pharmacy I

**Time Allowed:** 2HOURS

**Date:** Saturday, 27th May, 2023

**INSTRUCTIONS:**

1. Answer **ALL** questions in Sections B and C
2. Section B is to be answered in the provided answer booklet
3. Write your matriculation number on your question paper

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**SECTION B – To be answered in the provided answer booklet (30minutes)**

**SHORT ANSWER QUESTIONS (30marks)**

1. Give two uses of data
2. With a diagram, explain the difference between data and information
3. Define Information System
4. Give the full meaning of ROM and RAM
5. List four examples of storage devices
6. Give four applications of ICT in pharmacy
7. List three types of software
8. Give two examples each of the types of software
9. In one sentence, explain Source code
10. In one sentence, differentiate between a file and a folder

**SECTION C (20minutes)**

**MULTIPLE CHOICE QUESTIONS (20 marks)**

The link to the questions will be displayed. You are to make use of your personal computer to answer the questions. Connect to the internet and open the displayed link in your browser. You can only submit your response (answer) to the questions once.



## 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. Describe how you will prepare a primary emulsion for a formula containing 8mls of turpentine oil
  - b. Explain how to carryout dye solubility test to determine type of emulsion using scarlet red
- 2
  - a. Discuss the **advantages** and **disadvantages** of Macrogol as a suppository base
  - b. State three properties of an ideal suppository base.
- 3
  - a) Briefly discuss the methods of preparation of creams
  - b) Compare and contrast five differences between ointments and pastes
  - c) Gels have two different phases. Discuss.
- ④
  - a) The potential energy curve can be used to explain particle-particle interactions in pharmaceutical suspensions. Explain the sedimentation behaviours of Flocculated and Deflocculated suspensions using this curve.
  - b) Briefly discuss the reason(s) why flocculated suspensions are preferred to deflocculated suspensions in pharmacy.
  - c) Based on the nature of sediment, there are two kinds of coarse suspensions: Flocculated and Deflocculated Suspensions. Compare the two kinds of suspensions using Five (5) relevant characteristics.

Forces of interaction.

END OF PAPER. BEST WISHES.



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**DEPARTMENT OF PHARMACOGNOSY  
COLLEGE OF PHARMACY**

**SECOND SEMESTER (PHARM.D) EXAMINATION 2022/2023 SESSION**

**COURSE:** PCG 302 Practical

**Level:** 300

**Date:** 26<sup>th</sup> May 2023

**Time Allowed:** 45mins

**INSTRUCTIONS:**

1. Write your Matriculation number **BOLDLY** on your answer booklet
2. Indicate your question type on your answer booklet

**PRACTICAL TYPE A**

You are provided a sample of a medicinal plant, **A**, carry out the following experimental procedure on the plant sample and record your observation as clearly as possible making use of the following heading: Title, Materials required, Methods, Results and Discussion, Conclusion, Precaution.

Extract a known weight of plant sample, **A**, with an appropriate volume of 80% EtOH (2X) on a water bath, partition the extract with  $\text{CHCl}_3$ , and evaporate the  $\text{CHCl}_3$  layer to dryness. Take up the chloroform fraction in 1 mL of MeOH and add 3 mL of glacial  $\text{CH}_3\text{COOH}$  and a few drops of  $\text{FeCl}_3$  in a clean test tube. Carefully pour 2 mL  $\text{H}_2\text{SO}_4$  down the side of the test tube, and observe and record your observation. This test is called the Keller-Killiani Test.

What is the usefulness of this test? Suggest a chemical structure of any known compound likely to give a positive test to the experiment above and a full name of a plant, known to contain the structure in the following order: botanical name with authority, family, common name.



- ii) Design a 2x2 scheme of randomization for the administration of the different doses
- iii) Why is 2x2 Latin square method so called?
- iv) Plot the results and estimate the potency ratio from the graph
- v) Supposing two parallel lines are not obtained and therefore the horizontal distance (M) between them cannot be determined, how will you determine the Potency of the Unknown.

### Question 3

- i) What determines the extent to which a piece of smooth muscle contracts in response to a suitable active drug (Agonist)
- ii) How would you explain the variations in the observations in a tissue experiment (e.g. relationship between agonist concentration and magnitude of response)
- iii) What steps will you take in order to arrive at a most reliable answer if asked to compare the effects of two different doses of a drug

- iv) Explain the terms;

Supramaximal dose

Submaximal dose

Subthreshold dose

$$q_b \text{ Inhibition} = \frac{A - B}{A} \times 100$$

### Question 4

- i) Define bioassay
- ii) Bioassay is essential in -----and-----
- iii) Differentiate between qualitative and quantitative assays
- iv) Enumerate the three type of bioassay and their subtypes
- v) List three advantages and three disadvantages of bioassay

A = Control

B = Extract [drug]

Quantal bioassay  
- All or none  
- multiple point  
- interpolation

Direct bioassay  
- matching

### Question 5

- i) List three (3) requirements for the survival of a tissue while handling it.
- ii) Briefly explain any two
- iii) What type of solutions should be used in tissue experiments,
- iv) Name three examples of such solutions.
- v) Why are tissue experiments important in Pharmacology.

Advantage

- to determine potency & ED<sub>50</sub>  
- to estimate LD<sub>50</sub> & ED<sub>50</sub>

Disadvantage

- Time consuming 2  
- requires a lot of skill



x. Vermifuge (10 marks)

2. In a tabular form, supply the common names and medicinal uses of the following medicinal plants used in traditional/alternative medicines:

- i. *Acanthospermum hispidum*
- ii. *Allium cepa*
- iii. *Acalypha wilkesiana*
- iv. *Bryophyllum pinnatum*
- v. *Cymbopogon nardus*
- vi. *Erythroxylum coca*
- vii. *Euphorbia hirta*
- viii. *Mentha piperita* <sup>peppermint</sup>
- ix. *Thaumatococcus daniellii* <sup>date fruit</sup>
- x. *Thymus vulgaris*

(10 marks)

#### Section 4

1. Write a short and concise note on Pharmacopoeia and Monograph
2. Capsicum species are one of the medicinal plants listed in the United States Pharmacopoeia-National Formulary and the German Commission E. Mention any **eight (8)** chemical constituents indexed in appropriate monograph for the standardization of Capsicum fruit-based products. Draw the structure of any **one** of them and state one general effect on the mucosal membrane of the intestinal tract. State the binomial nomenclature any five (5) Capsicum species listed in the said monographs

#### Section 5

1. Psychoactive secondary metabolites in plants are produced evolutionarily. Discuss
2. List five (5) examples each of allergenic pollens, allergenic spores, hallucinogenic plants and teratogenic plants

#### Section 6

1. Give a detailed account of the evaluation of crude drugs under the following headings:
  - a. Chemical evaluation
  - b. Microscopical evaluation
  - c. Physical evaluation
  - d. Organoleptic evaluation
2.
  - a. Phytochemicals are major magic bullets in drug discovery, discuss.
  - b. Define the following terms:
    - i. palisade ratio
    - ii. Vein islet number
    - iii. Stomata index number
    - iv. Veinlet termination number.



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**DEPARTMENT OF PHARMACOLOGY & TOXICOLOGY  
COLLEGE OF PHARMACY, AFE BABALOLA UNIVERSITY-ADO EKITI.**

**2ND SEMESTER EXAMINATION      2022/2023 SESSION**

**Course Code: PCO-302      Course Units - 3 UNITS**

**Course Title:      AUTONOMIC/NEUROPHARMACOLOGY**

**Paper Three:      PRACTICAL (Alternative to Practical)**

**Time Allowed:      2 hours**

**INSTRUCTIONS:      Attempt all questions.**

**Question 1**

In a castor oil induced diarrheal in rats the following treatment/results were administered/obtained; Distilled water (Control) number of watery diarrheal was 17, 50 mg/kg Extract X number of watery diarrheal was 12, 100 mg/kg Extract X number of watery diarrheal was 9, 200mg/kg Extract X number of watery diarrheal was 6, 5mg/kg Loperamide number of watery diarrheal was 7.

Express the activity of each group as percent inhibition

- Organize the data into a suitable table showing percentage inhibition.
- Compare the results obtained for the extract at 200mg/kg to that of Loperamide

**Question 2.**

In a 2x2 Latin square method bioassay, if A and B are the two dose volumes for the standard and C and D the two dose volume of the unknown and the data collected is as shown below:

Drug volume	Dose	Response (height) cm			
		1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>
A	0.1	0.3	0.2	0.4	0.2
B	0.4	0.5	0.4	0.6	0.5
C	0.2	1.4	1.2	1.5	1.3
D	0.8	1.6	1.9	1.5	1.7

- Calculate the mean response for each dose



**DEPARTMENT OF PHARMACOGNOSY  
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**SECOND SEMESTER (PHARM.D) EXAMINATION 2022/2023 SESSION**

**COURSE: PCG 302**

**Level: 300**

**Date: 31<sup>ST</sup> May 2023**

**Time Allowed: 3 hours (2:00- 5:00 PM)**

**INSTRUCTIONS:**

1. Write your Matriculation number **BOLDLY** on your answer booklet
2. Answer at least **ONE (1)** in each section
3. Answer **TEN** questions in **TOTAL**

**Section 1**

1. Discuss the traditional medicine as practised in the South-East Asian Region of the World.

\* 2

- a. What is a pest?
- b. Write concisely on pesticides.

**Section 2**

\* 1

- a. List (stepwise) the techniques involved in the preparation of a voucher specimen. **(3 marks)**
- b. Briefly comment on "what to collect" and "what not to collect" in the collection of herbarium specimens. **(3 marks)**
- c. Labelling is key to the profiling of herbarium specimens. Write a **short note** on the labelling of herbarium specimens, including the contents of an ideal herbarium label. **(4 marks)**

\* 2. Ethnobotany has contributed to proffering solutions as well as the development of drug for many diseases. In a tabular form, list 2 drugs each developed from medicinal plants for the following purposes, including the name and the botanical source.

- a. Antihypertensive — *Kava*
- b. Antimalaria — *Artemisia* & *Quinine*
- c. Anticancer
- d. Analgesia — *U*
- e. Cardiotoxic — *Digoxin*  
*Digitalis*

**(10 marks)**

**Section 3**

\* 1 Give the meanings of the following terms:

- i. Purgative —
- ii. Dyspepsia —
- iii. Astringent —
- iv. Emmenagogue —
- v. Gingivitis —
- vi. Emollient —
- vii. Anticariogenic —
- viii. Haemostatic —
- ix. Antipyretic —



Matric. Number:.....

.....

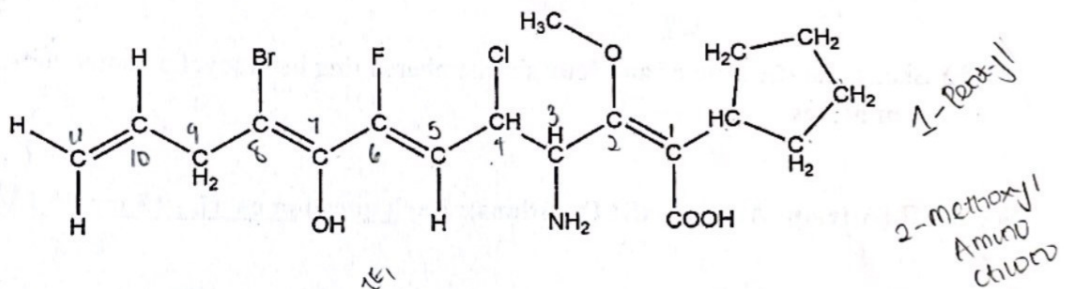
Time allowed: Three hours

**INSTRUCTION:** Attempt all questions in Section A and any four (4) questions from Section B.

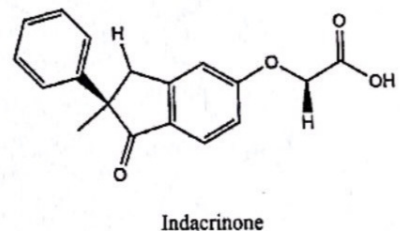
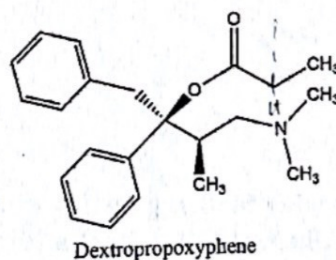
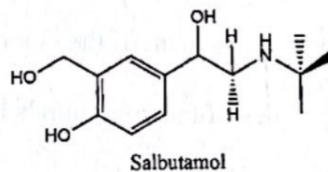
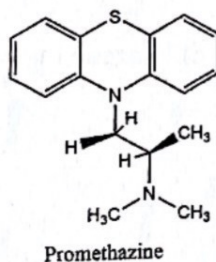
**Section A (Answer all):** Each question in section A carries 20 marks.

1.

- (a) Provide the full IUPAC/systematic name (including stereochemistry) for the following compound:



- (b) Draw the correct structural formula for the organic compound whose systematic name is **(2E,4E,6E,8Z)-7,9-diamino-2-bromo-6-chloro-8-ethyldeca-2,4,6,8-tetraen-3-ol**.
- (c) Identify by unambiguously circling all chiral carbon atoms in the four drug molecules presented below. *Note that circling the wrong atom attracts a penalty.*



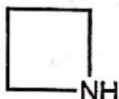
- (d) Using appropriate examples briefly discuss the differences between stereoisomerism and structural isomerism.

2.

- a.) What do you understand by the phrase **heterocyclic compounds**?  
 b.) Highlight three (3) properties of four-membered ring heterocyclic compounds  
 c.) Name each of the following heterocyclic compounds:



A



B



C



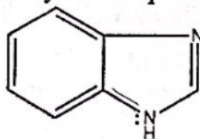
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- d.) Sketch the structure of **any four** six-membered ring heterocyclic compounds and provide their names.

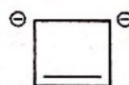
**Section B (Attempt ANY FOUR Questions): Each question carries 15 marks.**

3.

- a. Prove the possible aromaticity of compounds P and Q

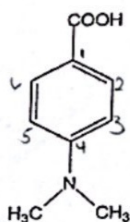


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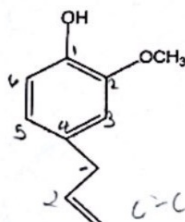


Q

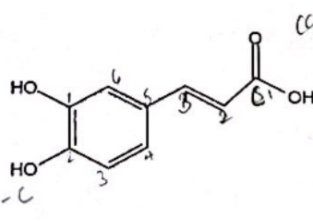
- b. Present the detailed mechanism of the chlorination of benzene in the formation of monochlorobenzene.  
 c. Give the IUPAC names of the compounds below



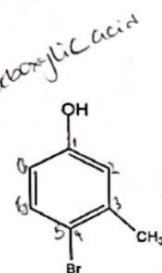
(I)



(II)



(III)



IV

4. Write short notes on each of the following focusing on descriptions and structural examples (correct structural examples/illustrations attract additional marks):

- a. Optical activity  
 b. Geometrical isomerism  
 c. Resolution of racemic mixtures.

5. Showing the reaction(s), give the product(s) (with IUPAC name) obtained by:

## PART B

3. The table below is from the result of rabbit pyrogen test for a particular product

Rabbit	Weight (kg)	Initial Temp.	30 mins	60 mins	90 mins	120 mins	150 mins	180 mins	210 mins
1	1.5	37	37.0	37.1	37.5	37.4	37.2	37.1	37.2
2	2.0	38.1	38.1	38.2	38.5	38.1	38.1	38.1	38.2
3	2.2	37.2	37.3	37.2	37.2	37.7	37.6	37.4	37.3

- a) Calculate:
- The dose (in ml) administered to each rabbit. **3 marks**
  - The response of each rabbit. **3 marks**
  - The sum of response. **1 mark**
  - From your results of (ii) and (iii) above comment if the product passed the test. **3 marks**
- b) Explain any 5 disadvantages of rabbit pyrogen test. **10 marks**
4. a) i. Explain the consequences of transfusing a pyrogenic solution into a patient **5 marks**  
ii. List two methods you can employ to make a solution apyrogenic **4 marks**  
iii. Write short note any one of the two methods listed in (i). **5 marks**
- b) Write short note on sterile water for inhalation under:
- Preparation **2 marks**
  - Indication **2 marks**
  - Storage **2 marks**

## PART C

5. A reputable pharmaceutical company planning to start production of infusions, identified a large river as the source of water for their production. If you are employed as a production pharmacist in that company, briefly discuss how you will carry out the following in the bacteriological examination of the water sample.
- Presumptive coliform tube test **8 marks**
  - Confirmatory test **6 marks**
  - Completed test **6 marks**
6. Describe the following with the aid of relevant diagram ONLY
- Distillation **5marks**
  - Filtration **5 marks**
  - Water cycle **5 marks**
  - Membrane filtration **5 marks**





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**COLLEGE OF PHARMACY**

**DEPARTMENT OF PHARMACEUTICAL MICROBIOLOGY**

**COURSE TITLE: PRINCIPLES OF STERILIZATION AND ASEPSIS**

**COURSE CODE: PMB 302**

**SECOND SEMESTER EXAMINATION FOR 2022/2023 SESSION**

**DATE: 2<sup>nd</sup> June, 2023**

**TIME ALLOWED: 2 HOURS 20 MINS**

**SECTION B: THEORY SECTION**

**Instructions:**

- I.** Answer **FOUR** questions in all.
- II.** Answer at least **ONE** question from Part A, B and C
- III.** Answer **EACH** question on a **FRESH PAGE**.

**PART A**

1. A reputable Pharmaceutical company decided to add to the list of their numerous products, sulphonamide suspension for oral administration to children. The management then hired a new Pharmacist to be in charge of the production unit. The company set a goal of producing ten thousand (10,000) containers of the suspension per batch, with each container having 4800 mg of sulphonamide drug in powdered formulation for reconstitution. The company manager asked the new Pharmacist to also supervise the quality control unit. If you are the new Pharmacist, briefly comment on the following when evaluating the microbial content of the suspension:
  - a) What number of containers will you consider for the microbial content evaluation? **2marks**
  - b) What quantity of the powdered drug will you consider for the evaluation? **2marks**
  - c) What choice of media will you prefer for the evaluation? **6marks**
  - d) Do you think an inactivating agent or dilution is needed in the evaluation? If so, mention a suitable one. **6 marks**
  - e) If your answer is yes to (d) above, supposing the company does not have the inactivator, briefly describe another method that can be used so as to carry out the microbial evaluation of the suspension. **4marks**
2. As part of evaluating the microbial content of pharmaceutical preparations, the enumeration of microbial cells is an important part, particularly with non-sterile preparations.
  - a) Give a step-by-step account of how you will carry out a total viable bacteria count and determine the colony forming unit per mL of a liquid pharmaceutical preparation in the laboratory. **10marks**
  - b) List three (3) other methods of indirect bacterial cell count. **6marks**
  - c) In the detection of acute pathogens from pharmaceutical preparations being evaluated, what type of microorganisms will the following media select out of mixed microbial population?
    - i. MacConkey agar
    - ii. Eosine Methylene Blue Agar
    - iii. Cetrimide agar
    - iv. Mannitol Salt Agar

**4 marks**

$\frac{0.5\text{ml}}{10^{-6}} \times 10^{-4} \times 10^6$



Matric. Number:..

Time allowed: Three hours

**Answer Question 1 (compulsory) and any other three (3) questions. Each question carries 25 marks.**

1. The following data is from a conductometric titration of 10.00 mL aqueous solution containing a mixture of acetic acid ( $\text{CH}_3\text{COOH}$ ) and hydrochloric acid ( $\text{HCl}$ ) with a 1.00 M sodium hydroxide solution.

Volume OH <sup>-</sup> /mL	Conductivity/S	Volume OH <sup>-</sup> /mL	Conductivity/S	Volume OH <sup>-</sup> /mL	Conductivity/S
0.00	1.08	0.70	0.52	1.40	0.64
0.10	1.00	0.80	0.44	1.50	0.74
0.20	0.92	0.90	0.46	1.60	0.84
0.30	0.84	1.00	0.48	1.70	0.94
0.40	0.76	1.10	0.50	1.80	1.04
0.50	0.68	1.20	0.52	1.90	1.14
0.60	0.60	1.30	0.54	2.00	1.24

- (a.) From the data above, draw the graph of this titration and determine the concentration of the acetic acid and hydrochloric acid in the mixture. Showing clearly how the respective endpoints were determined.



(b.) Using the molar conductivity at infinite dilution values provided **below** and at 25°C, explain the shape of the titration curve obtained in (a) above. Include chemical equations for the reactions taking place in your answer.

Ionic molar conductance at infinite dilution in units of at

$$\lambda^\circ(\text{H}^+) = 35.01 \, \Omega^{-1} \text{ cm}^2 \text{ mol}^{-1}$$

$$\lambda^\circ(\text{Na}^+) = 5.01 \, \Omega^{-1} \text{ cm}^2 \text{ mol}^{-1}$$

$$\lambda^\circ(\text{Cl}^-) = 7.64 \, \Omega^{-1} \text{ cm}^2 \text{ mol}^{-1}$$

$$\lambda^\circ(\text{CH}_3\text{COO}^-) = 4.09 \, \Omega^{-1} \text{ cm}^2 \text{ mol}^{-1}$$

$$\lambda^\circ(\text{OH}^-) = 19.86 \, \Omega^{-1} \text{ cm}^2 \text{ mol}^{-1}$$

2. Answer the following questions:
  - (a.) Concisely discuss two (2) benefits and two (2) limitations of conductometric titrations.
  - (b.) Provide explanation for the necessity of maintaining a constant temperature in conductometric measurements.
3. Briefly discuss
  - (a.) The relevance of potentiometry in pharmaceutical analysis.
  - (b.) Advantages of potentiometric titration over traditional classical methods of titration.
4. Write a short note on each of the following:
  - (a.) Limit tests in pharmaceutical analysis.
  - (b.) Quality criteria employed in official monographs for pharmaceutical analysis
5. What do you understand by the term titration? Write short notes on the classification of titration; cite appropriate examples in your discussion.
6. Describe how end-point determination is performed in titrimetric assays, providing information on the different means of achieving that.

4

- (a) Define Pyrogens.  
 (b) List and explain the classes of pyrogen.  
 (c) Explain five properties of pyrogens.  
 (d) Explain in details the Rabbit Pyrogen Test.

2 marks  
 4 marks  
 10 marks  
 4 marks.

Endotoxin  
 Endo  
 Pyrogens  
 gram-neg  
 and are  
 bacteria  
 titration  
 microb  
 bands

5

- (a). What is Good Manufacturing Practice (GMP)?  
 (b). Mention five necessary facilities that must be provided to ensure GMP.  
 (c) Briefly explain validation of ventilation system in a pharmaceutical company.  
 (d) As a Pharmaceutical Microbiologist, how would you evaluate paracetamol syrup causing diarrhoea among infants in a community?

2 marks  
 5 marks  
 3 marks  
 10marks

from  
 or ven  
 from  
 more

6

Describe the following:

- Bioburden determination  
marks
- Environmental monitoring  
marks
- Sterility testing  
marks
- Different microorganisms encountered in pharmaceutical preparation. 5m





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**COLLEGE OF PHARMACY**

**DEPARTMENT OF PHARMACEUTICAL MICROBIOLOGY**

**COURSE TITLE: APPLIED PHARMACEUTICAL MICROBIOLOGY**

**COURSE CODE: PMB 302.**

**SECOND SEMESTER EXAMINATION FOR 2021/2022 SESSION**

**Date: 02/06/2022**

**Time: 3 HOURS**

**INSTRUCTIONS: Answer only FIVE questions.**

- 1 (a) Describe in detail the multiple tube method of bacteriological analysis of water under the following headings

- i. Definition  
ii. Types  
iii. procedure  
iv. Result interpretation

14marks

- (b). Give 3 advantages and 3 disadvantages of the method mentioned above 3 marks

- (c). Define total coliforms and give two examples 3 marks

- 2 (a). Explain the following methods of purification of type III water.

- i. Reverse osmosis  
ii. Distillation

11 marks

- (b). List 5 characteristics of an ideal indicator 5 marks

- (c). Describe the water cycle with the aid of a diagram only. 4 marks

- 3 (a) Define Parenteral Preparations 2 marks

- (b) List any four components of parenteral preparations. 4 marks

- (c) List any five minimum compendial criteria that parenteral preparations must meet. 10 marks

- (d) Apart from sterility and apyrogenicity, water for injection is expected to be free of air and carbon dioxide. Discuss. 4 marks

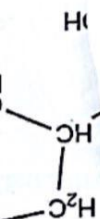
30067L 2ND SEMESTER  
2022/2023

all): Each question in section A carries 20 marks

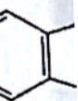
Section B.

INSTRUCTION: Attempt all questions in Section A and any four (4)

Matric. Number:.....



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