



PAST PAPERS

<i>Faculty</i>	<i>Department / Section/Division</i>
<i>Not Applicable</i>	<i>Learning Resource Centre</i>

Past Papers

Faculty of Health Sciences

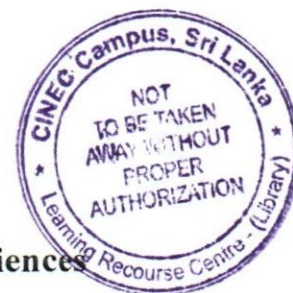
Diploma in Pharmaceutical and Cosmetic Science

Year 1 – Semester 1

2023

<i>Document Control & Approving Authority</i>	<i>Senior Director – Quality Management & Administration</i>
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Faculty of Health Sciences
Diploma in Pharmaceutical and Cosmetic Sciences
DPC 1113 – Biochemistry
1st Year 1st Semester
Batch 02
End Semester SEQ Examination

Date : 06th of June 2023

Time : 09.00 am – 12.00 pm (Three Hours)

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **SIX** questions.
- Answer **ALL** questions.
- You should write **answers** legibly in black or blue ink.

QUESTION 01

(100 marks)

- 1.1. State the components of the plasma membrane. (15 marks)
- 1.2. Relate the structure of plasma membrane with its functions. (35 marks)
- 1.3. Compare and contrast between simple and facilitated diffusion. (25 marks)
- 1.4. Write a short note on secondary active transport systems. (25 marks)

QUESTION 02

(100 marks)

- 2.1. Differentiate between reducing and non-reducing sugars. (15 marks)
- 2.2. Outline the reaction steps involved in the citric acid cycle. (30 marks)
- 2.3. Compare and contrast between glycolysis and gluconeogenesis. (30 marks)
- 2.4. Write a short note on the importance of glycogenolysis process. (25 marks)

QUESTION 03

(100 marks)

- 3.1. Define the term saturated fatty acid. (10 marks)
- 3.2. Discuss the biological functions of essential fatty acids. (35 marks)
- 3.3. Write a short note on the structure of phospholipid. (25 marks)
- 3.4. Draw a flow chart to denote the lipid digestion process of human body. (30 marks)

QUESTION 04

(100 marks)

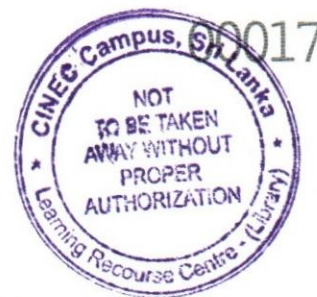
- 4.1. Write short notes on the following.
 - 4.1.1 Double helix structure of DNA (25 marks)
 - 4.1.2 Messenger RNA (25 marks)
 - 4.1.3 Transfer RNA (25 marks)
 - 4.1.4 Transamination of amino acids (25 marks)

QUESTION 05**(100 marks)**

- 5.1. State **three** glucogenic amino acids. (20 marks)
- 5.2. Explain the formation of a peptide bond by a diagram. (20 marks)
- 5.3. Define what is meant by "zwitterions". (20 marks)
- 5.4. Write short notes on followings.
- 5.4.1 Tertiary structure of proteins (20 marks)
 - 5.4.2 Secondary structure of protein (20 marks)

QUESTION 06**(100 marks)**

- 6.1. Mention **five** factors which affects the activity of enzymes. (20 marks)
- 6.2. Draw a diagram to denote the lock and key hypothesis of enzymes. (25 marks)
- 6.3. Mention **four** deficiency symptoms occurred due to lack of consumption of vitamin K. (20 marks)
- 6.4. Discuss the importance of vitamin E to the human body. (35 marks)



Faculty of Health Sciences
Diploma in Pharmaceutical & Cosmetic Sciences
DPC 1153 – Good Manufacturing Practices & Organizational Management
Batch - 02
1st year 1st semester
End Semester SEQ Examination

Date : 05th June 2023
Time : 09.00 a.m to 12.00 p.m.

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **SIX** questions.
- Answer **ALL** questions.
- You should write legibly in black or blue ink.

Question 01 **(100 marks)**

- 1.1. What is GMP? (10 marks)
- 1.2. State **05** areas that should be followed under GMP. (20 marks)
- 1.3. Differentiate between GMP and cGMP. (30 marks)
- 1.4. Briefly describe the importance of GMP in a pharmaceutical manufacturing area. (40 marks)

Question 02 **(100 marks)**

- 2.1. Define the term pharmacopoeia. (10 marks)
- 2.2. Differentiate general monographs and specific monographs. (20 marks)
- 2.3. "Personal hygiene is very important for entering clean rooms in biological drug manufacturing facility". Comment on this statement. (25 marks)
- 2.4. Write a descriptive account of cleanroom technology. (45 marks)

Question 03 **(100 marks)**

- 3.1. "Management is never ending process." Comment on this statement. (20 marks)
- 3.2. List contemporary issues in planning. (15 marks)
- 3.3. Briefly describe the relationship between the planning process and decision-making. (25 marks)
- 3.4. Describe the Holacracy organizational structure at Zappos. (40 marks)

Question 04**(100 marks)**

- 4.1. Define the term "Standardization". (10 marks)
- 4.2. Elaborate on the system perspective of the organization. (20 marks)
- 4.3. Briefly describe the dimensions of quality based on a practical example. (30 marks)
- 4.4. Analyze the meaning of quality based on consumers' perspective and producers' perspective. (40 marks)

Question 05**(100 marks)**

- 5.1. List 04 techniques for continuous improvement. (10 marks)
- 5.2. Differentiate between effectiveness and efficiency. (20 marks)
- 5.3. Briefly describe the role of front managers in a team. (30 marks)
- 5.4. Compare the internal cost of quality and the external cost of quality. (40 marks)

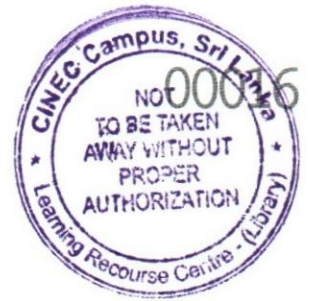
Question 06**(100 marks)**

- 6.1. Define the term forecasting. (10 marks)
- 6.2. Write a descriptive note on the following, (40 marks)
- 6.2.1. Two (02) qualitative forecasting methods.
- 6.2.2. Two (02) quantitative forecasting methods.
- 6.3. Forecast demand based on exponential smoothing constant. (50 marks)

$$F_t = F_{t-1} + \alpha (A_{t-1} - F_{t-1})$$

Quarter	Actual demand	Forecast with $a = .10$	Forecast with $a = .50$
1	200		
2	300		
3	160		
4	540		
5	280		
6	430		
7	350		
8	600		

Library.



Faculty of Health Sciences
Diploma in Pharmaceutical & Cosmetic Sciences
DPC 1153 – Good Manufacturing Practices & Organizational Management
Batch - 02
1st year 1st semester
End Semester - Assignment

Date : 05th June 2023
Time : 1.00 p.m to 2.00 p.m.

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **TWO** questions.
- Answer **ALL** questions.
- You should write legibly in black or blue ink.

Question 01 **(100 marks)**

1.1. You are going to start a pharmaceutical manufacturing plant planning to implement the GMP guidelines provided by the World Health Organization (WHO)

1.1.1. State **05** basic principles which you are going to follow. (20 marks)

1.1.2. Briefly describe the GMP guidelines which you are going to consider when, (30 marks)

- a. Selecting a location of the pharmaceutical manufacturing plant
- b. Personnel
- c. Selecting equipment

1.2. Imagine you are a pharmaceutical scientist who is planning to start a new sterile pharmaceutical manufacturing plant. Describe how you will apply concepts of cleanroom technology for planning your manufacturing plant facility. (50 marks)

Question 02 **(100 marks)**

2.1. Differentiate goals and objectives. (10 marks)

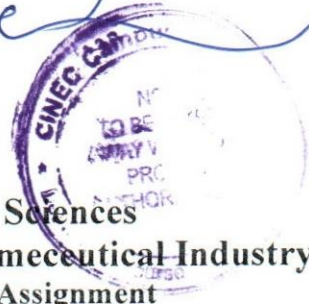
2.2. Briefly describe different levels of managers. (20 marks)

2.3. Apply the PDCA technique in your real-life scenario. (30 marks)

2.4. Forecast future demand based on the 4-month moving average method. (40 marks)

Month	Actual sales	4-month moving average
January	10	
February	12	
March	13	
April	16	
May	19	
June	23	
July	26	
August	30	
September	28	
October	18	
November	16	
December	14	

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Faculty of Health Sciences
Diploma in Pharmaceutical & Cosmetic Sciences
DPC 1143 – Introduction to Pharmaceutical & Cosmeceutical Industry
Batch – 02-1st year 1st semester- End Semester - Assignment

Date : 28th May 2023
Time : 1.00 pm - 3.00 pm (Two hours)



INSTRUCTIONS TO CANDIDATES

- This question paper consists of **TWO** questions.
- Answer **ALL** questions.
- You should write legibly in black or blue ink.

Question 01 (100 marks)

1.1. Define the following. (30 marks)

- 1.1.1 Elixirs
- 1.1.2 Lotions
- 1.1.3 Eye drops
- 1.1.4 Pastes

1.2. Give one example per each of the above dosage forms. (10 marks)

1.3. The ingredients required to prepare an elixir are given below.

Ingredients	Quantities
Compound Orange Spirit	12 ml
Syrup	375 ml
Alcohol	238 ml
Purified Water, each q.s. to make	1000 ml

State the function of ingredients given below in an elixir. (20 marks)

- 1.3.1 Compound orange spirit
- 1.3.2 Alcohol

1.4 Classify semi solid dosage forms, define each category and explain the general method of preparation of pastes. (40 marks)

Question 02 (100 marks)

2.1 Justify: "Liquid dosage forms are more useful than solid dosage forms in many situations" (70 marks)

2.2 Explain an example scenario where the above statement holds true. (30 marks)



Faculty of Health Sciences
Diploma in Pharmaceutical & Cosmetic Sciences
DPC 1143 – Pharmaceutical and Cosmeceutical Unit Operations
Batch – 02-1st year 1st semester-End Semester SEQ Examination

Date : 27th May 2023
Time : 1.00 pm – 4.00 pm (Three hours)

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **SIX** questions.
- Answer **ALL** questions.
- Write the answers legibly in black or blue ink.

Question 01 (100 marks)

- 1.1 List **three** factors that affect segregation. (10 marks)
- 1.2 Describe how the factors mentioned in 1.1 affect segregation. (40 marks)
- 1.3 State the difference between elutriation and sedimentation. (20 marks)
- 1.4 Briefly describe the process of wet granulation. (30 marks)

Question 02 (100 marks)

- 2.1 Write down the steps of compression. (10 marks)
- 2.2 What are the **two** types of tablet press machines available. State **two** differences between them. (20 marks)
- 2.3 List **five** main parts commonly found in tablets presses. State **one** part found only in rotary presses. Write **one** function for each part. (30 marks)
- 2.4 What are the issues encountered during tablet compression? List **five** issues. Draw a diagram and briefly explain **two** issues of your liking. (40 marks)

Question 03 (100 marks)

- 3.1 What is tablet coating? (10 marks)
- 3.2 List **two** main types of tablet coating available. Write **one** advantage of each type. (20 marks)
- 3.3 Draw a diagram of the fluidized bed coating pan and label the main components. Show in the diagram the directions that can be utilized to spray coating solution. (30 marks)
- 3.4 Justify: "Ancillary equipment are crucial when tablet coating." Give **one** example. (40 marks)

Question 04 (100 marks)

- 4.1 List **two** issues related to powders. (10 marks)
- 4.2 What are the **two** types of pneumatic powder conveying systems available. List the **two** phases available. Write down one difference between the two phases. (25 marks)
- 4.3 Write a short paragraph on **two** types of solid (powder) filling methods. (30 marks)
- 4.4 Describe the soft gelatin capsule filling process. (35 marks)

Question 05 (100 marks)

- 5.1 list the main steps of extrusion and spheronization process. (15 marks)
- 5.2 Briefly explain **one** main application of extrusion and spheronization. (20 marks)
- 5.3 what are the methods of imprinting? State **four** advantages and **four** disadvantages of pharmaceutical printing. (30 marks)
- 5.4 Write the exemptions to pharmaceutical imprinting. Write a short paragraph explaining why they are exemptions. (35 marks)

Question 06 (100 marks)

- 6.1 What is meant by Deliquescence and Exsiccation? (20 marks)
- 6.2 Briefly describe the agitaton method used in size separation in the pharmaceutical industry. (20 marks)
- 6.3 State importance of mixing when preparing a pharmaceutical/cosmeceutical dosage form. (20 marks)
- 6.4 Describe the factors affect the segregation of powders and granules.(40 marks)

Faculty of Health Sciences
Diploma in Pharmaceutical and Cosmetic Sciences
DPC 1133 Anatomy and Physiology I
1st year 1st semester-End Semester SEQ Examination -2nd Batch

Date : 27th May 2023
Time : 9.00 a.m. – 12.00 p.m. (Three hours)

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **SIX** questions.
- Answer **ALL** questions.
- You should write the answers in black or blue ink.

Question 1 **(100 marks)**

- 1.1 Draw a labeled diagram of animal cell. (25marks)
- 1.2 Describe the general characters of epithelial tissues. (35 marks)
- 1.3 Write down the functions of following structure. (4 X 10 marks= 40 marks)
- 1.3.1 Ribosome
 - 1.3.2 Mitochondria
 - 1.3.3 Plasma membrane
 - 1.3.4 Nucleus

Question 2 **(100 marks)**

- 2.1 Define following terms and give two (2) examples for each.
- 2.1.1 True Ribs (20 marks)
 - 2.1.2 False Ribs (20 marks)
 - 2.1.3 Floating Ribs (20 marks)
- 2.2 Briefly describe the following terms.
- 2.2.1 Tidal volume (20 marks)
 - 2.2.2 External respiration (20 marks)

Question 3 **(100 marks)**

- 3.1 Show the nine (9) regions in the abdominal region by using a labeled diagram. (20 marks)
- 3.2 Name **all** different parts of small intestine and large intestine. (20 marks)
- 3.3 Describe the major function of human gastro-intestinal tract. (40 marks)
- 3.4 Write down the major functions of following accessory organs in digestive system.
- 3.4.1 Salivary gland (5marks)
 - 3.4.2 Pancreases (5marks)
 - 3.4.3 Liver (5marks)
 - 3.4.4 Gallbladder (5marks)

Question 4**(100 marks)**

- 4.1 List the components of blood. (20 marks)
4.2 What is major difference between plasma and serum? (20 marks)
4.3 Show body fluid compartments in the human body by a flow chart. (30 marks)
4.4 Describe the function of body water. (30 marks)

Question 5**(100 marks)**

- 5.1 List the main layers present in heart wall (20 marks)
5.2 "Myocardium in left ventricle is thicker than the wall of right ventricle". What is the reason for that? (20 marks)
5.3 List the main four (4) factors effecting cardiac output. (20 marks)
5.4 What is homeostasis? (20 marks)
5.5 What is pulmonary circulation? (20 marks)

Question 6**(100 marks)**

- 6.1 Name **all** the bones in upper limb. (20 marks)
6.2 Name the type of respiratory epithelium. (10 marks)
6.3 Describe the main importance of respiratory epithelium related to its function. (35 marks)
6.4 Describe the main role of gastric acid. (35 marks)

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Faculty of Health Sciences

DIPLOMA IN PHARMACEUTICAL AND COSMESCUTICAL SCIENCES

DPC 1133 FOUNDATION OF CHEMISTRY

DIPLOMA 1st SEMESTER-END SEMESTER SEQ EXAMINATION

Date: 25th of May 2023

Time: 09.00 am – 12.00 pm - Three Hours

INSTRUCTIONS TO CANDIDATES Page

- This question paper consists of **SIX** questions.
- Answer **ALL** questions.
- You should write legibly in black or blue ink.

Question 01

(100 marks)

1. The rate law for the reaction $A + B \rightarrow C$ is given by $\text{rate} = k[A][B]^2$. The initial concentrations of A and B are both 0.1 M, and the rate constant k is $0.05 \text{ mol}^{-2} \text{ dm}^6 \text{ s}^{-1}$.

1.1 Calculate the initial rate of the reaction. (20 marks)

1.2 Apart from the concentration, name two other factors that affect the rate of the reaction. Explain how each factor changes the rate of the reaction. (25 marks)

1.3 What is the meaning of half-life in a chemical reaction? (10 marks)

1.4 Find the half-life of A and B. (25 marks)

1.5 Find the concentration of A after 10 seconds. (20 marks)

Question 02

(100 marks)

2.1 Draw the Lewis structures of following molecules. (40 marks)

2.1.1 N_2O_5

2.1.2 H_2O_2

2.1.3 PCl_5

2.1.4 SF_6

2.2 Figure out the shape and the geometry of the following molecules. (40 marks)

2.2.1 NH_3

2.2.2 XeF₅2.2.3 CCl₄2.2.4 SF₆2.3 Explain why H₂O has different bond angle comparing with NH₃.

(20 marks)

Question 03**(100 marks)**

3.1 In an acidic solution, a solution of potassium permanganate (KMnO₄) is added to a solution containing iron (II) sulfate (FeSO₄). The reaction between KMnO₄ and FeSO₄ is a redox reaction.

3.1.1 Write the balanced redox equation for this reaction. Identify the oxidizing and reducing agents in the reaction.

(10 marks)

3.1.2 If 35.0 mL of 0.200 M KMnO₄ solution is required to react completely with 25.0 mL of FeSO₄ solution, what is the molarity of the FeSO₄ solution?

(20 marks)

3.1.3 A student performed the reaction between KMnO₄ and FeSO₄ and obtained 7.20 g of Fe₂(SO₄)₃. Calculate the theoretical yield of Fe₂(SO₄)₃ and the percentage yield of the reaction.

(30 marks)

3.2.

3.2.1 Draw the molecular orbital diagram of O₂.

(30 marks)

3.2.2 Determine the bond order of O₂ Molecule.

(10 marks)

Question 04

4.1 The names and formulae of three hydrocarbons in the same homologous series are:

Ethane C₂H₆Propane C₃H₈Butane C₄H₁₀

4.1.1 Write the next member in the series and its structural formula

(20 marks)

4.2 Draw the structures for the following IUPAC names.

4.2.1 Propan -2-ol

4.2.2 1,3- hexanediol

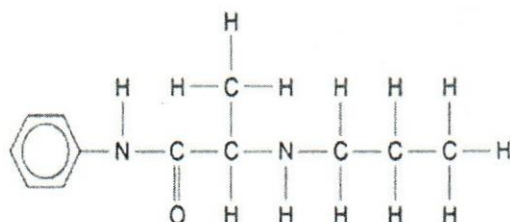
4.2.3 2- butylcyclohexanol

4.2.4 2-butanone

4.2.5 2,4,6-tribromophenol

(25 marks)

- 4.3 Prilocaine (figure 01) is used as an anesthetic in dentistry. Identify the functional group(s) in the prilocaine molecule.



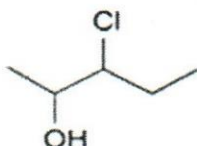
(15 marks)

Figure – 01

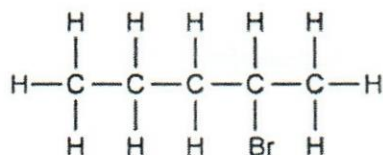
- 4.4 Write the IUPAC name and classification for the following compounds.

(40 marks)

4.4.1



4.4.2



Question 05

(100 marks)

- 5.1 Table 01 shows the melting and boiling points of some of the elements in group 17 and give the state of each substance at 50°C.

(25 marks)

Table 1

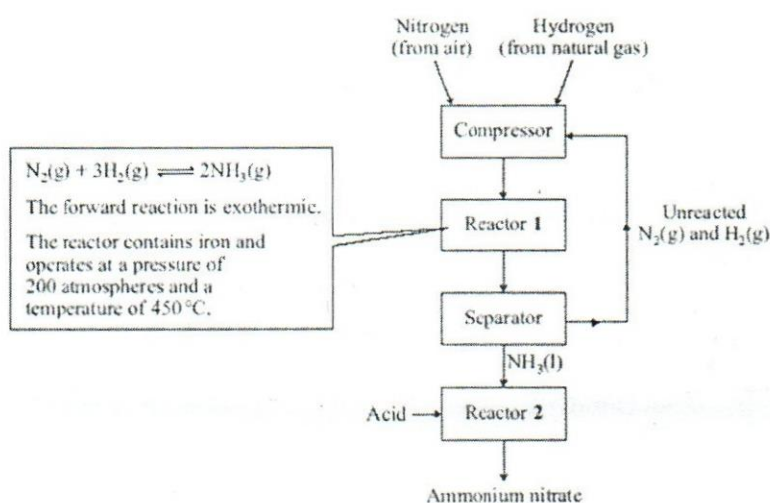
Element	Melting point in °C	Boiling point in °C
Fluorine	-220	-188
Chlorine	-101	-35
Bromine	-7	59

- 5.2 Explain why 3rd ionization energy is large compare to the 1st and 2nd ionization energy of Calcium (Ca). (25 marks)
- 5.3 Write the balance reactions of Na, K and Mg with water. (20 marks)
- 5.4 Explain why the atomic radius increases across the period. (15 marks)
- 5.5 Given that melting point of Ca is larger than the melting point of Ba .Explain the reason for the difference in melting points. (15 marks)

Question 06

(100 marks)

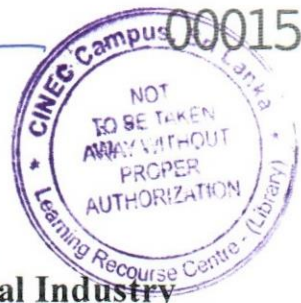
6.1 The following questions are based on the Haber-Bosh process method.



- 6.1.1 What is the purpose of the iron in reactor 1. (30 marks)
- 6.1.2 A mixture of ammonia, nitrogen and hydrogen leaves reactor 1. In the separator, what should be done to the mixture to separate the ammonia from the other gases? (20 marks)
- 6.2 State five requirements to be considered when establishing chemical industries. (50 marks)



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Faculty of Health Sciences
Diploma in Pharmaceutical & Cosmetic Sciences
DPC 1143 – Introduction to Pharmaceutical & Cosmeceutical Industry
Batch – 02-1st year 1st semester-End Semester SEQ Examination

Date : 28th May 2022
Time : 9.00 am – 12.00 noon (Three hours)

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **SIX** questions.
- Answer **ALL** questions.
- Write the answers legibly in black or blue ink.

Question 01 **(100 marks)**

- 1.1 Define the term “dosage forms”. State **one** reason for manufacturing different types of dosage forms. (10 marks)
- 1.2 List **three** advantages and **two** disadvantages of solid dosage forms. (20 marks)
- 1.3 List **five** ideal properties of bases used in semisolid dosage forms and write on the importance of **one** property. (30 marks)
- 1.4 Write on **two** methods of your liking that are used in semisolid dosage form manufacturing giving **one** example per each. (40 marks)

Question 02 **(100 marks)**

- 2.1 List 3 different types of alternative medicine used in Sri Lanka. (10 marks)
- 2.2 State the principle used in Acupuncture to treat and prevent diseases. (20 marks)
- 2.3 Briefly describe the importance of personality development. (30 marks)
- 2.4 Discuss the ways to improve commitment to work. (40 marks)

Question 03**(100 marks)**

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- 3.1 List the three types of gaseous dosage forms present. Give one advantage per each. (10 marks)
- 3.2 Draw a diagram of a metered dose inhaler (MDI) and label the main parts. Write one function for each part. (25 marks)
- 3.3 What are the 4 techniques involved in manufacturing inhalers? Explain the procedure of "Cold filling process". (30 marks)
- 3.4 Justify: "Inhalers are the most suitable technique in delivering medications to the respiratory system". (35 marks)

Question 04**(100 marks)**

- 4.1 What are medicated syrups? Give one example. (10 marks)
- 4.2 Briefly explain the difference between suspensions and emulsions and state **one** similarity between them. (20 marks)
- 4.3 What are parenteral preparations? State and briefly describe the three techniques of administration of parenterals. (30 marks)
- 4.4 Explain the manufacturing process of parenteral preparations. (40 marks)

Question 05**(100 marks)**

- 5.1 state the **three** items regulated by National Medicines Regulatory Authority. (15 marks)
- 5.2 State **four** functions of the National Medicines Quality Assurance Laboratory. (20 marks)
- 5.3 Briefly describe the main functions of the National Dangerous Drugs Control Board. (30 marks)
- 5.4 Describe the five functions of National Medicines Regulatory Authority. (35 marks)

Question 06**(100 marks)**

- 6.1 What is an over-the-counter medicine (OTC)? (10 marks)
- 6.2 State five common OTC medicines. (20 marks)
- 6.3 Briefly describe the disadvantages of taking OTC medicines. (30 marks)
- 6.4 State two common prescription only medicines. (10 marks)
- 6.5 Briefly describe the reason for controlling drugs with a prescription?(30 marks)