

Faculty of Health Sciences
Diploma in Pharmaceutical and Cosmetic Sciences
DPC 1113-Pharmaceutical and Cosmeceutical Microbiology
Batch – 05
1st Year 1st Semester
End Semester SEQ Examination

Date : 14th of August 2026
Time : 9.00 am. – 11.00 am. (Two Hours)

INSTRUCTIONS TO CANDIDATES

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

QUESTION 1

(100 Marks)

- 1.1 Define the “growth medium” use in microbiology laboratory. (25 marks)
- 1.2 Classify microorganisms based on their oxygen requirements. (25 marks)
- 1.3 Classify the types of culture media used in microbiology laboratories according to their functions. (25 marks)
- 1.4 Briefly explain the importance of selective and differential growth media. (25 marks)

QUESTION 02

(100 Marks)

- 2.1 Define the term “sterilization” in microbiology. (25 marks)
- 2.2 Briefly describe two (02) dry-heat sterilization techniques. (25 marks)
- 2.3 State the types of inoculation methods used in microbiological culture techniques. (25 marks)
- 2.4 Compare and contrast two (02) of the inoculation methods stated in Question 2.3. (25 marks)

QUESTION 03

(100 Marks)

- 3.1 Illustrate the classification of Gram-positive bacteria. (25 marks)
- 3.2 State five (05) characteristics of *Staphylococcus spp.* (25 marks)
- 3.3 State two (02) microbiological diagnostic methods that can be used to identify Gram-positive bacteria. (25 marks)
- 3.4 Briefly describe one (01) disease caused by *Staphylococcus spp.* (25 marks)

QUESTION 04

(100 Marks)

- 4.1 Define the term “bacterial growth curve” in microbiology. (25 marks)
- 4.2 Briefly explain how an antibiotic sensitivity test is performed in a microbiology laboratory. (25 marks)
- 4.3 Outline the environmental factors that affect microbial growth. (25 marks)
- 4.4 Outline the sterilization techniques used in a microbiology laboratory to prevent contamination. (25 marks)

**Faculty of Health Sciences****Diploma in Pharmaceutical & Cosmetic Sciences****DPC 1133 - Introduction to Pharmaceutical & Cosmeceutical Industry****Batch - 05****1st year 1st semester****End Semester SEQ Examination**

Date: 10th August 2026**Time: 09.00 a.m. - 12.00 p.m. (Three hours)**

INSTRUCTIONS TO CANDIDATES

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

Question 01**(100 marks)**

- 1.1 Discuss **four (04)** challenges in development of a new drug molecule. (20 marks)
- 1.2 Mention the names (expanded form) of **six (06)** regulatory agencies and the country they represent. (30 marks)
- 1.3 Relate the importance of quality assurance department in pharmaceutical or cosmetic manufacturing and distribution. (20 marks)
- 1.4 Outline the characteristics of an effective leader. (30 marks)

Question 02**(100 marks)**

- 2.1 List **four (4)** types of alternative medicinal practices in Sri Lanka. (20 marks)
- 2.2 Write a short note on practice of Chinese acupuncture system in Sri Lanka. (30 marks)
- 2.3 List the **four (04)** types of ointment bases as per USP. (20 marks)
- 2.4 Discuss about **three (03)** special dosage forms used in the treatment of respiratory disorders. (30 marks)

Question 03**(100 marks)**

- 3.1 State **five (05)** competent authorities in Sri Lanka related to pharmaceutical and cosmeceutical sciences. (25 marks)
- 3.2 Outline the major role of National Medicines Regulatory Authority (NMRA) act. (25 marks)
- 3.3 List **four (04)** main qualifications required for a person to be registered as a pharmacist in Sri Lanka. (20 marks)
- 3.4 Discuss the responsibilities of National Dangerous Drug Control Board (NDDCB). (30 marks)

Question 04**(100 marks)**

- 4.1 State the importance of drug scheduling in pharmaceutical regulation and healthcare practice. (20 marks)
- 4.2 List down the main categories of drug scheduling in Sri Lanka and provide one relevant example for each category. (30 marks)
- 4.3 Outline the storage requirements applicable to Schedule II B drugs under Sri Lankan pharmaceutical regulations. (20 marks)
- 4.4 Briefly explain the control measures of Schedule III drugs in Sri Lanka. (30 marks)

Question 05**(100 marks)**

- 5.1 State how the following quality control tests for liquid dosage forms are performed.
 - 5.1.1 Appearance (10 marks)
 - 5.1.2 Particulate matter (10 marks)
- 5.2 Illustrate the classification of liquid dosage forms using a chart. (30 marks)
- 5.3 Mention the function of the following excipients
 - 5.3.1 Emollient
 - 5.3.2 Preservative
 - 5.3.3 Humectant (3 × 5 marks = 15 marks)
- 5.4 Relate the rationale (scientific reason) for developing a suspension dosage form. (20 marks)
- 5.5 Name **three (03)** types of wetting agents used as emulsifiers, with **one (01)** example each. (15 marks)

Question 06**(100 marks)**

- 6.1 Name **five (05)** quality control tests performed on hard gelatin capsules. (20 marks)
- 6.2 Discuss the reason for introducing enteric-coating technology. (25 marks)
- 6.3 Mention the types of tablets based on the release profile. (25 marks)
- 6.4 Illustrate the manufacturing process of an emulsion-based cream, using a flowchart. (30 marks)



Faculty of Health Sciences
Diploma in Pharmaceutical & Cosmetic Sciences
End-Semester Examination - SEQ
Chemistry (DPC 1123)
1st Year 1st Semester

Date: 12th of August 2026

Time: 9.00 am– 11.00 am - Two Hours

INSTRUCTIONS TO CANDIDATES

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

QUESTION 01

(100 marks)

1.1 Iodine and oxygen form a complex of IO_4^-

1.1.1 Draw acceptable Lewis structures for IO_4^-

(30 marks)

1.1.2 Deduce the shape of IO_4^-

(20 marks)

1.1.3 Comment on the polarity of IO_4^-

(10 marks)

1.2 Molecular orbital (MO) diagrams are visual representations that show how atomic orbitals combine to form molecular orbitals in a molecule.

1.2.1 Draw molecular orbital diagram for Hydrogen (H_2).

(30 marks)

1.2.2 Find the bond order of H_2 molecule.

(10 marks)

QUESTION 02

(100 marks)

2.1 What general trend in electronegativity occurs in the periodic table?

(20 marks)

2.2 Arrange the following elements in order of increasing electronegativity.

(20 marks)

Li, Br, K, B, C, Pb

2.2 Evaluate the stability of aluminium chloride (AlCl_3).

(20 marks)

2.4 Explain the large increase between the fourth and fifth ionization energies of carbon.

(20 marks)

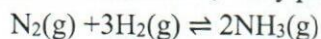
2.5 Evaluate the melting point of beryllium (Be) is higher than that of magnesium (Mg).

(20 marks)

QUESTION 03

(100 marks)

Consider the reaction for the synthesis of ammonia, a key process in the Haber process.



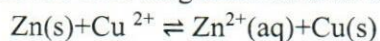
3.1 Explain the direction of shift in equilibrium when changes in temperature using the Le Chatelier's principle. (20 marks)

3.2 The equilibrium, the concentrations of the gases are as follows.

$$[\text{N}_2] = 0.40 \text{ mol/L} \quad [\text{H}_2] = 0.60 \text{ mol/L} \quad [\text{NH}_3] = 0.80 \text{ mol/L}$$

3.2.1 Calculate the equilibrium constant (K_c) for the reaction at 300 K. (30 marks)

3.3 Consider the following reaction in an electrochemical cell at standard conditions.



3.3.1 Write the half-reactions that occur at the anode and the cathode. (20 marks)

3.3.2 Calculate the standard cell potential E°_{cell} for this electrochemical reaction. (30 marks)

$$E^\circ_{\text{Zn}^{2+}/\text{Zn}} = -0.76 \text{ V} \quad E^\circ_{\text{Cu}^{2+}/\text{Cu}} = +0.34 \text{ V}$$

QUESTION 04

(100 marks)

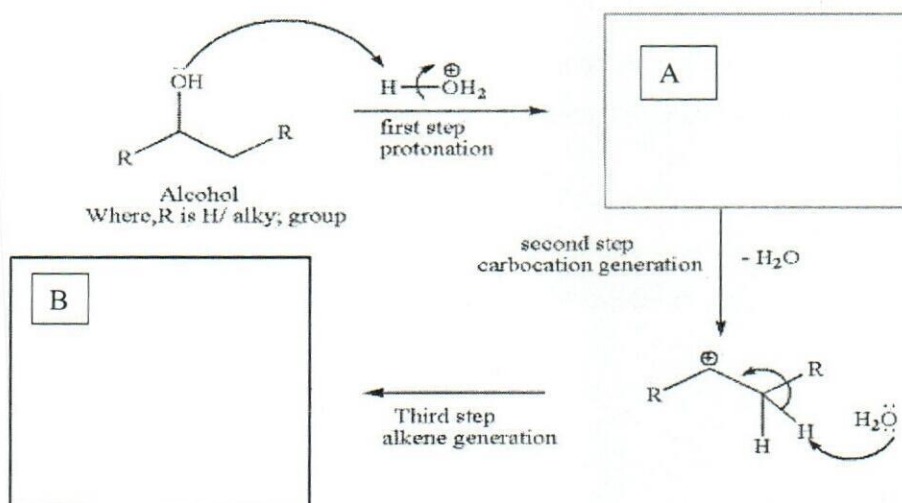
4.1 What is the difference between an alkane, alkene, and alkyne in terms of their bonding and general formula. (20 marks)

4.2 What is the structural difference between a primary, secondary and tertiary carbon? (20 marks)

4.3 Evaluate the presence of a polar functional group, such as a hydroxyl group (-OH), affect the solubility and reactivity of an organic compound. (20 marks)

4.4 Compare homolytic cleavage and heterolytic cleavage. (20 marks)

4.5 Draw the structures of A and B in following mechanism. (20 marks)





Faculty of Health Sciences

Diploma in Pharmaceutical & Cosmetic Sciences

DPC 1153 Pharmaceutical & Cosmeceutical Unit Operations

Batch 04

1st year 1st semester

End Semester SEQ Examination

Date: 15th November 2025

Time: 09.00 a.m. – 12.00 p.m. (Three hours)

INSTRUCTIONS TO CANDIDATES

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

Question 01

(100 marks)

- 1.1 Illustrate **two (02)** types of manufacturing process flow using flow charts / diagram. (25 marks)
- 1.2 Write a short note on **five (05)** key considerations in selection of unit operation. (25 marks)
- 1.3 Outline the working principle of freeze dryer using a flow chart. (25 marks)
- 1.4 What is the importance of finger / filter bag in a fluid bed dryer? (25 marks)

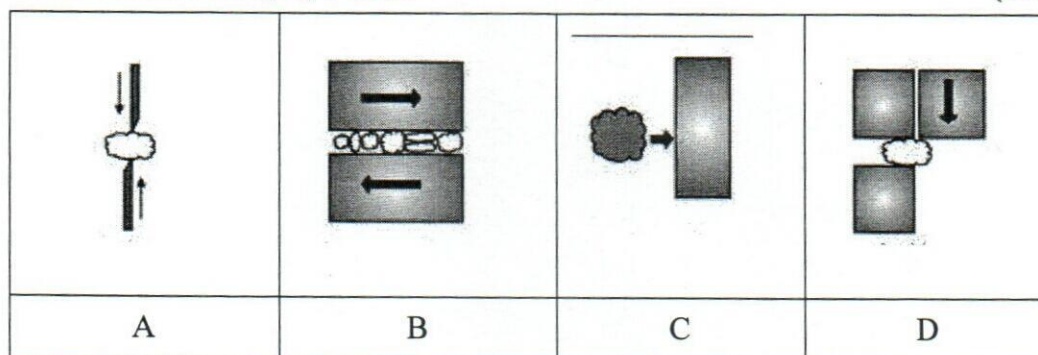
Question 02

(100 marks)

2.1 The diagrams given below depict the mode of stress applied in size reduction.

2.1.1 Write the names of A, B, C & D.

(20 marks)



- 2.1.2 Write a short note on **one** of the above mechanisms with suitable examples of sizing equipment. (20 marks)
- 2.2 State the impact of top weight & bottom weight on functioning of vibratory sifter equipment. (20 marks)
- 2.3 Illustrate the **three (03)** types of impellers using suitable diagrams. (15 marks)
- 2.4 If the gross capacity of a liquid mixing vessel is 150 L, and recommended working capacity is 40 – 80 %, find the minimum and maximum limits in terms of volume (L). (25 marks)

Question 03**(100 marks)**

- 3.1 Write **five (05)** objectives of performing granulation process. (20 marks)
- 3.2 Draw a suitable simple process flow diagram of the dry granulation process. (30 marks)
- 3.3 What are the **four (04)** stages of tablet compression process? (20 marks)
- 3.4 If you rotate a single station tablet compression machine at the speed of 30 rpm, you will get 30 tablets per min. Assume you are operating a 37-station tablet compression machine at the speed of 40 rpm. What is the output per hour? (30 marks)

Question 04**(100 marks)**

- 4.1 State the importance of pharmaceutical printing. (15 marks)
- 4.2 List **five (5)** major elements of a pharmaceutical label. (25 marks)
- 4.3 Define the following terms:
- 4.3.1) Spheronization (15 marks)
- 4.3.2) Extrusion (15 marks)
- 4.4 Outline the major steps involved in the extrusion and spheronization process. (30 marks)

Question 05**(100 marks)**

- 5.1 State **four (4)** types of powder conveying systems. (20 marks)
- 5.2 Outline how the hoisting and gravity conveying systems work. (30 marks)
- 5.3 Name **four (4)** key parameters to be checked during product sorting and inspection. (20 marks)
- 5.4 Write a short note on the advantages and disadvantages of the manual inspection method. (30 marks)

Question 06**(100 marks)**

6.1 State **four (04)** factors affecting Cleaning in Place (CIP) efficiency. (20 marks)

6.2 Identify the following equipment used in vessel cleaning in place (CIP) systems. (20 marks)

6.2.1.



6.2.2.



6.3 Outline the key design requirements when designing pipework for a cleaning in place (CIP) system. (30 marks)

6.4 Imagine you are a pharmaceutical industry professional and discover a batch of expired drugs in your facility. Outline the steps you would take to safely dispose of these drugs, ensuring regulatory compliance, environmental safety, and workplace best practices. (30 marks)



Faculty of Health Sciences
Diploma in Pharmaceutical and Cosmetic Sciences
DPC 1143 Good Manufacturing Practices & Organizational Management
Batch 04
1st Year 1st Semester
End Semester Examination – SEQ

Date : 09th of November 2025

Time : 9.00 a.m. - 12.00 noon (Three hours)

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **SIX** structured essay type questions.
- Answer **ALL** the questions.
- Final answers should be given legibly in black or blue ink.

Question 01 (100 marks)

- 1.1 Define Good Manufacturing Practices (GMP). (20 marks)
- 1.2 List the main components (5 P's) of GMP. (20 marks)
- 1.3 What is the difference between GMP and current GMP (cGMP)? (30 marks)
- 1.4 Outline the GMP guidelines on complaints and recall. (30 marks)

Question 02 (100 marks)

- 2.1 What are cosmetics? (20 marks)
- 2.2 List **four (04)** type of cosmetics with examples. (20 marks)
- 2.3 Write a short note on United States Pharmacopoeia. (30 marks)
- 2.4 Differentiate pharmacopoeia and formulary. (30 marks)

Question 03 (100 marks)

- 3.1 What is a clean room? (15 marks)
- 3.2 State the function of HEPA filter. (15 marks)
- 3.3 List **four (04)** measures to maintain aseptic conditions in manufacturing area. (20 marks)
- 3.4 Outline the use of heating-ventilation-air conditioning (HVAC) systems. (20 marks)
- 3.5 Give **two (02)** example for following each type of contamination. (30 marks)
 - 3.5.1 Biological
 - 3.5.2 Particulate
 - 3.5.3 Chemical

Question 04**(100 marks)**

- 4.1 What are the **four (04)** functions of management? (10 marks)
- 4.2 How do you define organizational goals? (20 marks)
- 4.3 Read the following scenario carefully and answer the questions.

Sunshine Café is a small coffee shop located near a university in Colombo. It offers freshly brewed coffee, homemade snacks, and free Wi-Fi for students. The café has built a loyal customer base among university students and young professionals. However, recently a large international coffee chain opened nearby, attracting some of Sunshine Café's regular customers. The café's owner is considering expanding the menu to include smoothies and introducing a student loyalty card system to stay competitive. Rising ingredient prices and limited seating space are also becoming concerns.

- 4.3.1 Do a SWOT analysis for Sunshine Café. (30 marks)
- 4.3.2 Based on your SWOT analysis, suggest one strategy that Sunshine Café can use to maintain or improve its market position. (20 marks)
- 4.3.3 Outline how one of the café's strengths can help overcome a threat you identified. (20 marks)

Question 05**(100 marks)**

- 5.1 What are codes of ethics? (20 marks)
- 5.2 Mention **two (02)** reasons why a business should create a code of ethics. (20 marks)
- 5.3 List any **three (03)** guidelines included in the SLCPI Code of Conduct. (30 marks)
- 5.4 Give **two (02)** examples of unethical behavior that can harm company reputation. (30 marks)

Question 06**(100 marks)**

- 6.1 State the **three (03)** levels of management. (20 marks)
- 6.2 Mention **four (04)** Simple Planning Techniques. (20 marks)
- 6.3 Outline how does SMART concept help in setting effective goals. (30 marks)
- 6.4 Name **three (03)** time management strategies and explain one (01) strategy. (30 marks)

Faculty of Health Sciences
Higher Diploma in Pharmaceutical and Cosmetic Sciences
HD 1143 Good Manufacturing Practices & Organizational Management
Batch 04
1st Year 1st Semester
End Semester Examination – SEQ

Date : 06th of November 2025

Time : 9.00 a.m. - 12.00 noon (Three hours)

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **SIX** structured essay type questions.
- Answer **ALL** the questions.
- Final answers should be given legibly in black or blue ink.

Question 01 (100 marks)

- 1.1 What are Good Manufacturing Practices (GMP)? (20 marks)
- 1.2 State the **five (05)** main components of GMP. (20 marks)
- 1.3 Differentiate GMP and current GMP (cGMP). (30 marks)
- 1.4 Outline the GMP guidelines on documentation and recordkeeping. (30 marks)

Question 02 (100 marks)

- 2.1 What are cosmetics? (20 marks)
- 2.2 List four (04) specific GMP challenges in cosmetic manufacturing. (20 marks)
- 2.3 Write a short note on British Pharmacopoeia. (30 marks)
- 2.4 State the differences between pharmacopoeia and formulary. (30 marks)

Question 03 (100 marks)

- 3.1 What is a clean room? (15 marks)
- 3.2 State the function of HEPA filter (15 marks)
- 3.3 List **four (04)** measures to maintain aseptic conditions in manufacturing area. (20 marks)
- 3.4 Outline the use of heating-ventilation-air conditioning (HVAC) systems. (20 marks)
- 3.5 Give **two (02)** example for following each type of contamination. (30 marks)
 - 3.5.1 Particulate
 - 3.5.2 Chemical
 - 3.5.3 Biological

Question 04**(100 marks)**

- 4.1 How do you define organizational goals? (10 marks)
- 4.2 Outline the **five (05)** main types of organizational goals that differ in the intent of attainment of objectives. (20 marks)
- 4.3 Read the following scenario carefully and answer the questions.

Oceanic Fitness is a mid-sized gym chain operating in Colombo and Galle. It has built a reputation for offering affordable memberships, qualified trainers, and a friendly atmosphere. Recently, customer numbers have declined as new luxury fitness centers with advanced equipment and mobile apps entered the market. The management is considering investing in a fitness-tracking mobile app, offering online workout sessions, and upgrading equipment. However, financial limitations and rising electricity costs are major challenges.

- 4.3.1 Conduct a SWOT analysis for Oceanic Fitness Pvt Ltd. (30 marks)
- 4.3.2 Using your SWOT findings, propose **two (02)** strategic actions that could help the company stay competitive in the market. (20 marks)
- 4.3.3 How internal weaknesses could limit the company's ability to take advantage of external opportunities. Provide one example from your SWOT. (20 marks)

Question 05**(100 marks)**

- 5.1 What are codes of ethics? (10 marks)
- 5.2 Mention **four (04)** reasons why a business should create a code of ethics. (20 marks)
- 5.3 Mention any **five (05)** guidelines included in the SLCPI Code of Conduct. (20 marks)
- 5.4 An employee shares a client's confidential information without permission.
- 5.4.1 What problems could this cause for the company? (30 marks)
- 5.4.2 Suggest **two (02)** ways the company can prevent such unethical behavior. (20 marks)

Question 06**(100 marks)**

- 6.1 Mention **four (04)** Simple Planning Techniques. (20 marks)
- 6.2 Outline the main steps involved in team building. (20 marks)
- 6.3 What is the importance of each step you mentioned in 6.2 above in creating an effective and cohesive team? (30 marks)
- 6.4 What is the purpose of using techniques like the Pomodoro Technique or time blocking in time management? (30 marks)



Faculty of Health Sciences
Diploma in Pharmaceutical & Cosmetic Sciences
DPC 1133 – Introduction to Pharmaceutical & Cosmeceutical Industry
Batch – 04
1st year 1st semester
End Semester SEQ Examination

Date: 2nd November 2025

Time: 09.00 a.m. – 12.00 noon (Three hours)

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 List down **four (04)** competent authorities in Sri Lanka related to pharmaceutical and cosmeceutical sciences. (20 marks)
- 1.2 Outline the major role of each competent authority mentioned in 2.1. (30 marks)
- 1.3 State **four (04)** main qualifications required for a person to be registered as a pharmacist in Sri Lanka. (20 marks)
- 1.4 Write a short note on contribution of the NMRA act in regulation of medicines in Sri Lanka. (30 marks)

Question 02 **(100 marks)**

- 2.1 List the **five (05)** stages of drug product development. (25 marks)
- 2.2 Write **four (04)** reasons why an active ingredient must be converted into a dosage form. (20 marks)
- 2.3 List **five (05)** departments which are common to a company that manufactures and distributes pharmaceuticals or cosmetic products. (25 marks)
- 2.4 Mention **six (06)** skills or characteristics an employee shall possess in addition to educational qualifications which may help in career progress. (30 marks)

Question 03 **(100 marks)**

- 3.1 What is “drug scheduling”? (20 marks)
- 3.2 List down the importance of drug scheduling in pharmaceutical regulation and healthcare practice. (20 marks)
- 3.3 State the main categories of drug / medicine scheduling in Sri Lanka and provide **one (01)** example for each category. (30 marks)
- 3.4 Write a short note on the characteristics, control measures, and significance of Schedule I drugs. (30 marks)

Question 04**(100 marks)**

- 4.1 Classify the powder dosage forms based on dosage / dose frequency. (20 marks)
- 4.2 Mention **five (05)** in-process quality control tests performed on tablets. (25 marks)
- 4.3 What is the function of diluent in tablet formulation? (15 marks)
- 4.4 Draw a diagram of an empty gelatin capsule and label the significant features. (20 marks)
- 4.5 Is an empty gelatin capsule an active ingredient or an excipient? Justify your answer. (20 marks)

Question 05**(100 marks)**

- 5.1 Differentiate between a solution and a dispersion along with the technical terms used for both. (20 marks)
- 5.2 Write a short note on how parenteral liquid dosage forms differ from other liquid dosage forms. (30 marks)
- 5.3 State **four (04)** types of alternative medicinal practices in Sri Lanka. (20 marks)
- 5.4 Write a short note on the Helawedakama system. (30 marks)

Question 06**(100 marks)**

- 6.1 Mention the **four (04)** types of semi-solid dosage forms. (20 marks)
- 6.2 What is a suppository? Why is it a special dosage form? (25 marks)
- 6.3 Write **five (05)** categories of emulsifying agents with few examples. (25 marks)
- 6.4 Illustrate the types of emulsions with suitable diagrams. (30 marks)

Faculty of Health Sciences
Diploma in Pharmaceutical and Cosmetic Sciences
DPC 1113-Pharmaceutical and Cosmeceutical Microbiology
Batch – 04
1st Year 1st Semester
End Semester SEQ Examination

Date : 01st of November 2025
Time : 9.00 am. – 11.00 am. (Two Hours)

INSTRUCTIONS TO CANDIDATES

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

QUESTION 1

(100 Marks)

- 1.1 Define the term “growth curve” in microbiology. (25 marks)
- 1.2 Classify microorganisms based on their growth at different environmental temperatures. (25 marks)
- 1.3 Classify the types of culture media used in the laboratory along with their functions. (25 marks)
- 1.4 State the different types of inoculation methods used for transferring samples to culture media. (25 marks)

QUESTION 02

(100 Marks)

- 2.1 State the properties of viruses. (25 marks)
- 2.2 Outline the stages involved in the viral replication (life) cycle, of a virus. (25 marks)
- 2.3 Compare and contrast the characteristics of virus and the bacteria microorganisms. (25 marks)
- 2.4 State the high-risk groups for viral infection along with examples. (25 marks)

QUESTION 03

(100 Marks)

- 3.1 Illustrate the classification of Gram-negative microorganisms. (25 marks)
- 3.2 State the characteristics of *Pseudomonas spp.* and *Escherichia coli*. (25 marks)
- 3.3 State the types of microbiological diagnostic methods that can be used to identify Gram-negative bacteria. (25 marks)
- 3.4 Illustrate and label a typical bacterial cell structure. (25 marks)

QUESTION 04

(100 Marks)

- 4.1 Define the term “endospore” in microorganisms. (25 marks)
- 4.2 State the characteristics of acid-fast bacilli, providing suitable examples. (25 marks)
- 4.3 State the differences between Gram-positive bacteria and acid-fast bacilli. (25 marks)
- 4.4 Outline the sterilization techniques used in a microbiology laboratory to prevent contamination. (25 marks)



Faculty of Health Sciences
Diploma in Pharmaceutical & Cosmetic Sciences
Chemistry (DPC 1123)
End-Semester Examination - SEQ
1st Year 1st Semester

Date: 8th of November 2025

Time: 9.00 am– 11.00 am - Two Hours

INSTRUCTIONS TO CANDIDATES

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

QUESTION 01

(100 marks)

1.1 Iodine and oxygen form a complex of IO_5^{-3} used as a transient species in chemical reactions.

1.1.1 Draw acceptable Lewis structures for IO_5^{-3} (30 marks)

1.1.2 Deduce the shape of this molecule. (20 marks)

1.1.3 Is this molecule polar or non-polar? (10 marks)

1.2 Molecular orbital (MO) diagrams are visual representations that show how atomic orbitals combine to form molecular orbitals in a molecule.

1.2.1 Draw molecular orbital diagram for hydrogen (H_2). (30 marks)

1.2.2 Find the bond order of H_2 molecule. (10 marks)

QUESTION 02

(100 marks)

2.1 What is the general trend in electronegativity occurs in the periodic table. (20 marks)

2.2 Arrange the following elements in order of increasing electronegativity. (20 marks)

Li, Br, K, B, C, Pb

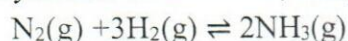
2.3 Explain that although BCl_3 is an electron deficient compound, it is stable. (20 marks)

2.4 Explain why the 2nd ionization energy is higher in sodium (Na) than the 1st ionization energy. (20 marks)

2.5 Explain the melting point of beryllium (Be) is higher than that of magnesium (Mg). (20 marks)

QUESTION 03**(100 marks)**

Consider the reaction for the synthesis of ammonia, a key process in the Haber process.



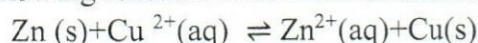
3.1 Explain the direction of shift in equilibrium when changes in temperature using the Le Chatelier's principle. (20 marks)

3.2 At equilibrium, the concentrations of the gases are as follows.

$$[\text{N}_2] = 0.40 \text{ mol/L} \quad [\text{H}_2] = 0.60 \text{ mol/L} \quad [\text{NH}_3] = 0.80 \text{ mol/L}$$

3.2.1 Calculate the equilibrium constant, K_c for the reaction at 300 K. (30 marks)

3.3 Consider the following reaction in an electrochemical cell at standard conditions.



3.3.1 Write the half-reactions that occur at the anode and the cathode. (20 marks)

3.3.2 Calculate the standard cell potential E°_{cell} for this electrochemical reaction. (30 marks)

$$E^\circ_{\text{Zn}^{2+}/\text{Zn}} = -0.76 \text{ V} \quad E^\circ_{\text{Cu}^{2+}/\text{Cu}} = +0.34 \text{ V}$$

QUESTION 04**(100 marks)**

4.1 What is the difference between an alkane, alkene, and alkyne in terms of their bonding and general formula? (30 marks)

4.2 What is the difference between a primary, secondary, and tertiary carbon atom? (20 marks)

4.3 How does the presence of a polar functional group, such as a hydroxyl group (-OH), affect the solubility and reactivity of an organic compound? (20 marks)

4.4 Explain the difference between homolytic cleavage and heterolytic cleavage. (30 marks)



Faculty of Health Sciences
Diploma in Pharmaceutical and Cosmetic Sciences
DPC 1213 Anatomy
1st year 2nd semester
End Semester Special Repeat SEQ Examination
3rd Batch

Date : 24th August 2025
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 legibly in black or blue ink.

Question 1 (100 marks)

- 1.1 Illustrate main parts of typical animal cell. (25 marks)
- 1.2 Describe structural diversity of animal cells, based on their functions, by giving 2 examples. (25 marks)
- 1.3 Compare right and left bronchi. (25 marks)
- 1.4 Briefly describe the anatomical features of respiratory epithelium. (25 marks)

Question 2 (100 marks)

- 2.1 Compare pericardium and myocardium. (25 marks)
- 2.2 Name main valves associated with heart chambers and great vessels attached to heart. (20 marks)
- 2.3 "Myocardium in left ventricle is thicker than the wall of right ventricle". What is the reason for that? (25 marks)
- 2.4 Define following terms.
 - 2.4.1 True Ribs (10 marks)
 - 2.4.2 False Ribs (10 marks)
 - 2.4.3 Floating Ribs (10 marks)

Question 3 (100 marks)

- 3.1 Illustrate a structure of a nephron by using a label diagram. (25 marks)
- 3.2 How male urethra is differed from female urethra? (25 marks)
- 3.3 Write short note on urinary bladder. (25 marks)
- 3.4 Write a short note on thyroid follicles (25 marks)

Question 4 (100 marks)

- 4.1 Show the nine regions in the abdominal region by using a labeled diagram. (25 marks)
- 4.2 How exocrine pancreas differ from endocrine pancreas. (25 marks)

- 4.3 Illustrate microscopic structure of human liver. (25 marks)
4.4 List the components present in the spermatic cord. (25 marks)

Question 5**(100 marks)**

- 5.1 Illustrate the structure of a neuron. (25 marks)
5.2 Name the three layers of meninges. (15 marks)
5.3 List main parts of female reproductive system. (15 marks)
5.4 List components which can observe in the microscopic view of human ovary cortex. (20 marks)
5.5 Write a short note on structure of a synovial joint. (25 marks)

Question 6**(100 marks)**

- 6.1 Compare cardiac muscles and smooth muscles. (25 marks)
6.2 Write a short note on tympanic membrane (eardrum). (25 marks)
6.3 Draw a label diagram of a section of human eye. (25 marks)
6.4 Write a short note on cerebrum. (25 marks)



**Faculty of Health Sciences
Diploma in Pharmaceutical and
Cosmeceutical Sciences**

DPC 1113-Pharmaceutical and Cosmeceutical Microbiology

Batch – 03

1st Year 1st Semester

Re-sit End Semester SEQ Examination

Date : 10th of August 2025
Time : 9.00 am. – 12.00 pm. (Three Hours)

INSTRUCTIONS TO CANDIDATES

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

QUESTION 1

(100 Marks)

- 1.1 Define the Koch's postulates in microbiology. (25 marks)
- 1.2 State three (03) contributions of Robert Koch into microbiology. (25 marks)
- 1.3 Illustrate and label the bacterial structure. (25 marks)
- 1.4 State and define the major groups of Archaeobacteria. (25 marks)

QUESTION 02

(100 Marks)

- 2.1 State the growth factors affect the growth of microorganism. (25 marks)
- 2.2 Outline the types of microorganisms based on oxygen requirement. (25 marks)
- 2.3 State and define the types of culture media find in laboratory. (25 marks)
- 2.4 Briefly describe the types of streaking methods used in microbiology laboratory. (25 marks)

QUESTION 03

(100 Marks)

- 3.1 Illustrate the identification method of gram-positive bacteria. (25 marks)
- 3.2 Outline the principle of Catalase test in identification in *Staphylococcus aureus*. (25 marks)
- 3.3 State the types of *Staphylococcus aureus* toxins that cause disease to human. (25 marks)
- 3.4 Briefly define the hemolytic pattern of the *Streptococcus* spp. microorganism. (25 marks)

QUESTION 04

(100 Marks)

- 4.1 State five (05) difference of fungi compared to the bacteria. (25 marks)
- 4.2 Define the structures called yeast, hypha and mycelium. (25 marks)

4.3 List the five (05) characteristics of the *Candida* spp.

(25 marks)

4.4 State the diagnosis method of the fungi.

(25 marks)

QUESTION 05

(100 Marks)

5.1 State the transmission method of viruses.

(25 marks)

5.2 State five (05) properties of the virus.

(25 marks)

5.3 State the life cycle of the virus.

(25 marks)

5.4 State the diagnosis methods of the viral infection.

(25 marks)

QUESTION 06

(100 Marks)

6.1 State the sterilizing mechanism of microbiology laboratory.

(25 marks)

6.2 Define the terms sterilization, disinfection and bacteriostatic.

(25 marks)

6.3 Outline the autoclave procedure of the microbiology laboratory.

(25 marks)

6.4 State the methods of cross contamination take place in the microbiology laboratory.

(25 marks)



Faculty of Health Sciences
Diploma in Pharmaceutical & Cosmetic Sciences
DPC 1133 – Introduction to Pharmaceutical & Cosmeceutical Industry
Batch – 03
1st year 1st semester
End Semester - SEQ Examination (Resit)

Date : 10th of August 2025
Time : 1.30 pm – 4.30 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. What is the difference between conventional and alternative medicines? (20 marks)
- 1.2. State the principle behind acupuncture. (20 marks)
- 1.3. List **one (01)** advantage and **one (01)** disadvantage of acupuncture. (20 marks)
- 1.4. State **three (03)** factors affecting personality of an individual. (15 marks)
- 1.5. Write **five (05)** ways to enhance your personality. (25 marks)

Question 02 (100 marks)

- 2.1. What is a 'Dosage form'? (20 marks)
- 2.2. Write **four (04)** types of dosage forms according to physical form. (20 marks)
- 2.3. What is a biphasic liquid dosage form? (30 marks)
- 2.5. State the importance of using a suspending agent in biphasic dosage form preparation. (30 marks)

Question 03 (100 marks)

- 3.1. State **four (04)** ideal properties of semi-solid dosage form. (20 marks)
- 3.2. What is the importance of the base in semi solid preparations? (30 marks)
- 3.3. State **four (04)** ideal properties of parenteral preparations. (20 marks)
- 3.4. Define "water for injection". (30 marks)

Question 04**(100 marks)**

- 4.1. What are the **two (02)** types of inhalers? (20 marks)
- 4.2. State **three (03)** types of moist inhalation. (15 marks)
- 4.3. List the key steps of manufacturing process of a Metered Dose Inhaler (MDI). (35 marks)
- 4.4. Write **three (03)** manufacturing techniques of MDI. (30 marks)

Question 05**(100 marks)**

- 5.1. State the **three (03)** items regulated by National Medicines Regulatory Authority (NMRA). (30 marks)
- 5.2. Write **four (04)** functions of the National Medicines Regulatory Authority. (20 marks)
- 5.3. What is the main function of National Dangerous Drugs Control Board? (30 marks)
- 5.4. State the main function of Medical Supply Division (MSD). (20 marks)

Question 06**(100 marks)**

- 6.1. What is the reason for controlling drugs with a prescription? (30 marks)
- 6.2. State **two (02)** common prescription only medicines. (20 marks)
- 6.3. Write **three (03)** disadvantages of taking over the counter medicines. (30 marks)
- 6.4. Mention **two (02)** medical devices with high risk levels. (20 marks)



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Faculty of Health Sciences
Diploma in Pharmaceutical & Cosmetic Sciences
DPC 1133 – Introduction to Pharmaceutical & Cosmeceutical Industry
Batch – 03
1st year 1st semester
End Semester - SEQ Examination

Date	: 12 th of October 2024
Time	: 1.30 pm – 4.30 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. What is the difference between conventional and alternative medicines? (20 marks)

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1.2.State the principle behind acupuncture. (20 marks)

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1.3. List **one (01)** advantage and **one (01)** disadvantage of acupuncture. (20 marks)

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1.4.State **three (03)** factors affecting personality of an individual. (15marks)

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1.5. Write **five (05)** ways to enhance your personality. (25 marks)

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Question 02**(100 marks)**

2.1. What is a 'Dosage form'?

(20 marks)

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2.2. Write **four (04)** types of dosage forms according to physical form.

(20 marks)

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2.3. What is a biphasic liquid dosage form?

(20 marks)

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2.5. State the importance of using a suspending agent in biphasic dosage form preparation.

(20 marks)

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Question 03**(100 marks)**3.1. State **four (04)** ideal properties of semi-solid dosage form.

(20 marks)

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3.2. What is the importance of the base in semi solid preparations?

(20 marks)

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3.3. State **four (04)** ideal properties of parenteral preparations.

(20 marks)

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3.4. Define “water for injection”. (20 marks)

Question 04 (100 marks)

4.1. What are the **two (02)** types of inhalers? (20 marks)

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Question 06 (100 marks)

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 6.2 State **two (02)** common prescription only medicines. (20 marks)

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 6.3 Write **three (03)** disadvantages of taking over the counter medicines. (30 marks)

.....

 6.4 Mention **two (02)** medical devices with high risk levels. (20 marks)



Faculty of Health Sciences

Diploma in Pharmaceutical and Cosmetic Sciences

DPC 1143 Good Manufacturing Practices & Organizational Management

Batch 03

1st Year 1st Semester

End Semester Examination - SEQ

INDEX NUMBER:

Date : 19th October 2024

Time : 9.00 a.m. - 12.00 p.m. (Three hours)

INSTRUCTIONS TO CANDIDATES

- This question paper consists of **SIX** questions.
- Answer **ALL** the questions on this paper itself.
- Final answers should be given legibly in black or blue ink.

Question 01

(100 marks)

1.1 What is the need of standards in pharmaceutical industry?

(25 marks)

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1.2 What is meant by 'Current Good Manufacturing Practices (cGMP)'?

(25 marks)

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1.3 State **five (05)** basic principles of GMP.

(25 marks)

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1.4 Briefly describe GMP guidelines on sanitation and hygiene.

(25 marks)

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Question 02

(100 marks)

2.1 List **five (05)** world renowned pharmacopoeia.

(25 marks)

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2.2 Briefly describe differences between general monographs and specific monographs. (25 marks)

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2.3 Describe the importance of pharmacopeia in pharmaceutical quality control. (30 marks)

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2.4 List **two (02)** examples for each of the contamination types given below. (20 marks)

2.4.1 Particulate

2.4.2 Chemical

2.4.3 Biological

2.4.4 Radiological

Question 03 (100 marks)

3.1 What is cross-contamination? (20 marks)

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3.2 Briefly describe the importance of High Efficient Particulate Air (HEPA) filters in clean room facility of a pharmaceutical manufacturing plant. (25 marks)

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 3.2 Briefly describe the mechanism and importance of interlocking system. (25 marks)

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3.3 List **six (06)** measures to maintain aseptic conditions. (30 marks)

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Question 04 (100 marks)

4.1 Write the **four (04)** functions of management (20 marks)

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4.2 Define 'organizational goals' (20 marks)

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4.3 Briefly describe the **three (03)** types of 'organizational goals.' (30 marks)

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 4.4 Write the **seven (07)** steps for setting organizational goals. (30 marks)

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Question 05 (100 marks)

5.1 What are ethics? (20 marks)

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5.2 Write **two (02)** common types of business codes of ethics. (20 marks)

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5.3 State **five (05)** reasons for creating a code of ethics in a business. (30 marks)

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5.4 Explain the 'theory of a rotten apple' with an example. (30 marks)

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Question 06**(100 marks)**6.1 Write the **five (05)** stages of team development.**(15 marks)**

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6.2 Briefly describe **four (04)** forecasting techniques/ methods.**(40 marks)**

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6.3 Name **four (04)** time management methods and briefly explain **two (02)** of them. **(40 marks)**

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6.4 Write **five (05)** manufacturer's specifications of a product**(20 marks)**

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Faculty of Health Sciences
Diploma in Pharmaceutical and
Cosmeceutical Sciences
DPC 1113-Pharmaceutical and Cosmeceutical Microbiology
Batch – 03
1st Year 1st Semester
End Semester SEO Examination

Date : 12th of October 2024
Time : 9.00 am. – 12.00 pm. (Three Hours)

INSTRUCTIONS TO CANDIDATES

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

QUESTION 1

(100 Marks)

1.1 Define the term of “binary fission” of microorganisms.

(25 marks)

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1.2 Illustrate the growth curve and label the phases of the growth curve of microorganism.

(25 marks)

[illegible]

1.3 Classify the culture media based on the consistency of the media.

(25 marks)

[illegible]

1.4 State the difference between selective media, differential media and enrichment media.

(25 marks)

QUESTION 02

(100 Marks)

2.1 State the general characteristics of *Staphylococcus spp.*

(25 marks)

2.2 Outline the principle of catalase test and the coagulase test.

(25 marks)

2.3 State the virulence factors of *Staphylococcus aureus*.

(25 marks)

(25 marks)

[illegible]

(100 Marks)

(25 marks)

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(25 marks)

[illegible]

(25 marks)

[illegible]

(25 marks)

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QUESTION 04**(100 Marks)**

4.1 State five characteristics of virus that infect host cell.

(25 marks)

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4.2 State the steps of transmission of virus into a host cell.

(25 marks)

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4.3 State the viral transmission methods and an example for each method.

(25 marks)

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4.4 "HIV infection is highly virulent compared to the *E. coli* infection" state your opinion on this statement.

(25 marks)

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QUESTION 05**(100 Marks)**

5.1 State three examples for the spirochete's microorganism and state two characteristics of spirochetes. (25 marks)

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5.2 Write the short notes on Leptospirosis and Syphilis infections. (25 marks)

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5.3 State the antigenic and virulence factors of gram-negative bacilli. (25 marks)

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5.4 Outline the characteristics of three pathogenic strains of *Escherichia coli*. (25 marks)

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QUESTION 06**(100 Marks)**

6.1 State the different oxygen utilization methods by the microorganisms.

(25 marks)

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6.2 State the virulence factors of gonococcus and meningococcus.

(25 marks)

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6.3 Outline a microbiology test method on identifications of gonorrhea.

(25 marks)

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6.4 State the methods that the cross contamination might occur during the culture procedure.

(25 marks)

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Faculty of Health Sciences
DIPLOMA IN PHARMACEUTICAL AND COSMACEUTICAL SCIENCES
3rd Batch
DPC 1123 – Chemistry
End Semester Examination
1st Year 1st Semester –SEQ

Date: 19th of October 2024

Time: 09.00 am – 12.00 pm - Three Hours

INSTRUCTIONS TO CANDIDATES Page

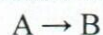
This question paper consists of **SIX** questions.

- Answer **ALL** questions.
- You should write legibly in black or blue ink.

Question 01

(100 marks)

1. The initial concentration of A is 0.15 mol dm^{-3} for the given reaction. The rate constant k is 0.01 s^{-1} .



- 1.1 Write the rate equation of the reaction.

(20 marks)

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- 1.2 Apart from the concentration, name two other factors that affect the rate of the reaction.

(10 marks)

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- 1.3 What is the meaning of half-life in a chemical reaction?

(20 marks)

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- 1.4 Find the half-life of A?

(25 marks)

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1.5 Calculate the initial rate of the reaction

(25 marks)

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Question 02

(100 marks)

2.1 Draw the Lewis structures of following molecules.

(40 marks)

2.1.1 SF_6

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2.1.2 CH_4

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2.2 Figure out the shape of the following molecules and draw the structure of the following molecules.

(40 marks)

2.2.1 PH_3

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2.2.2 BCl_3

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2.2.3 Cl_2

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2.2.4 CCl_4

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2.3 State two reasons why H_2O has different bond angle comparing with NH_3 .

(20 marks)

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Question 03

(100 marks)

3.1 In an acidic solution, a solution of potassium dichromate (K_2CrO_4) is added to a solution containing iron (II) sulfate (FeSO_4). The reaction between K_2CrO_4 and FeSO_4 is a redox reaction.

3.1.1 Identify the oxidizing and reducing agents in the reaction.

(10 marks)

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3.1.2 Write the balanced redox equation for this reaction.

(20 marks)

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3.1.3 If 35.0 mL of 0.200 M K_2CrO_4 solution is required to react completely with 25.0 mL of $FeSO_4$ solution. Find the molarity of the $FeSO_4$ solution in $mol\ dm^{-3}$ (30 marks)

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3.2.

3.2.1 Draw the molecular orbital diagram of N_2 . (30 marks)

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3.2.2 Determine the bond order of N_2 molecule. (10 marks)

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Question 04

(100 marks)

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

Pentane C_5H_{12}

Hexane C_6H_{14}

Heptane C_7H_{16}

4.1.1 Write the next member in the series and its structural formula. (30 marks)

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4.2 Draw the structures for the following IUPAC names.

(30 marks)

4.2.1 Butan -2-ol

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4.2.2 1,3- hexanediol

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4.2.3 2- Propylcyclohexanol

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4.2.4 2-pentanone

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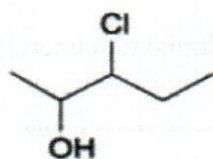
4.2.5 2,4,6-tribromophenol

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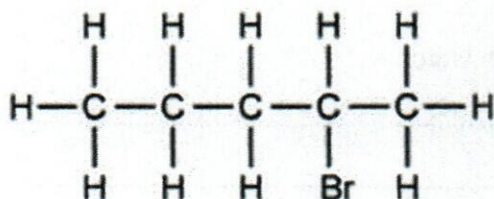
4.3 Write the IUPAC name and classification for the following compounds.

(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 VII and gives the state of each Substance at 50°C. (15 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 2nd ionization energy is large compare to the 1st ionization energy of sodium (Na) (25 marks)

5.3 Write the balance reactions of Na, K and Mg with water. (20 marks)

5.4 Briefly explain why the atomic radius decreases across the period. (20 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. (20 marks)

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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 use of **Iron (Fe)** in this process?

(30 marks)

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6.1.2 What is the procedure to separate ammonia from the nitrogen and hydrogen gasses?

(30 marks)

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6.2 State five requirements to be considered when establishing chemical industries.

(40 marks)

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-THE END-

**Faculty of Health Sciences****Diploma in Pharmaceutical & Cosmetic Sciences****DPC 1163 – Pharmaceutical and Cosmeceutical Unit Operations****Batch – 03****1st year 1st semester - End Semester - SEQ Examination**

Date	: 26th October 2024
Time	: 9.00 am – 12.00 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** reasons for granulation.**(30 marks)**

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1.2 State **one** reason that you mentioned in 1.1.**(30 marks)**

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1.3 Outline the process of wet granulation.

(40 marks)

[illegible]

Question 02

(100 marks)

2.1 State the working mechanism of single punch tablet press.

(30 marks)

[illegible]

2.2 Briefly describe the importance of understanding the compression profile of a tablet in compression. (30 mark)

(30 marks)

[illegible]

2.3 Draw a diagram and briefly explain **two** issues encountered during tablet compression.

(40 marks)

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Question 03

(100 marks)

3.1 What is tablet coating?

(20 marks)

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3.2. List **three** uses of enteric coating.

(30 marks)

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3.3 List **three** main types of tablet coating machines available.

(10 marks)

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3.4 Outline industrial process of sugar coating of the tablets.

(40 marks)

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(100 marks)

(10 marks)

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(30 marks)

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(30 marks)

[illegible]

4.4. Write a short paragraph on **two** types of solid (powder) filling methods. (30 marks)

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Question 05

(100 marks)

5.1 List the main steps of extrusion and spheronization process. (15 marks)

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5.2 How does the particle size affects segregation? (30 marks)

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5.3 State the three mechanisms of pharmaceutical mixing. (30 marks)

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5.3 Write five factors you consider when selecting the appropriate drying method.

(25 marks)

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Question 06

(100 marks)

6.1 What is meant by Deliquescence and Exsiccation?

(30 marks)

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6.2 Briefly describe the sieving and sifting method used in size separation in the pharmaceutical industry.

(30 marks)

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6.3. Mention **five** optimum conditions required for sorting in material disposal related to pharmaceutical industry.

(40 marks)