



Faculty of Health Sciences
BSc. (Hons) in Cosmetics Sciences
BCS 2233 Cosmeceutics
End Semester Examination - SEQ
2nd Year 2nd Semester
6th Batch BCS (8th FHS)

Date: 23rd February 2026

Time: 9.00 a.m. to 12.00 noon

INSTRUCTIONS TO CANDIDATES

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

1. (100 Marks)

- 1.1 List **two (02)** natural exfoliants and **two (02)** synthetic exfoliants used in face scrub formulation. (20 Marks)
- 1.2 State **three (03)** differences between natural and synthetic exfoliants. (30 Marks)
- 1.3 A topical emulsion intended for dermatological application contains the following oil-phase components as shown in the table, each contributing to the overall Hydrophilic Lipophilic Balance (HLB) requirement of the formulation.

Ingredient	Amount (g)	HLB
Isopropyl Myristate	20	11.5
Beeswax	4	12.0
Cetyl Alcohol	2	15.0
Emulsifier blend	5	—
Water	qs to 100 mL	—

- 1.3.1 Calculate the required HLB of the oil phase. (20 Marks)
- 1.3.2 Using Tween 80 (HLB = 15.0) and Span 60 (HLB = 4.7), calculate the quantities of each emulsifier needed to prepare 5 g of emulsifier blend. (30 Marks)

2. (100 Marks)

- 2.1 Illustrate the wet granulation process by using a flow chart. (32 Marks)
- 2.2 Evaluate how improper control at any two selected steps in the wet granulation process can influence the quality of the final tablet. (28 Marks)
- 2.3 List **two (02)** advantages and **two (02)** limitations of the wet granulation process. (20 Marks)
- 2.4 Evaluate **one (01)** important aspect of screening of granules in solid dosage forms manufacturing. (10 Marks)
- 2.5 Evaluate **one (01)** important aspect of the lubrication of granules in solid dosage forms manufacturing. (10 Marks)

- 3. (100 Marks)**
- 3.1 Analyze **two (02)** causes for each of the following tablet defects.
- 3.1.1 Lamination (15 Marks)
 - 3.1.2 Picking (15 Marks)
- 3.2 Propose **two (02)** corrective actions for the following tablet defects.
- 3.2.1 Black spots (10 Marks)
 - 3.2.2 Mottling (10 Marks)
- 3.3 Justify the concern that the use of triclosan in toothpaste may be associated with carcinogenic risk. (20 Marks)
- 3.4 List **one (01)** example for each of the following ingredients used in toothpaste formulation.
- 3.4.1 Humectant (06 Marks)
 - 3.4.2 Thickening agent (06 Marks)
 - 3.4.3 Detergent (06 Marks)
 - 3.4.4 Abrasive agents (06 Marks)
 - 3.4.5 Flavoring agents (06 Marks)
- 4. (100 Marks)**
- 4.1 List **two (02)** examples for each of the following types of powders.
- 4.1.1 Natural powders (10 Marks)
 - 4.1.2 Synthetic powders (10 Marks)
- 4.2 Outline **five (05)** characteristic features to consider in powder-based cosmetic formulations. (30 Marks)
- 4.3 Mention **four (04)** physical instability phenomena that can occur in emulsion-based cosmetic formulations. (20 Marks)
- 4.4 **"The melting point of excipients must be considered during cosmetic manufacturing."**
Explain this statement using **three (03)** key reasons. (30 Marks)
- 5. (100 Marks)**
- 5.1 Evaluate the physicochemical function of each of the following excipients.
- 5.1.1 Preservatives (10 Marks)
 - 5.1.2 Antioxidants (10 Marks)
 - 5.1.3 Surfactants (10 Marks)
 - 5.1.4 Disintegrants (10 Marks)
- 5.2 Analyze the effect of excipient molecular weight on the following formulation properties.
- 5.2.1 Skin penetration (15 Marks)
 - 5.2.2 Viscosity of the formulation (15 Marks)
- 5.3 List **two (02)** types of ointment bases used in cosmetics. (10 Marks)
- 5.4 List **five (05)** gelling agents used in cosmetic gel preparation (20 Marks)

6.

(100 Marks)

6.1 Vitamin C 500 mg tablets are manufactured in a cosmetic nutraceutical production facility according to British Pharmacopoeial (BP) standards. Two production batches, Batch A and Batch B, are subjected to the weight variation test as part of routine quality control. The individual tablet weights obtained are given in the table below.

Tablet No	Weight of the tablets (mg)	
	Batch A	Batch B
1	617.8	604.1
2	625.6	599.8
3	622.7	625.4
4	624.8	625.2
5	623.1	623.3
6	622.7	602.9
7	623.2	625.6
8	622.2	588.2
9	624.4	624.8
10	624.1	623.3
11	620.3	622.5
12	624.1	624.4
13	620.6	624.1
14	624.4	580.7
15	625.4	618.9
16	625.2	620.6
17	623.3	625.3
18	622.5	622.7
19	622.4	623.2
20	623.5	612.2

6.1.1 Calculate the mean value for each sample. (20 Marks)

6.1.2 Calculate the Upper Control Limit (UCL) and the Lower Control Limit (LCL) for each sample. (Use the percentage deviation as $\pm 5\%$) (40 Marks)

6.1.3 Does each sample satisfy the BP standards for weight variation tests? Explain the results. (20 Marks)

6.2 Outline the procedure for performing a friability test for vitamin C tablets. (20 Marks)



Faculty of Health Sciences
BSC. (HONS) in COSMETICS SCIENCES
BCS 2233 Cosmeceutics - End Semester Examination - SEQ
2nd Year 2nd Semester
5th Batch BCS

Date: 18th August 2025

Time: 9.00 a.m. to 12.00 noon

INDEX NUMBER:

INSTRUCTIONS TO CANDIDATES

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

- 1. (100 Marks)**
 - 1.1 List **three (03)** different types of coated tablets. (15 Marks)
 - 1.2 List **three (03)** functions of coating tablets. (15 marks)
 - 1.3 What is meant by “enteric-coated tablets”? (20 Marks)
 - 1.4 Draw and label the drug release graphs for a conventional tablet form and a controlled-release tablet form separately. (50 Marks)
- 2. (100 Marks)**
 - 2.1 List the **seven (07)** steps involved in hard gelatin capsule shell manufacturing. (21 Marks)
 - 2.2 Write **two (02)** advantages of the soft gelatin capsules over hard gelatin capsules in cosmetic formulation. (10 marks)
 - 2.3 Three different samples (**X, Y, and Z**) of Vitamin C (Ascorbic Acid) 100 mg BP tablets were tested to determine their friability.
 - 2.3.1 Calculate the friability percentage for each sample using the data provided in the table below. (24 Marks)

Sample Code	Initial weight (g)	Final weight (g)	Friability percentage
X	6.53	6.44	
Y	6.52	6.51	
Z	6.52	6.45	
 - 2.3.2 Evaluate the quality of the tablets from each sample based on the standard friability limit. Provide comments on whether each sample meets the acceptable criteria. (25 Marks)
 - 2.4 List **two (02)** possible causes of weight variation in tablets or capsules. (10 Marks)
 - 2.5 List **two (02)** limitations of the wet granulation process in tablet manufacturing. (10 Marks)
- 3. (100 marks)**
 - 3.1 List **four (04)** properties of powders in the formulation of cosmetics. (16 Marks)
 - 3.2 List **four (04)** types of thickening agents and **one (01)** example for each. (24 Marks)

- 3.3 The stability of emulsions depends on selecting suitable emulsifiers based on the required HLB of the oil phase.

Ingredient	Amount (g)	HLB
Liquid Paraffin	25 g	11.0
Lanolin	2 g	8.0
Stearyl Alcohol	1 g	15.5
Emulsifier	4 g	—
Water	qs to 80 mL	—

- 3.3.1 Calculate the required final HLB of the formulation. (20 Marks)
- 3.3.2 Using Tween 80 (HLB = 15.0) and Span 80 (HLB = 4.3), determine the amounts of each emulsifier needed to prepare 4 g of the emulsifier blend for this formulation. (20 Marks)
- 3.4 List **four (04)** groups of ointment bases used in ointment preparation. (20 Marks)

4. (100Marks)

- 4.1 Write **four (04)** instability situations of emulsion preparation. (20 Marks)
- 4.2 Write a short note on the spreadability test in the evaluation of cosmetic cream products. (25 Marks)
- 4.3 List **four (04)** commonly used gelling agents in the formulation of hair gels. (20 Marks)
- 4.4 List **three (03)** methods used in gel formulation. (15 Marks)
- 4.5 List **four (04)** types of tablet defects. (20 Marks)

5. (100 Marks)

- 5.1 Write **two (02)** disadvantages of using exfoliants. (30 Marks)
- 5.2 Write **three (03)** differences between natural exfoliants and chemical exfoliants in cosmetics. (30 Marks)
- 5.3 List **two (02)** ingredients used as natural exfoliants. (20 Marks)
- 5.4 List **two (02)** ingredients used as chemical exfoliants. (20 Marks)

6. (100 Marks)

- 6.1 List **five (05)** commonly used types of ingredients in toothpaste formulation. (30 Marks)
- 6.2 Write **one (01)** function for each of the ingredients you have listed above in the toothpaste formulation. (30 Marks)
- 6.3 Write **one (01)** function and **one (01)** example for the following excipients used in cosmetic product manufacturing. (40 Marks)
- 6.3.1 Surfactant
- 6.3.2 Emulsifying Agents
- 6.3.3 Preservatives
- 6.3.4 Glidants
- 6.3.5 Binding agents

1.3 List **three (03)** advantages of the wet granulation method.

(15 Marks)

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1.4 List **three (03)** disadvantages of the wet granulation method.

(15 Marks)

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1.5 Write **five (05)** properties of powders used in the cosmetic formulation.

(20 Marks)

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2.

(100 Marks)

2.1 Write **four (04)** importance of standard pharmacopoeias.

(20 Marks)

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2.2 Write **one (01)** specific content included in the following volumes of the British Pharmacopoeia.

(30 Marks)

Volume No	Content
Volume I & II	

Volume III	
Volume IV	
Volume V	
Volume VI	

2.3 Write **one (01)** reason and **one (01)** corrective action for each of the following tablet defects.

(24 Marks)

Tablet Defect	Reason for the defect	Corrective action
2.3.1 Capping		
2.3.2 Black Spots		
2.3.3 Picking Sticking		

2.4 Briefly describe the steps involved in hard gelatin capsule manufacturing.

(26 Marks)

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3. (100 Marks)

3.1 List **two (02)** semisolid preparations. (10 Marks)

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3.2 List **four (04)** types of ointment bases. (20 Marks)

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3.3 Write **four (04)** ideal characteristics of a face scrub formulation. (20 Marks)

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3.4 Write **three (03)** differences between natural exfoliants and chemical exfoliants. (15 Marks)

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3.5 List **five (05)** tests conducted for the evaluation of cosmetic cream.

(15 Marks)

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3.6 Fluoride and Triclosan are commonly used active ingredients in toothpaste formulation. Write **one (01)** negative effect of each ingredient.

(20 Marks)

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4. (100 Marks)

4.1 Write **four (04)** applications of emulsion formulation in cosmetic preparation.

(20 Marks)

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4.2 List **four (04)** physical instabilities that can occur in an emulsion.

(20 Marks)

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4.3 List **five (05)** gelling agents used in cosmetic gel preparation.

(30 Marks)

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4.4 A student conducted the "Dye Test" for an anti-aging cream formulation prepared by himself.

4.4.1 What is the procedure of the "Dye Test" for cosmetic creams?

(15 Marks)

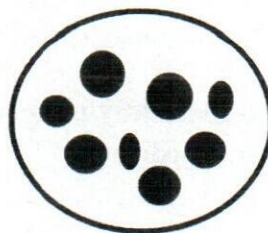
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- 4.4.2 Interpret the results obtained from the “Dye Test” for the anti-aging cream prepared by the student as shown below. (15 Marks)



5.

(100 Marks)

Niacinamide helps to improve healthy skin appearance in people with acne and pigmentations. A cosmetic manufacturing plant has manufactured two batches of Niacinamide 250 mg supplement tablets according to the British Pharmacopoeial (BP) standards. Then **Batch A** and **Batch B**, are subjected to weight variation tests as part of the quality control process, and the weight of the tablets is recorded in the following table.

Tablet No	Weight of the tablets (mg)	
	Batch A	Batch B
1	417.8	404.1
2	425.6	399.8
3	422.7	425.4
4	424.8	425.2
5	423.1	423.3
6	422.7	402.9
7	423.2	425.6
8	422.2	388.2
9	424.4	424.8
10	424.1	423.3
11	420.3	422.5
12	424.1	424.4
13	420.6	424.1
14	424.4	380.7
15	425.4	418.9
16	425.2	420.6
17	423.3	425.3
18	422.5	422.7
19	422.4	423.2
20	423.5	412.2

5.1 Calculate the mean value for each sample.

(20 Marks)

[illegible]

5.2 What is the Upper Control Limit (UCL) and the Lower Control Limit (LCL) for each sample? (Use the percentage deviation as $\pm 5\%$) (30 Marks)

This image shows a full page of blank handwriting practice paper. It features multiple sets of horizontal lines, each consisting of three dotted lines with a solid midline, providing a guide for letter height and placement. The lines are evenly spaced and extend across the entire width of the page.

(20 Marks)

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins or other markings on the paper.

5.4 Outline the procedure for performing a friability test for these niacinamide tablets. (30 Marks)

This image shows a full page of primary-ruled paper. It features multiple horizontal rows, each consisting of two parallel dotted lines with a larger margin above them. The entire page is filled with these repeating row patterns from top to bottom, providing a guide for handwriting practice. There are no margins, text, or other markings on the page.

6. (100 Marks)

6.1 What is an excipient? (15 Marks)

[illegible]

6.2 List **five (05)** ideal characteristics of an excipient.

(25 Marks)

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6.3 Write **one (01)** function and **two (02)** examples for the following excipients used in cosmetic product manufacturing.

(40 Marks)

Type of the excipient	Function	Example
5.3.1 Flavoring Agents		
5.3.2 Emulsifying Agents		
5.3.3 Humectants		
5.3.4 Preservatives		
5.3.5 Lubricants		

6.4 List **four (04)** types of surfactants.

(20 Marks)

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