



**Example study checklist and assessment questions:**  
**Diploma of Personal Care Formulation**

<b>Pace yourself! Set a due date of 2 weeks on each unit if studying 10-15hrs/wk or adjust accordingly</b>	<b>Tick when each time completed</b>	<b>Item/Unit</b>
		Evaluate the functions of ingredients in personal care products
		Read 1 <sup>st</sup> Chapter – Evaluate the functions of ingredients in personal care products – <i>access dropbox Evaluate functions folder to find the text so you can start studying straight away while you wait for your study materials to arrive!</i>
		Watch Evaluate Functions Lecture and complete all lecture activities – <i>refer to dropbox for required lecture activity information sheets in the Evaluate functions folder.</i>
		Watch Evaluate Functions lecture video ( <i>in your on-line lecture system</i> ).
		Re-read text in relevant sections and ensure all text activities are completed; you may also choose to re-watch the lecture/video at this point (optional)
		Watch on-line Tutorial
		Complete all Section 1 questions of the Assessment
<b><i>Only continue to the next unit once you have completed all items in order</i></b>		

**Some Example Assessment Questions:**

1.4 Complete the tables for each product – use information provided in dropbox and processing information provided in the text to answer this question.

<b>Lamesoft PO65</b>		
<b>Starting Material/s</b>	<b>Processing involved</b>	<b>Natural or synthetic status</b>
<b>Incroquat Behenyl</b>		
<b>Starting Material/s</b>	<b>Processing involved</b>	<b>Natural or synthetic status</b>




1.5 How much of each component of each material would be present if it were used at 5% in a finished product?

<b>Lamesoft PO65</b>		
Component	% present in material	% present when used at 5% in a finished product

<b>Incroquat Behenyl</b>		
Component	% present in material	% present when used at 5% in a finished product



Pace yourself! Set a due date of 2 weeks on each unit if studying 10-15hrs/wk or adjust accordingly	Tick when each time completed	Item/Unit
		Evaluate the safety of a product formulation
		Read 2 <sup>nd</sup> Chapter – Evaluate the safety of a product formulation
		Watch Evaluate Safety Lectures 1 & 2 and complete all lecture activities - refer to dropbox for required lecture activity information sheets in the Evaluate safety folder.
		Re-read text in relevant sections and ensure all text activities are completed; you may also choose to re-watch the lectures at this point (optional)
		Watch on-line Tutorial
		Complete all Section 2 questions of the Assessment
Only continue to the next unit once you have completed all items in order		

**Some Example Assessment Questions:**

2.2 Identify comedogenic ingredients in personal care products.

2.6 Identify 2 common allergenic ingredients in personal care products, and their usual role in a product formulation.

2.8 Describe the principles of hypoallergenic products.

2.12 Interpret the results of product and raw material testing as described below:

2.12.1 a score of 4 in a draize rabbit model for a wash off ingredient.

2.12.2 a strong irritation using the immersion assay for a wash off ingredient in guinea pigs.

2.12.3 a mild reaction using cumulative irritation testing in humans for a leave on product.

2.12.4 a strong irritation using an epiderm in vitro test for a leave on product.



2.12.5 a mild reaction in 1 subject out of 18 in real-life safety evaluation of a wash off product.

<b>Pace yourself! Set a due date of 2 weeks on each unit if studying 10-15hrs/wk or adjust accordingly</b>	<b>Tick when each time completed</b>	<b>Item/Unit</b>
		Apply compliance requirements to ingredient selection
		Read 3 <sup>rd</sup> Chapter – Apply compliance requirements to ingredient selection
		Watch Apply compliance lectures 1, 2 & 3 and complete all lecture activities
		Re-read text in relevant sections and ensure all text activities are completed; you may also choose to re-watch the lectures at this point (optional)
		Watch on-line Tutorial for the Assessment
		Watch on-line Tutorial SPECIFICALLY for Question 3.6
		Complete all Section 3 questions of the Assessment
<b><i>Only continue to the next unit once you have completed all items in order</i></b>		



### Some Example Assessment Questions

3.5 For the following product formulation (refer to dropbox for all required ingredient information):

3.5.1 Conduct searches and complete the table for all ingredients listed.

3.5.2 Provide a fully compliant ingredient list ready for a label using INCI names and % listing rules.

3.5.3 What marketing claims could be made on the label?

Brightening Serum % w/w      Material		INCI Name/s	CAS Number/s	On AICS? Y/N	EU Limit %
To 100	Purified water				N/a
4.0	Glycerin				
5.0	Myritol 318®				
1.0	Apricot kernel oil				
5.0	Versaflex V-175®				
5.0	Belides®				
0.2	Tocopherol				
1.0	Geogard ECT				

3.6 Complete the following table:

Material	CAS	SUSMP limit (cosmetic, not S5 or S6)	EU limit
Lime essential oil (expressed) in a lotion			
Thioglycolic acid (in			



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depilatory cream)			
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Pace yourself! Set a due date of 2 weeks on each unit if studying 10-15hrs/wk or adjust accordingly	Tick when each time completed	Item/Unit
		Apply chemistry principles to ingredient selection
		Read 4 <sup>th</sup> Chapter – Apply chemistry principles to ingredient selection
		Watch Chemistry lectures 1, 2 & 3 and complete all lecture activities
		Watch Chemistry lecture video (in your on-line lecture system)
		Re-read text in relevant sections and ensure all text activities are completed; you may also choose to re-watch the lectures at this point (optional)
		Watch on-line Tutorial for the Assessment
		Complete all Section 4 questions of the Assessment
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### Some Example Assessment Questions

4.2 How is pH applied to finished personal care products?

4.4 What effect does the hydrophobic portion and hydrophilic portion of a molecule have on its physical properties?

4.6 Provide 2 materials you would use in each product from what you have learnt so far.

Product Type	Material Trade Name and/or INCI	Natural/ Synthetic Status	Why have you selected this material for this product?
High priced o/w face cream			
Competitively priced			



'natural' body lotion			
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4.7 Complete the table below:

<b>Processing method</b>	<b>Classification</b>	<b>Brief explanation</b>	<b>Used for</b>
Cold pressing	Physical	Seeds are cleaned, crushed and cooked before being pressed by a metal press head, releasing the oil. This oil is then filtered to remove debris, and may also be bleached and deodorized, and antioxidants are added	Vegetable oils
Distillation			
Esterification			
Hydrogenation			
Ethoxylation			





<b>Pace yourself! Set a due date of 2 weeks on each unit if studying 10-15hrs/wk or adjust accordingly</b>	<b>Tick when each time completed</b>	<b>Item/Unit</b>
		Apply microbiology techniques for product safety
		Read 5 <sup>th</sup> Chapter – Apply microbiology techniques for product safety
		Watch Microbiology lectures 1, 2 and the lecture video (in your on-line lecture system), and complete all lecture activities
		Re-read text in relevant sections and ensure all text activities are completed; you may also choose to re-watch the lectures at this point (optional)
		Watch on-line Tutorial for the Assessment
		Complete all Section 5 questions of the Assessment
<b><i>Only continue to the next unit once you have completed all items in order</i></b>		

### **Some Example Assessment Questions**

5.2 Complete the following table:

<b>Org.</b>	<b>Product Type</b>	<b>Microbial Limits</b>
TGA	Application on skin	
EU	Eye area, mucous membranes & children <3yrs	
EU	Other products	
TGA/EU	Raw materials	

5.3 How would you sample raw materials and finished products? Include details of the equipment, types of agar and methods you would use.



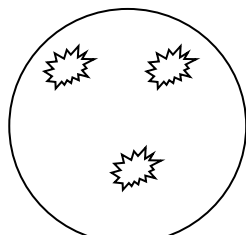
5.9 Provide 'ideal' systems to reduce microbial introduction in respect of:

5.9.1 the water system

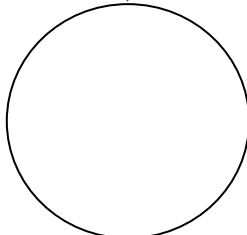
5.9.2 the air system

5.9.3 a sanitising system for equipment

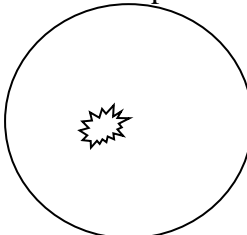
5.10 Imagine you are in charge of testing Quality of finished product. These are the results from the last batch of product made, and were consistent for all samples taken from finished product.



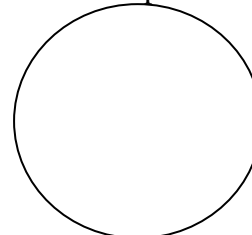
Tryptic soy agar



Sabouraud Dextrose Agar



Cetrimide Agar



Mannitol Salt Agar

5.10.1 Interpret the results – what would be the cfu count?

5.10.2 Provide steps of the investigation you would conduct to investigate the cause.

5.10.3 What should you do with this batch?



<b>Pace yourself! Set a due date of 2 weeks on each unit if studying 10-15hrs/wk or adjust accordingly</b>	<b>Tick when each time completed</b>	<b>Item/Unit</b>
		Select appropriate preservatives in personal care formulations
		Read 6 <sup>th</sup> Chapter – Select appropriate preservatives in personal care formulations
		Watch Preservative lectures 1 & 2 and complete all lecture activities – <i>make sure you access the Preservative tables in dropbox to follow us through the Worked Example.</i>
		Re-read text in relevant sections and ensure all text activities are completed; you may also choose to re-watch the lectures at this point (optional)
		Watch on-line Tutorial for the Assessment
		Complete all Section 6 questions of the Assessment
<b>Only submit your Assessment when ALL sections of ALL questions have been completed. Revisit the text, lectures, videos and especially the TUTORIALS to ensure you have answered all questions to the best of your ability.</b> <b>This also helps ensure the best quality of learning! Happy studying 😊</b>		

### Some Example Assessment Questions

6.1 Identify and describe the two main mechanisms of preservative activity.

6.4 Describe the process of Preservative Efficacy (Challenge) Testing. In your answer, identify when you would use this testing, how it is performed, and what you would need results to show in order to prove efficacy.

6.6 Complete the following table: (*access dropbox for preservative tables*)

<b>Product</b>	<b>Preservative/blend you would use (trade name/s)</b>	<b>pH/temperature limits</b>	<b>Amount (%) to use</b>	<b>EU limit</b>
Face mask product in jar (pH = 7)				
Hair conditioner (pH = 4)				
Shampoo (SLS,				



PEG, propylene glycol and paraben free) (pH = 6)				
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## MODULE 2

Pace yourself! Set a due date of 2-3 weeks on each unit if studying 10-15hrs/wk or adjust accordingly	Tick when each time completed	Item/Unit
		Select appropriate gums & thickeners
		Read 1 <sup>st</sup> Chapter – Select appropriate gums & thickeners. <i>Note: Activity brochures and raw material brochures are provided in dropbox gums folder.</i>
		Watch Select appropriate gums lectures 1 & 2 and complete all lecture activities
		Watch Gums video in on-line lectures – <b>this video is crucial – it shows how to hydrate different gums in the lab.</b>
		Watch Select appropriate gums lecture 3 and complete all lecture activities
		Re-read text in relevant sections and ensure all text activities are completed; you may also choose to re-watch the lectures/video at this point (optional)
		View the YouTube video watching me make a simple gel: <a href="https://youtu.be/AkBXRF5Ynow">https://youtu.be/AkBXRF5Ynow</a>
		Prepare samples from Practical Activity Workbook relevant to the gums unit. <i>Note: Practical Activity Workbook is provided in Module 2 Dropbox folder.</i>
		Review ingredient brochures in dropbox and highlight materials in text; you may also explore the advanced database, 'Prospector'. <ul style="list-style-type: none"> <li>Prospector Registration information is provided in Dropbox Module 2 folder.</li> <li>To build your fundamental gum/thickener 'library of materials' focus on the materials in the text, dropbox, and the gum/thickener usage guide in dropbox, especially the different methods required!</li> </ul>
		Watch on-line Tutorial
		Complete all Section 1 questions of the Assessment
<b>Only continue to the next unit once you have completed all items in order</b>		



**Some Example Assessment Questions**

1.4 Complete the following table for water based gums/thickeners

Gum/thickener	Natural/synthetic status	Products best used for	Processing required as part of finished product formulation
Xanthan			
Bentonite			
Hydroxyethylcellulose			
Guar hydroxypropyl trimonium chloride			
Carbopol Ultrez 21			
PVP			

1.5 Complete the following table for oil based thickeners.

Gum/thickener	Natural/synthetic status	Products best used for	Processing required as part of finished product formulation
Polyethylene			
Stearalkonium bentonite			
Trihydroxystearin			



Silica dimethyl silylate			
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1.6 Conduct searches into the various thickeners available as in your text, dropbox or Prospector

.Provide one example of a suitable **thickener** per product by completing the table below.

Product	Trade name and/or INCI	Natural/ synthetic status	Reason for choosing	% to use	Processing method in final formulation
Hair conditioner (a <b>cationic</b> product)					
Budget body lotion (a <b>water</b> <b>based</b> emulsion)					
Liquid foundation (an <b>oil based</b> emulsion)					
Foaming face wash (an <b>anionic</b> product)					



Pace yourself! Set a due date of 2-3 weeks on each unit if studying 10-15hrs/wk or adjust accordingly	Tick when each time completed	Item/Unit  Select appropriate lipids
		Read 2 <sup>nd</sup> Chapter – Select appropriate lipids. <i>Note: Activity brochures and raw material brochures are provided in dropbox lipids folder.</i>
		Watch Select appropriate lipids lectures 1 & 2 and complete all lecture activities
		Re-read text in relevant sections and ensure all text activities are completed; you may also choose to re-watch the lectures at this point (optional)
		Prepare samples from Practical Activity Workbook relevant to the lipids unit. <i>Note: Practical Activity Workbook is provided in Module 2 Dropbox folder.</i>
		Review ingredient brochures in dropbox and highlight materials in text; you may also explore the advanced database, 'Prospector' and conduct internet searches as guided in the learning materials. <ul style="list-style-type: none"> <li>• Prospector Registration information is provided in Dropbox Module 2 folder.</li> <li>• To build your fundamental lipid 'library of materials' focus on the materials in the text and dropbox, and the lipid usage guide in dropbox, especially the different inputs for different product types provided.</li> </ul>
		Watch on-line Tutorial
		Complete all Section 2 questions of the Assessment
<b><i>Only continue to the next unit once you have completed all items in order</i></b>		



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**Some Example Assessment Questions**

2.1 Describe the following processing methods used to obtain derivatives of natural lipids:

- a. esterification
- b. ethoxylation

2.4 Identify and describe the performance properties of silicones, and how they differ by molecular weight.

2.5 Conduct searches into the various natural lipids available and complete the table below using one ingredient in each category as an example.

	INCI name	Natural/ synthetic status	Best suited for (product type)	% to use
Vegetable oil				
Vegetable butter				
Exotic butter				
Plant wax				

2.6 Conduct searches into the various derivatives of lipids available and complete the table below using one ingredient in each category as an example.

	Trade name and/or INCI	Natural/ synthetic status	Best suited for (product type)	% to use
Fatty acid				
Fatty alcohol				
Fatty acid ester				
Ethoxylated derivative				





2.8 Conduct searches into the various silicones available and complete the table below using one ingredient in each category as an example.

	Trade name and/or INCI	Best suited for (product type)	% to use
Dimethicone			
Dimethicone/ Vinyl dimethicone crosspolymer (silicone elastomer)			
Silicone polyether (copolyols/PEGs/PPGs)			

2.9 For each of the following product types, provide an example of **two** lipids you would use in each product by completing the following table.

	Trade name and/or INCI	Natural/ synthetic status	Reason for choosing	% to use
Natural face cream (medium viscosity o/w emulsion)				
Budget body butter (highly viscous o/w emulsion)				
Premium conditioner				
Non greasy night cream (viscous w/o emulsion)				



Pace yourself! Set a due date of 2-3 weeks on each unit if studying 10-15hrs/wk or adjust accordingly	Tick when each time completed	Item/Unit
		Select appropriate fragrances & essential oils
		Read 3 <sup>rd</sup> Chapter – Select appropriate fragrances & essential oils. <i>Note: brochures to complete activities can be found in Dropbox in the Lipids folder.</i>
		Watch Fragrances/Essential Oils lecture and complete all lecture activities
		Re-read text in relevant sections and ensure all text activities are completed; you may also choose to re-watch the lecture at this point (optional)
		Prepare samples from Practical Activity Workbook relevant to the fragrances & essential oils unit. <i>Note: Practical Activity Workbook is provided in Module 2 Dropbox folder.</i>
		Review Aroma Wheel in dropbox Fragrances Activities folder and the Appendixes to your text.
		Watch on-line Tutorial
		Complete all Section 3 questions of the Assessment
<b><i>Only continue to the next unit once you have completed all items in order</i></b>		

### **Some Example Assessment Questions**

3.1 Identify and describe 3 methods of obtaining essential oils.

3.3 Describe the safety aspects and legislation relevant to the use of fragrances and essential oils.

3.5 Describe the principles of blending essential oils for lasting, compatible fragrances. Provide 2 example blends based on the theory you have presented.

3.6 Complete the table for the following essential oils:

Oil	Clary sage	Geranium
Top notes		



<b>Body notes</b>		
<b>Dry out notes</b>		
<b>Plant part used</b>		
<b>Intensity of body note</b>		
<b>Cosmetic uses</b>		
<b>Sensory effects</b>		
<b>Contra-indications</b>		

3.8 Select an example of the types of essential oils and/or fragrance you would use for each of the products by completing the following table.

	Description of aroma or essential oil blend	Why used? Consider benefits, features, signal attributes	Other reasons for selection: cost, availability, substantivity, compatibility?	% to use
Natural face cream				
Premium conditioner				
Budget hand cream				



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Pace yourself! Set a due date of 2-3 weeks on each unit if studying 10-15hrs/wk or adjust accordingly	Tick when each time completed	Item/Unit
		Read 4 <sup>th</sup> Chapter – Apply colloid science. <i>Note: brochures to complete activities can be found in Dropbox in the Colloids folder.</i>
		Watch Apply colloid science lectures 1, 2 & 3 and complete all lecture activities.
		Re-read text in relevant sections and ensure all text activities are completed; you may also choose to re-watch the lectures at this point (optional)
		View the YouTube videos watching me make various emulsions ( <i>cut and paste the following YouTube links into your browser</i> ): <ul style="list-style-type: none"><li>• How to make a basic cream: <a href="https://youtu.be/OSldbwK_FYU">https://youtu.be/OSldbwK_FYU</a></li><li>• How to make a conditioner: <a href="https://youtu.be/JobkDBh2Qmk">https://youtu.be/JobkDBh2Qmk</a></li></ul>
		Prepare samples from Practical Activity Workbook relevant to the colloids unit. <i>Note: Practical Activity Workbook is provided in Module 2 Dropbox folder.</i>
		Review ingredient brochures in dropbox; you may also explore the advanced database, 'Prospector' and conduct internet searches as guided in the learning materials. <ul style="list-style-type: none"><li>• Prospector Registration information is provided in Dropbox Module 2 folder.</li><li>• To build your fundamental emulsifier 'library of materials' focus on the materials in dropbox and practice, practice, practice selection using the worked examples in the text as a guide.</li></ul>
		Watch on-line Tutorial
		Complete all Section 4 questions of the Assessment
<b><i>Only continue to the next unit once you have completed all items in order</i></b>		



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**Some Example Assessment Questions**

4.3 Discuss the use of ionic emulsifiers compared with non-ionic emulsifiers. Why should you use both types of emulsifiers in o/w emulsions where suitable?

4.4 Complete the following table

<b>System</b>	<b>Methods to stabilise</b>	<b>Properties</b>
O/W liquid/liquid		
W/O liquid/liquid		
Liquid/solid		
Gas/solid		
Liquid/gas*		



4.5 From researching the types of emulsifiers available, complete the following table, naming two emulsifiers you would consider using for each product.

	Two emulsifiers you would consider using (Trade name and INCI)	Why used?	HLB value	% to use
Natural body lotion (o/w emulsion; 12% oil)				
Hair conditioner				
Basic foundation (w/o; 60% oil)				



Pace yourself! Set a due date of 2-3 weeks on each unit if studying 10-15hrs/wk or adjust accordingly	Tick when each time completed	Item/Unit  Apply surface science
		Read 5 <sup>th</sup> Chapter – Apply surface science. <i>Note: brochures and a Surfactant Usage Guide to complete activities can be found in Dropbox in the Surface Science folder.</i>
		Watch Apply surface science lectures 1, 2 & 3 and complete all lecture activities.
		Re-read text in relevant sections and ensure all text activities are completed; you may also choose to re-watch the lectures at this point (optional)
		View the YouTube videos watching me make surfactant products ( <i>cut and paste the following YouTube links into your browser</i> ): <ul style="list-style-type: none"> <li>• How to make a mist and a gel: <a href="https://youtu.be/AkBXRf5Ynow">https://youtu.be/AkBXRf5Ynow</a></li> <li>• How to make a basic surfactant sample: <a href="https://youtu.be/vkomXhthJWA">https://youtu.be/vkomXhthJWA</a></li> <li>• How to make sulphate free hand wash: <a href="https://youtu.be/YA1V3qnmM9M">https://youtu.be/YA1V3qnmM9M</a></li> </ul>
		Prepare samples from Practical Activity Workbook relevant to the surface science unit. <i>Note: Practical Activity Workbook is provided in Module 2 Dropbox folder.</i>
		Review ingredient brochures in dropbox; you may also explore the advanced database, 'Prospector' and conduct internet searches as guided in the learning materials. <ul style="list-style-type: none"> <li>• Prospector Registration information is provided in Dropbox Module 2 folder.</li> <li>• To build your fundamental surfactant 'library of materials' focus on the materials and Surfactant usage guide in dropbox and practice, practice, practice selection using the worked examples in the text as a guide.</li> </ul>
		Watch on-line Tutorial
		Complete all Section 5 questions of the Assessment
<b><i>Only continue to the next unit once you have completed all items in order</i></b>		





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**Some Example Assessment Questions**

5.1 Briefly discuss how surfactants clean skin/hair and create foam.

5.2 Briefly describe how micelles form, how their shape can be changed and what impact micelle shape has on a product formulation.

5.3 Describe how surfactants can be produced from natural sources, with 1 example.

5.4 Describe how surfactants can be produced from synthetic sources, with 1 example.

5.8 Complete the table below for 1 surfactant from each class:

	Trade name and/or INCI	Natural/ synthetic	Properties	Best suited for (product type)	% to use
Anionic surfactant					
Cationic surfactant					
Non-ionic surfactant					
Amphoteric surfactant					



5.9 Identify 2 surfactants for each of the products below. Provide the finished product characteristics you are hoping to achieve with each of your surfactant blends and why you have chosen them to deliver those specific performance characteristics.

	Surfactant trade and/or INCI name	Finished product characteristics hoping for	Why chosen?
Baby bath gel			
Budget body wash			
Salon quality shampoo			
Salon quality conditioner			



<b>Pace yourself! Set a due date of 2-3 weeks on each unit if studying 10-15hrs/wk or adjust accordingly</b>	<b>Tick when each time completed</b>	<b>Item/Unit</b>
		Apply aerosol technology
		Read 6 <sup>th</sup> Chapter – Apply aerosol technology.
		Watch Aerosol lecture and complete all lecture activities.
		Re-read text in relevant sections and ensure all text activities are completed; you may also choose to re-watch the lecture at this point (optional)
		Watch on-line Tutorial
		Complete all Section 6 questions of the Assessment
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### Some Example Assessment Questions

6.1 Complete the following table:

	Advantages	Disadvantages
Hydrocarbons		
Dimethyl ether		
Compressed gases		



6.3 Discuss methods used to modify the spray characteristics of aerosols.

6.6 Use the following table to construct the basic outline of a formula for:

- a mousse **AND**
- an anti-perspirant

(Note: **two** separate tables should be submitted for your answers to this question)

Product type	
Propellants used and likely %	
Solvents used	
Key functional/active ingredients and likely %	
What packaging would be used for this product and why?	
How could spray/dispensing and performance characteristics be altered?	
What safety, stability and performance testing would be relevant for this product?	



MODULE 3

Pace yourself! Set a due date of 2-3 weeks on each unit if studying 10-15hrs/wk or adjust accordingly	Tick when each time completed	Item/Unit
		Develop stable product formulations
		Read 1 <sup>st</sup> Chapter – Develop stable product formulations.
		Watch Develop stable product formulations lectures 1 & 2 and complete all lecture activities.
		Re-read text in relevant sections and ensure all text activities are completed; you may also choose to re-watch the lectures at this point (optional)
		Watch on-line Tutorial
		Complete all Section 1 questions of the Assessment
<b><i>Only continue to the next unit once you have completed all items in order</i></b>		

**Some Example Assessment Questions**

1.2 Describe when and why you would perform stability testing throughout the development of a product from concept through to product launch. In your answer, provide examples of the types of stability testing which may be best to perform at each stage.

1.3 Discuss the following considerations and how they may affect product stability:

- 1.3.1 climate in which the product is being sold
- 1.3.2 changing suppliers of raw materials
- 1.3.3 changing manufacturing equipment

1.4 Using the stability templates following this question, prepare real time and accelerated stability testing schedules for EACH of the following products:

1.4.1 a moisturiser to be stored at 30°C with ideal specifications:

- glossy white medium viscosity cream with characteristic coconut aroma
- pH: 5.5
- specific gravity: 0.85
- viscosity: 40,000 cps

In your answer include the types of tests you would perform and why.



1.6 Below is an example body lotion. This lotion has shown signs of separation, changes in fragrance and colouration and viscosity after 6 months. The product is packed in a clear plastic bottle with flip top cap. Suggest ways to improve the stability of this product and provide reasons why you have made those suggestions.

### Example body lotion

PHASE	ADDED %w/w	RAW MATERIALS	FUNCTION
A	To 100	Purified water	Solvent
A	5.0	Glycerin	Humectant/solvent
B	4.0	Cetearyl alcohol, cetareth-20	Emulsifier blend
B	0.5	Stearic acid	Emulsifier
B	9.0	Grapeseed oil	Emollient
B	2.0	Almond oil	Emollient
B	2.0	Shea butter	Emollient
C	0.5	Calendula extract	Skin feel/advertising claims
C	0.5	Chamomile extract	Skin feel/advertising claims
D	0.2	Germall plus	Preservative
D	0.5	Vanilla essential oil	Fragrance
E	q.s	Citric acid	pH adjustment

### METHOD

1. Combine ingredients in phase A and heat to 65 - 70°C.
2. Combine ingredients in phase B and heat to 65°C.
3. Add phase B to phase A and stir. Emulsify and stir while cooling.
4. When cooled below 30°C add ingredients from phase C and D; stir under low shear until mixed thoroughly.

Adjust pH to 5.5 – 5.8.



Pace yourself! Set a due date of 3-4 weeks on each unit if studying 10-15hrs/wk or adjust accordingly	Tick when each time completed	Item/Unit  Develop a product from a product development brief
		<p>Read 2<sup>nd</sup> Chapter – Develop a product from a product development brief. Remember to watch YouTube videos for practical demonstrations of sample development (you watched these in module 2 but may want to watch again):</p> <ul style="list-style-type: none"> <li>• Activity 5.1 Rich Night Cream: <a href="https://youtu.be/OSldbwK_FYU">https://youtu.be/OSldbwK_FYU</a></li> <li>• Activity 5.1 Simple Body Wash: <a href="https://youtu.be/vkomXhthJWA">https://youtu.be/vkomXhthJWA</a></li> <li>• How to make sulphate free hand wash: <a href="https://youtu.be/YA1V3qnmM9M">https://youtu.be/YA1V3qnmM9M</a></li> <li>• How to make a mist and a gel: <a href="https://youtu.be/AkBXR5Ynow">https://youtu.be/AkBXR5Ynow</a></li> <li>• How to make a conditioner: <a href="https://youtu.be/JobkDBh2Qmk">https://youtu.be/JobkDBh2Qmk</a></li> </ul>
		Watch Develop a product from a product development brief lectures 1 & 2 and complete all lecture activities.
		Watch the Develop a product from a product development brief tutorial videos 1 and 2 in on-line lecture system.
		Watch Develop a product from a product development brief lecture 3 and complete all lecture activities.
		<p>Re-read text in relevant sections and ensure all text activities are completed and re-watch lectures if necessary, especially:</p> <ul style="list-style-type: none"> <li>• Activity 4.1 – Costing template is provided in Dropbox, Module 3, Develop from a brief folder</li> <li>• Activity 6.2 – Practice preparing ingredient lists using the guide in Dropbox, Module 3, Develop from a brief folder – this was taught back in Module 1, Compliance, but an overview is provided again so you can practice.</li> <li>• Section 7.3 &amp; 7.4</li> </ul> <p>Use the IPCS Formulation Template provided in Dropbox, Module 3, Develop from a Brief Folder.</p>
		Watch on-line Tutorial
		Complete all Section 2 questions of the Assessment – <i>(refer to preservatives tables from module 1 (in dropbox module 1) for preservative inputs + dropbox for information brochures on various materials (emulsifiers) + text/dropbox for gum/thickener inputs and methods + lipid text &amp; dropbox for lipid input rates to complete Section 2 questions)</i>
<b>Only continue to the next unit once you have completed all items in order</b>		



### Some Example Assessment Questions

2.3 For the following product development brief:

<b>Company philosophy</b>	Natural Anti-Ageing; high efficacy
<b>Proposed name</b>	Age-Reverse Day Cream
<b>Product profile and objectives</b>	Cream (hydrating and emollient moisturising cream); launch of a new product. Key competitor: L'Oreal Unique points: contains natural active ingredients to help reverse the signs of ageing
<b>Target market</b>	45-55 year old women working full time.
<b>Marketing message</b>	Stop the clock! The proprietary blend of actives in Age-Reverse Day Cream will help you reverse the signs of ageing.
<b>Promotion and distribution</b>	Will be promoted through pharmacy and store catalogues. Available through selected pharmacies.
<b>Key ingredients</b>	Natural, efficacious anti-ageing actives
<b>Ingredients to avoid</b>	Synthetic and PEG materials; preservative should be suitable for use in natural products
<b>Aesthetics of the product</b>	Product should be a viscous, rich looking cream. Emollient but NOT greasy.
<b>Packaging of the product</b>	50gm jar with casca seal and screw top lid. Packaging will be white with screen printed text.
<b>Proposed pricing</b>	\$2.50/jar including packaging into individual boxes.
<b>Budget for development</b>	\$800 + GST.
<b>Quantity to be manufactured</b>	250kg (approx. 5000 units).
<b>Timeframe for the formulation</b>	6 weeks.
<b>Timeframe for the completed product</b>	12 weeks from completed formulation date.

2.3.1 Determine possible issues with the details contained within the product development brief and provide possible solutions.

2.3.2 Identify value adding concepts suitable to the product development brief.

2.3.3 Prepare finished product formulation documentation for the product and identify the stability, safety and efficacy parameters you have included within the formulation. How could you fine tune the formulation if required later?

2.3.4 Identify how you would source required raw materials and what information you would request with a sample and why. Provide an example technical data sheet for at least one of the actives you have selected, showing efficacy.

2.3.5 Identify the stability and performance tests you would conduct on samples.





Pace yourself! Set a due date of 3-4 weeks on each unit if studying 10-15hrs/wk or adjust accordingly	Tick when each time completed; make sure to complete in order.	<b>Item/Unit</b>  Apply skin physiology to formulate basic skin care
		Read 3 <sup>rd</sup> Chapter – Apply skin physiology to formulate basic skin care
		Watch Apply skin physiology lectures 1, 2 & 3 and complete all lecture activities
		Re-watch YouTube videos if required to see me prepare various products ( <i>YouTube links provided in Develop from a brief checklist above</i> )
		Re-read text in relevant sections and ensure all text activities are completed; you may also choose to re-watch the lectures at this point (optional)
		Watch on-line Tutorial
		Optional: work on Extension Activities from the Extension booklet ( <i>Formulation Extension Exercises booklet is in dropbox DPCF Module 3</i> )
		Complete all Section 3 questions of the Assessment
		Prepare practical samples of Rich Night Cream and Light Lotion – refer to Practical Activity Assessment Workbook in Dropbox; remember to provide: <ul style="list-style-type: none"> <li>• full formulas and methods using the IPCS Formulation Template</li> <li>• notes on stability testing you would conduct</li> <li>• what you have added to enhance stability</li> <li>• PLUS compliant ingredient list</li> </ul>
<b>Only continue to the next unit once you have completed all items in order</b>		

### Some Example Assessment Questions

3.1 Explain how skin ages and the effects this has on skin structure.

3.2 Complete the following table with brief descriptions for each of the following functions:

Simple diffusion	
Osmosis	
Allergy response	
Skin repair	



3.3 Briefly explain how:

3.3.1 different types of skin cleansers clean the skin, with examples

3.3.2 different products can be used to exfoliate the skin, with examples

3.3.3 different types of moisturisers can be used to moisturise the skin, with examples of how moisturisers can be tailored to suit different skin types

3.4 Complete the table with brief descriptions identifying the special needs of each type of product:

Baby skincare	
Mens skincare	
Ageing skincare	

3.5 Provide a formula for a **chemical exfoliant for the face**.

3.6 Provide a formula for a **baby bath wash**.

3.7 Provide a formula for a **mens after shave lotion**.

3.8 Provide a formula for a **w/o moisturiser for ageing skin**.

3.9 Provide a formula for a **mouthwash**.

3.10 Provide a formula for a **deodorant**.

3.11 Provide a formula for an **anti-perspirant**.



<b>Pace yourself! Set a due date of 2-3 weeks on each unit if studying 10-15hrs/wk or adjust accordingly</b>	<b>Tick when each time completed</b>	<b>Item/Unit</b>
		Apply hair physiology to formulate basic hair care
		Read 4 <sup>th</sup> Chapter – Apply hair physiology to formulate basic hair care
		Watch Hair Physiology lectures 1 & 2 and complete all lecture activities
		Re-read text in relevant sections and ensure all text activities are completed; you may also choose to re-watch the lectures at this point (optional)
		Watch on-line Tutorial
		Optional: work on Extension Activities from the Extension booklet ( <i>Formulation Extension Exercises booklet is in dropbox DPCF Module 3</i> )
		Complete all Section 4 questions of the Assessment
		Prepare practical samples of Simple Body Wash, SLS free face wash and conditioner – refer to Practical Activity Assessment Workbook in Dropbox; remember to provide: <ul style="list-style-type: none"><li>• full formulas and methods using the IPCS Formulation Template</li><li>• notes on stability testing you would conduct</li><li>• what you have added to enhance stability</li><li>• PLUS compliant ingredient list</li></ul>
<b><i>Only continue to the next unit once you have completed all items in order</i></b>		

### **Some Example Assessment Questions**

4.1 Discuss the structure and chemistry of hair. In your answer, be sure to mention pH, bonding involved, and then summarise the resultant chemical and physical properties of hair.

4.4 Describe how split ends occur and how hair care products can be used to repair the hair.



4.7 Complete the following table, identifying the special needs of:

Hair cleansing products (wash out shampoos)	
Hair conditioning products (wash out conditioners)	

4.8 Identify the 5 main types of styling products that are used today. In your answer, discuss the basis of styling products and how they can be formulated to be innovative and different from each other.

4.9 Provide a formula for a **shampoo for oily hair**.

4.10 Provide a formula for a **conditioner for dry hair**.

4.11 Provide a formula for a **medium hold aerosol hairspray**.

4.12 Provide a formula for a **strong hold wax**.



Pace yourself! Set a due date of 3-4 weeks on each unit if studying 10-15hrs/wk or adjust accordingly	Tick when each time completed	Item/Unit
		Apply Specialty ingredients to formulate specialty products
		Read 5 <sup>th</sup> Chapter – Apply Specialty ingredients to formulate specialty products
		Watch Apply specialty ingredients lectures 1, 2 & 3 and complete all lecture activities
		Re-read text in relevant sections and ensure all text activities are completed; you may also choose to re-watch the lectures at this point (optional)
		Review ingredient brochures in dropbox; you may also explore Prospector (instructions to access are provided in Dropbox).
		Watch on-line Tutorial
		Revisit the Compliance unit (from module 1 – lecture access provided and latest version of this text is in your Dropbox DCPF Module 3 – Specialty Ingredients folder)
		Watch Tutorial <u>SPECIFICALLY</u> for Question 5.2
		Complete all Section 5 questions of the Assessment
<b><i>Only continue to the next unit once you have completed all items in order</i></b>		



**Some Example Assessment Questions**

5.1 Complete the following table. In your answer, identify and discuss the physiological effect of the ingredient on the skin/hair and how it produces the desired performance benefits:

Product	Example active	Usage rate %	Natural status	Mode of action
Depilatory cream				
Self tanning lotion				
Sunscreen lotion				
Non-oxidative hair dye				
Perming agent				
Oxidative hair dye				

5.2 Conduct the necessary searches to complete the following table for **COSMETIC** products:

Ingredient	AU Limit	EU Limit	US Limit	JP Limit
Ethylhexyl methoxycinnamate				
Blue 1 Lake (CAS 68921-42-6)				
Glycolic acid				
Arbutin				



5.3 Complete the following table:

Product	Issues with stability	Methods to stabilise
Depilatory creams		
Self tanning creams		
Sunscreens		
Oxidative hair colourants		

5.5 Using the formulation template provided at the end of this assessment, provide a formula for **each** of the following products:

- 5.5.1 tanning lotion
- 5.5.2 skin firming body lotion
- 5.5.3 sunscreen (SPF30+)
- 5.5.4 depilatory leg cream
- 5.5.5 perming agent
- 5.5.6 non-oxidative hair dye
- 5.5.7 oxidative hair dye



<b>Pace yourself! Set a due date of 2-3 weeks on each unit if studying 10-15hrs/wk or adjust accordingly</b>	<b>Tick when each time completed</b>	<b>Item/Unit</b>
		Develop a product through reverse engineering
		Read 6 <sup>th</sup> Chapter – Develop a product through reverse engineering.
		Watch Reverse engineering lecture and complete all lecture activities.
		Re-read text in relevant sections and ensure all text activities are completed; you may also choose to re-watch the lectures at this point (optional)
		Watch on-line Tutorial
		Complete all Section 6 questions of the Assessment
		Prepare Reverse Engineering practical sample, formula and method and submit with your practical samples.
<b>Only submit your Assessment when ALL sections of ALL questions have been completed. Revisit the text, lectures, videos and especially the TUTORIALS to ensure you have answered all questions to the best of your ability.</b>		
<b>This also helps ensure the best quality of learning! Happy studying ☺</b>		

### **Some Example Assessment Questions**

6.4 For the following ingredient list, and specifications:

Aqua, Isopropyl Myristate, Macadamia Ternifolia Seed Oil, Glycerin, Shea butter, Cetearyl Alcohol, Glyceryl Stearate, PEG-100 Stearate, Rosmarinus Officinalis Leaf Extract, Helianthus Annuus Seed Oil, Carbomer, Tromethamine, Benzyl Alcohol, Salicylic Acid, Sorbic Acid.

Glossy medium viscosity cream with neutral odour.

pH: 6.0 – 6.3

Viscosity: Spindle TR11 @ 100rpm @ 25°C: 4,800 – 5,100cPs

6.4.1 Prepare a finished product formulation and method for the product using the formulation template provided at the end of this assessment. In your answer, show your working through all steps including:

- determining the function of each ingredient
- determining ingredients with limits of addition.
- determining ingredients with key input quantities.





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**FORMULATION AND METHOD OF MANUFACTURE TEMPLATE**

PHASE	ADDED %w/w	RAW MATERIALS (TRADE NAME &/OR INCI)	FUNCTION
Total	100% w/w		

**METHOD**

- 1.
- 2.
- 3.
- 4.
- 5.

Final pH required:



## **EXAM DETAILS**

On the day of your exam, you will be contacted via Skype at your allocated start time and asked to provide Government provided photo identification such as a drivers licence with photo, passport or proof of ID card (with photo). We must be able to see the Government stamp/ID of the agency endorsing the proof of identify, and you must have this with you before you can start the exam.

The exam for the Diploma of Personal Care Formulation runs for 3 hours (plus 20 minutes reading time) and is composed of two parts:

- Formulating a skin care product from a brief (90 mins)
- Formulating a hair care product from a brief (90 mins)

You will be provided with 2 briefs for the skin care product from which you will need to choose one only to work on; you will also be provided with 2 briefs for the hair care product from which you will need to choose one only to work on. You will be given 20 minutes reading time at the start of the exam so that you have ample time to decide which brief you will select for each section of the exam and can start researching ingredients. At the end of 180 minutes (plus reading time, so it will actually be 200 minutes), you will need to stop working on the formulations and send them through to student services to forward to your assessor.

If you require tutorial assistance prior to your exam, please contact us to arrange.

Good luck!