• Draw sketches of a detergent micelle, a lipid vesicle and a water-in-oil microemulsion.	**Marks** **3**

• Give a brief definition or explanation of the following concepts in colloid science.	**Marks 6**
double layer	
counter ion	
isoelectric point	
zeta potential	
flocculation	
electrokinetic mobility	

- Why do phospholipids self-assemble in solution, what structures do they form, and why are they relevant to cell biology?

2

	Marks
• Give 2 examples of changes of conditions that might cause a colloidal dispersion to coagulate. In each case, explain why coagulation occurs.	**4**

	Marks
• Explain how the self-assembly of phospholipids can be utilised in a drug delivery system.	**2**

• Explain how soap acts to remove oil.	**Marks 2**

- Explain why surface effects are important in colloidal systems. **2**

- Describe how the addition of an electrolyte can alter the state of a colloidal dispersion. **2**

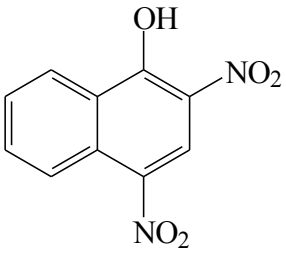
- Describe how hydrophilic and hydrophobic colloids are stabilised in water.

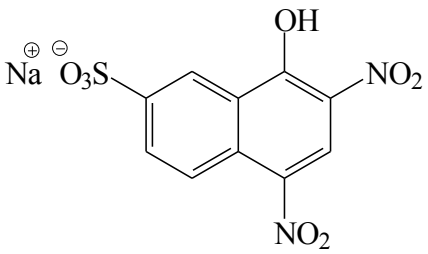
3

• Describe how hydrophilic and hydrophobic colloids are stabilised in water.	**Marks 3**

Marks

- Consider the following two compounds. **3**





(I) Martius Yellow (II) Naphthol Yellow S

On ingestion of compound (I), death from liver failure occurs very quickly. In contrast, compound (II) is completely non-toxic and is used as an artificial colouring agent. Explain, using the model of biological membranes, why (I) is highly toxic.

- Give three examples of colloids in biological systems, and complete the following table. Paint is given as an example of a synthetic (non-biological) system. **3**

Name of colloid	Discrete phase	Continuous phase
paint	*synthetic polymer*	*water*