

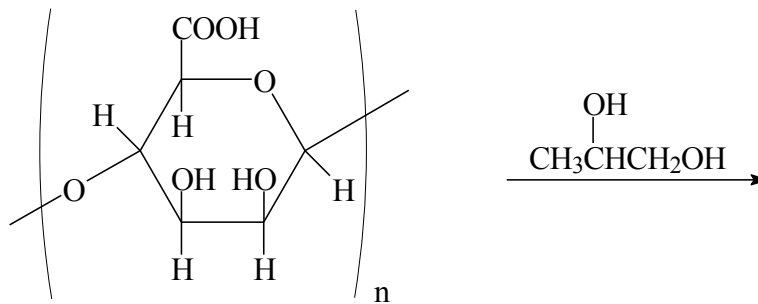
- Give three examples of colloids in biological systems, and complete the following table. Paint is given as an example of a synthetic (non-biological) system.

**Marks**  
**3**

Name of colloid	Discrete phase	Continuous phase
<i>paint</i>	<i>synthetic polymer</i>	<i>water</i>

- Alginates are high molecular weight polysaccharides extracted from seaweed. The surface active agent with the common name "propylene glycol alginate" is used as a thickener in foodstuffs. It is made by esterifying approximately 80% of the carboxyl units of the polysaccharide with 1,2-propanediol depicted, in part, below.

**2**



Explain in terms of its two components (the polysaccharide and 1,2-propanediol) why the ester functions as (a) a surfactant and (b) a thickener.