Spec ref: 4.3.1.7

KEY FACTS

- Vaccine: contains harmless/dead/weakened pathogen or its antigens
- Immune system responds: makes antibodies + memory cells
- On re-exposure: memory cells produce antibodies FAST → infection destroyed before symptoms
- Herd immunity: enough vaccinated → pathogen cannot spread → unvaccinated protected

★ Herd immunity requires vaccination rates above a threshold (varies by disease)

KEY TERMS

Vaccine	Preparation of harmless antigens — trains immune system without causing disease
Herd immunity	When enough people are immune that the pathogen cannot spread in a population
Memory cell	B lymphocyte remaining after immunisation — enables rapid future response

■ EXAM TIP: Vaccines give you MEMORY CELLS, not lasting antibodies. Memory cells enable fast antibody production IF pathogen arrives. This is the key mechanism.