

(Human defence systems (skin, nose, trachea, white blood cells))

Q1.(2019)

prevents pathogens from entering

skin

- tough / dry / dead outer layer
- skin acts as a barrier
- sebum / oil on (surface of) skin
- sebum / oil repels pathogens
- scabs form over cuts **or** scabs form a barrier
- platelets are involved in forming clots / scab

stomach

- contains (hydrochloric) acid
- (HCl) kills bacteria
- in food **or** in swallowed mucus

eyes

- produce tears
- contains enzymes to kill bacteria
- tears are antiseptic

breathing system

- trachea / bronchi / nose produce mucus
- mucus is sticky
- (mucus) traps bacteria
- (mucus) carried away by cilia

defends itself against pathogens inside the body

- immune system / white blood cells (WBCs)
- WBCs engulf pathogens
- antitoxins are produced
- (antitoxins) neutralise toxins / poisons (produced by pathogen)
- antibodies are produced
- (antibodies) help destroy pathogens
- memory cells (are formed)
- (memory cells give a) more rapid response if pathogen re-enters

a **level 2** response should refer to body defence **and** the immune system

Q2.(2020)

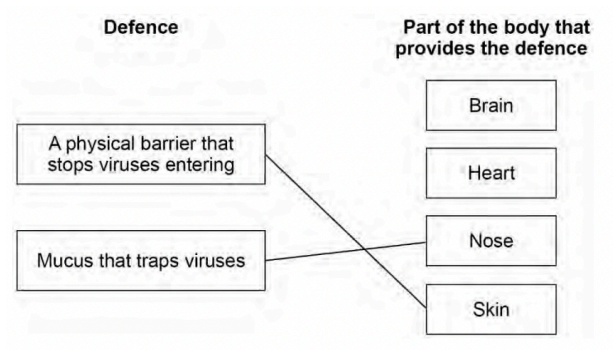
hydrochloric acid is produced by the stomach

the skin is a barrier covering the whole body

Q3.(2020)

white blood cells engulf the microorganisms.

Q4.(2023)



Q5.a)(2024)

(physical) barrier

or

stops pathogens entering (blood / body)

Q5.b)(2024)

$$\frac{63}{210}$$

$$\frac{3}{10}$$

Q5.c)(2024)

(at pH1) 187 (killed)

(at pH5) 31 (killed)

 $(187 - 31) = 156$
 (more bacteria killed)

Q5.d)(2024)

(the student) calculated the midpoint

(between) 23 and 63

ORany **two** from:

- $\frac{63 - 23}{2} = 20$
- $20 + 23 = 43$
- $63 - 20 = 43$