

Question 3 (Answer: **A**)

- Spirogyra has a cell wall, chloroplasts, a vacuole and a nucleus.
- Those are all plant cell features – chloroplasts and a cell wall in particular.
- So it shares the plant cell's full set of structures.

Question 4 (Answer: **A**)

- A cell is the basic unit; a tissue is a group of similar cells; an organ is several tissues working together.
- The brain and the liver are both organs.
- A neurone is a single cell.

Question 3 (Answer: **B**)

- A palisade cell is a plant cell, so it has a cellulose cell wall.
- A neurone is an animal cell, which has no cell wall.
- Membranes, cytoplasm and nuclei are present in both.

1(a)	go to 2	
	go to 4	
	go to 3	
	<i>Vibrio cholerae</i>	D
	<i>Helicobacter pylori</i>	B
	<i>Salmonella typhi</i>	E
	<i>Treponema pallidum</i>	C
	go to 5	
	go to 6	
	<i>Staphylococcus aureus</i>	A
	<i>Streptobacillus moniliformis</i>	G
	<i>Streptococcus pyogenes</i>	F
	;;;	
1(b)(i)	<i>radius</i> : 0.25 μm ; <i>volume</i> : 0.39 μm^3 ;;;	
1(b)(ii)	prokaryote ;	
1(c)(i)	J protein coat ; K genetic material ;	
1(c)(ii)	<i>any two from</i> : cell wall ; cell membrane ; circular / loop of, DNA ; plasmid ; cytoplasm ; ribosome ; AVP ;;	

Question 3 (Answer: **D**)

- Cell membranes and nuclei are found in both plant and animal cells.
- Cell walls and chloroplasts are found only in plant cells.
- So the shared pair is the cell membrane and the nucleus.

Question 2 (Answer: **A**)

- A prokaryote has no nucleus and no membrane-bound organelles.
- Its DNA lies free in the cytoplasm, and it is much smaller than a eukaryotic cell.
- So pick the cell with no nucleus drawn in it.

5(a)(i)	<i>any four from:</i> 1 <u>active transport</u> ; 2 (movement of particles / nitrate ions) from a low concentration to a high concentration / against OR up the concentration gradient OR there are more (nitrate) ions in the cell / root hair than the soil ; 3 pass, through / across, cell / partially permeable, membrane ; 4 using protein, carriers / molecules ; 5 using energy (from respiration) ;
5(a)(ii)	lightning and (nitrogen fixing) bacteria ;
5(b)	osmosis ;
5(c)	<i>total of five from:</i> <i>differences to max 3:</i> <i>root hair cells have:</i> 1 nucleus / nuclear membrane ; 2 mitochondria ; 3 (large permanent) vacuole ; 4 <u>cellulose</u> cell wall / cell wall made of a different substance ; 5 <u>linear</u> DNA ; 6 <u>no</u> plasmids ; 7 AVP ; <i>similarities to max 3:</i> 8 cell wall ; 9 cell membrane ; 10 cytoplasm ; 11 DNA / genetic material ; 12 ribosomes ; 13 AVP ;

Question 3 (Answer: D)

- A plant cell has a membrane, a cell wall and ribosomes; so does a bacterial cell.
- Plasmids are found only in bacteria, never in plant cells.
- So the shared structures are the cell membrane, the cell wall and ribosomes.