



**CHEMISTRY ONLINE**  
— **TUITION** —

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# BIOLOGY

## FOUNDATIONS IN BIOLOGY

Level & Board	OCR (A-LEVEL)
TOPIC:	CELL STRUCTURE MICROSCOPES
PAPER TYPE:	SOLUTION - 1
TOTAL QUESTIONS	8
TOTAL MARKS	/30

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## Cell Structure and Microscopes - 1

1.

(a)

	laser scanning confocal microscope	scanning electron microscope	transmission electron microscope
maximum resolution			
image appearance		3D	2D
image colour	named colour / coloured	black and white	

(b)

Larger number of organelles

Larger nucleus / more DNA

2.

(a) **B**: can be used with live tissues

3.

(a) The pond community is stable

(b)

Light Microscope

Graticule

(c) Urea OR Ammonia

**(d)**

Nitrosomonas nitrite

Nitrobacter nitrate

**4.**

**(a)**  $3157 \mu\text{m}^3 / 3.157 \times 10^3 \mu\text{m}^3$

**(b)** Transmission Electron Microscope

**It is because it provides:**

2D image

internal details visible

Named organelles / ultrastructure, visible

high magnification

high resolution

**OR**

Transmission electron microscopy (TEM) is a microscopy technique in which a beam of electrons is transmitted through a specimen to form an image. The specimen is most often an ultrathin section less than 100 nm thick or a suspension on a grid. This is because electrons can have a significantly shorter wavelength (about 100,000 times smaller) than that of visible light when accelerated through a strong electromagnetic field, thus increasing the microscope resolution by several orders of magnitude.

**5.**

**(a)**

A = permanent / temporary vacuole

B = nucleolus

**(b)**  $14000 / 1.4 \times 10^4$

**(c)**

No shading / cross hatches

Add a scale / magnification

Add a title

**(d)**

Place stain at edge of sample not the centre

Lower cover slip at an angle / use mounted needle

Use blotting paper to, remove excess stain / pull stain through

Use more than one stain to improve contrast

**6.**

**(a)** Transmission electron microscope

**(b)**

M = matrix

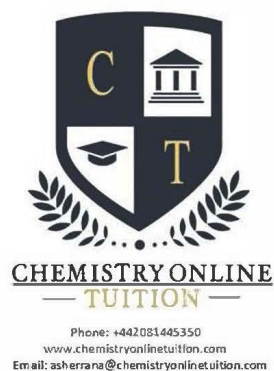
N = cristae

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I am Sorry !!!!!



**DR. ASHAR RANA**



- Founder & CEO of Chemistry Online Tuition Ltd.
- Tutoring students in UK and worldwide since 2008
- Chemistry, Physics, and Math's Tutor

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