

GCSE Physics A (Gateway)
J249/04 Physics A P5-P8 and P9 (Higher Tier)

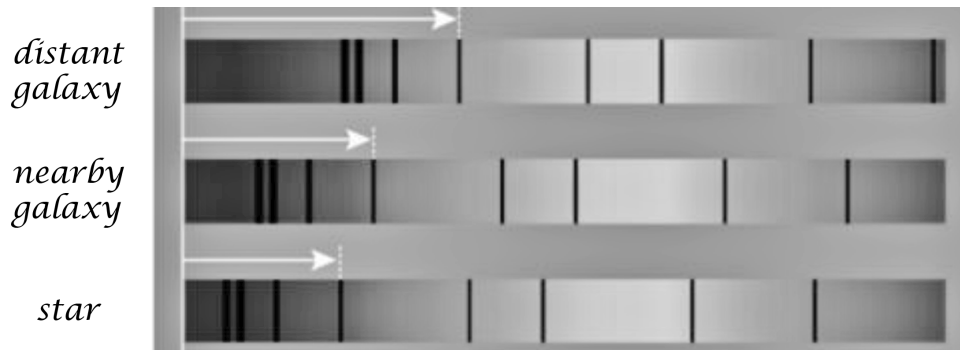
Question Set 18

1*

Scientists collect evidence from the universe and develop theories to explain their observations.

The diagram shows three absorption spectra showing red shift.

The white arrows show the relative position of the same band in the absorption spectra of a distant galaxy, a nearby galaxy and a star.



Using your knowledge of red shift, describe how the information in the diagrams supports the idea of the Big Bang model.

The Big Bang model theorises about how the universe started from a singularity / point and exploded, leading to the universe expanding. Redshift supports the theory, as it is evidence for the universe getting larger. [6]

When comparing these diagrams, the distant galaxy is shifted to the right (towards the red end of the spectrum) compared with the nearby galaxy. This highlights that the distant galaxy is redshifted and therefore implies that the galaxy is moving away from us.

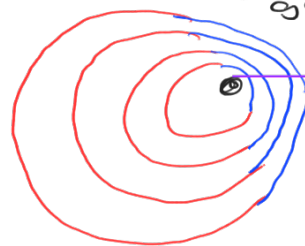
This suggests that the universe is growing, which agrees with the Big Bang Theory.



Us

Nearby galaxy

Distant galaxy



moving away from us due to expansion of the universe.

Redshift

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Oxford Cambridge and RSA

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