

## Doppler Effect & Big Bang

1. An opera singer is in a car driving towards you. They are singing a note - the driver of the car hears it as middle C with constant loudness. Describe how the sound you hear differs from what the driver hears as the car moves towards you.

(2)

2. A source of water waves is moving across a lake from East to West. Four observers are standing at the North, South, East and West edges of the lake. They each measure the wavelength of the water waves arriving. Put them in order of the wavelength they measure, from shortest to longest.

(2)

3. An LED is sitting on a table in front of you and it emits green light. It is then moved very rapidly away from you. Suggest what colour it could appear to be.

(1)

4. Studies of light from distant galaxies suggest that the universe may have started from one place. Explain how the evidence leads to this conclusion.

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