

Multiple Choice Answers

Q37: C

Q39: D

11(a)	inward force / force of gravitational attraction, is balanced by an outward force / force due to fusion reactions
11(b)(i)	ratio of the speed at which the galaxy is moving away from the Earth/observer to its distance (from the Earth/observer)
	ratio of speed (of a galaxy) to distance (away from observer)
11(b)(ii)	(age of universe $\Rightarrow d / v = 1 / H_0$ OR age (of universe) $= 1 / H_0$
11(b)(iii)	4.5×10^{17} (s)

Multiple Choice Answers

Q39: D

10(a)	24 km / s
	$v = 2\pi r / T$ OR $(v \Rightarrow) 2\pi r / T$ OR $(2\pi \times 2.28 \times 10^8) / (690 \times 24 \times 60 \times 60)$
	$(2\pi \times 2.28 \times 10^8) / (690 \times 24 \times 60 \times 60)$ OR $(T \Rightarrow) 690 \times 24 \times 60 \times 60$ OR $(T \Rightarrow) 59\,616\,000$ (s)
10(b)	elliptical / ellipse
10(c)(i)	wavelength (of light from distant galaxies) increases
	occurs when galaxies are moving away (from Earth)
10(c)(ii)	speed / velocity (that galaxy is moving away from Earth)