Practice Question Set For A-Level
Subject : Physics
Paper-3 Topic: Section A(Practical Skills Set-2)

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Name of the Student:_____
Max. Marks : 17 Marks **Time : 17 Minutes**

Q1.

Many astronomical observations rely on a Charge Coupled Device (CCD) to obtain an image. Describe the structure and operation of the CCD and discuss the advantages of using a CCD for astronomical observations.

The quality of your written communication will be assessed in this question.

(Total 6 marks)

Q2.

(a) The table summarises some of the properties of two stars in the constellation of Ursa Minor.

name	**apparent magnitude**	**radius of star / radius of the Sun**	**spectral class**
Polaris	2.0	50	F
Kocab	2.0	50	K

(i) Using these data, describe and explain **one** similarity and **one** difference in the appearance of the two stars as seen with the unaided eye by an observer on the Earth.

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similarity_____

_____

_____

difference_____

_____

_____

(2)

(ii) Deduce which of the two stars is further from the Earth.

_____

_____

_____

_____

_____

_____

(3)

(b) Ursa Minor also contains the galaxy NGC 6251. Measurements indicate that the light from the galaxy has a red shift, *z*, of 0.025 and that the galaxy is 340 million light years from Earth.

(i) Use these data to calculate a value for the Hubble constant.

value _____ k ms^{-1} Mpc^{-1}

(3)

(ii) Use your answer to part (b)(i) to estimate a value for the age of the Universe. State an appropriate unit for your answer.

age _____ unit _____

(3)

(Total 11 marks)

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