

Tutor Marked Assignment

Course and assignment number:
S281 02

Make sure you know how to complete and send in your TMA and PT3 form: detailed instructions are given in your student handbook (or supplement).

Covering: **Project work,**
Block 1 Chapters 3-5,
Block 2 Chapters 1-3
Cut-off date:
Friday 23 May 1997

In all calculations

- show details of your working;
- include units with all physical quantities;
- work to an appropriate number of significant figures.

Question 1

This question relates to the project work, and carries 50% of the marks for this assignment.

This question is centred on project write-up. IT IS MOST IMPORTANT that you follow the advice given in Section 2.5 of the *Project file*, including the organization of a write-up into sections, and the suggested lengths of each section. *The total length of your write-up should not exceed about 1200 words, plus sketches and graphs.*

There are two options – **CHOOSE ONLY ONE OF THEM.**

Option 1

Present your write-up of the project *The difference in length between the sidereal day and the mean solar day.*

Option 2

Present your write-up of the project *The luminosity of the Sun.*

For Option 1 only, you can use back-up data that we supply on your request (see the *Project file* for details). If you choose Option 1, and your write-up is based on the back-up data, then all marks are still available to you provided that (under observational/measurement procedure)

- you include a description of any observational efforts of your own, and/or your reasons for resorting to our data, and
- you describe our data, and how you used them.

If you did not obtain our data, yet have insufficient data of your own for a full write-up, then proceed as far as you can – some marks will still be available.

Question 2

This question relates to Book 1, mainly Chapters 3-5, and carries 20% of the marks for this assignment.

(a) (15 marks) Compare the properties of white dwarfs and neutron stars by writing a sentence or two on each of the following topics.

- The masses of main sequence stars with which white dwarfs and neutron stars are each associated. Mass ranges are preferred.
- The stage of evolution of the parent star at which white dwarfs and neutron stars are each found.
- The masses of white dwarfs and neutron stars. Mass ranges are again preferred.
- The approximate radii of white dwarfs and neutron stars.
- The types of radiation by which white dwarfs and neutron stars are usually detected, and how, in each case, the radiation is produced.
- The forces that prevent the collapse under gravity of white dwarfs and neutron stars. *neutron radio while d. - visible*
- Which type of object (white dwarfs and neutron stars) is the more common, and why. *white dwarfs are smaller*

Please lay out your answer in the order (i)-(vii), labelling each section of your answer clearly with the appropriate Roman numeral.

(b) (5 marks) In a few sentences, outline the important effects that the events leading immediately to the formation of white dwarfs and neutron stars have on the interstellar medium.

*to form white dwarf stars emit planetary nebulae
To form neutron stars, stars emit planetary nebulae or undergo supernova explosion. The ISM is enriched in heavy elements.*