

中學生天文訓練計劃  
Astronomical Training Programme for Secondary School Students  
筆試樣本  
Sample Paper

甲部：選擇題 (12 分)

Section A: Multiple Choice Questions (12 Marks)

1. 根據 1930 年國際天文聯會，黃道星座有\_\_\_\_\_ 星座。  
According to International Astronomical Union (IAU), there are \_\_\_\_\_ ecliptic constellations.  
A. 13  
B. 28  
C. 48  
D. 88
  
2. 太陽黑子數目的週期約為\_\_\_\_\_年。  
Solar sunspots cycle is roughly \_\_\_\_\_ yrs.  
A. 7  
B. 11  
C. 17  
D. 21
  
3. 那一個深空天體列表以暗星雲為主？  
Which deep sky object catalogue is mainly on dark nebulae?  
A. 梅西爾深空天體表                      Messier Catalogue  
B. 科德韋爾深空天體表                  Caldwell Catalogue  
C. 巴納德深空天體表                      Barnard Catalogue  
D. 赫歇爾深空天體表                      Herschel Catalogue
  
4. 脈衝星是一顆                                  Pulsar is a  
A. 類星體                                      Quasar  
B. 黑洞    Black hole  
C. 中子星                                      Neutron Star  
D. 以上選擇皆非                              None of the above answer
  
5. 根據廣義相對論，在強大的重力下時間會：  
According to general relativity, gravity causes time  
A. 變快    contraction  
B. 變慢    dilation  
C. 不變    conservation  
D. 以上選擇皆非                              None of the above answer

6. 獵戶座是屬於中國天文四象的那一象？

Which China four symbol does the Orion belong to?

- A. 東方蒼龍 The Azure Dragon
- B. 北方玄武 The Black Turtle
- C. 西方白虎 The White Tiger
- D. 南方朱雀 The Vermilion Bird

7. 暗星雲當中的星很可能屬於：

Inside a dark nebula, a star would probably be a :

- A. 原始星 protostar
- B. 超新星 supernova
- C. 新星 nova
- D. 中子星 neutron star

8. 那一種星系多擁有年老的恆星？

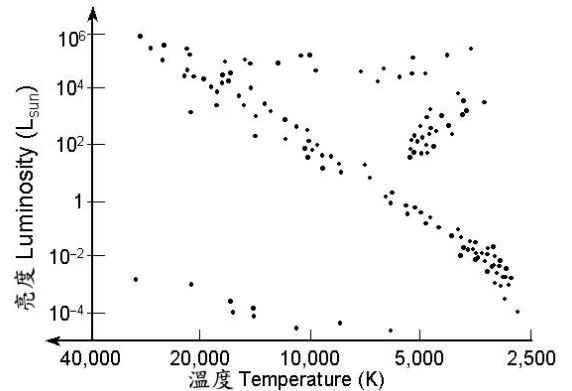
Which type of galaxy is mainly consisted of old stars?

- A. 橢圓星系 Elliptical Galaxy
- B. 棒旋星系 Barred Spiral Galaxy
- C. 螺旋星系 Spiral Galaxy
- D. 以上選擇皆非 None of the above

9. 赫羅圖中那一段代表藍超巨星：

In the HR Diagram, which region represents blue giant?

- A. 右下 Bottom right
- B. 左下 Bottom left
- C. 右上 Top right
- D. 左上 Top left



10. 以下那一樣元素不能在恆星的核聚變中產生？

Which of the following element cannot be produced under the stellar nucleosynthesis?

- A. 氦 Helium
- B. 鐵 Iron
- C. 鈾 Uranium
- D. 以上選擇皆非 None of the above answer

11. 以下那一種排列次序可造成月食？

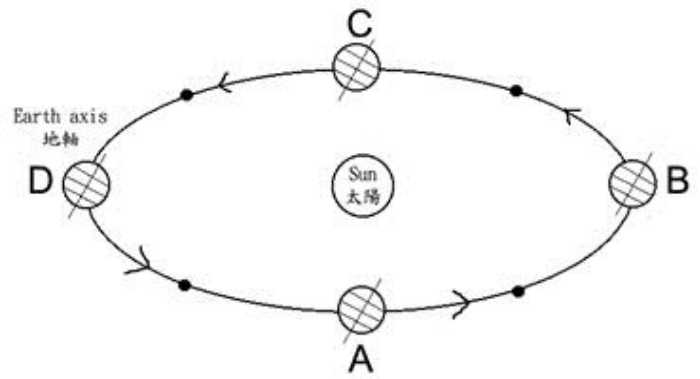
Which of the following arrangement can cause lunar eclipse?

- A. 太陽→月球→地球 Sun→Moon→Earth
- B. 太陽→地球→月球 Sun→Earth→Moon
- C. 月球→太陽→地球 Moon→Sun→Earth
- D. 以上選擇皆非 None of the above answer

12. 根據右圖，那個位置代表南半球的春天？

According to the graph, which position represents the spring season of the Southern Hemisphere?

- A. A
- B. B
- C. C
- D. D



乙部：傳統題 (13 分)

Section B: Conventional Questions (13 Marks)

1. 假設今天是 2015 年 5 月 10 日(農曆廿二)，小明帶了一支口徑 203mm F10 的折反射式望遠鏡觀星。  
Assume today is 10<sup>th</sup> May, 2015 (Lunar Twenty-second), Siu Ming brought a 203mm F10 catadioptric telescope for stargazing.

(a) 月亮在晚上那個時段可看見？並畫出今晚的月相。 (2 分)

What is the observable time for moon at night? Also sketch the moon phase. (2 mark)

(b) 小明應使用甚麼焦距的目鏡來放大月亮 200 倍？ (3 分)

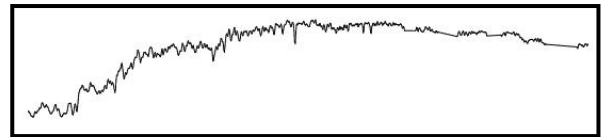
What is the focal length of eyepiece should be used to obtain a 200X magnification? (3 marks)

(c) 列出一個小明今晚可觀測到的月球環形山(隕石坑)。 (1 分)

Name one observable moon crater for Siu Ming tonight. (1 mark)

2. 右圖是來自一不知名恆星 Y 的光譜。

Figure shows the spectrum from an unknown star Y.



(a) 恆星 Y 是甚麼顏色？其表面溫度是否比太陽高？ (2 分)

What is the color of the Star Y? Is the surface temperature higher than that of the Sun? (2 marks)

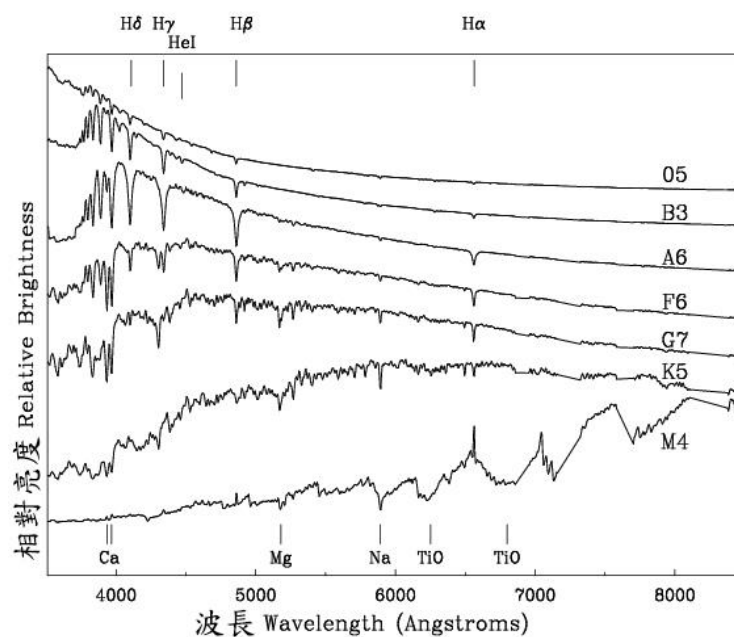
(b) 恆星 Y 的半徑是太陽半徑的 50 倍。在赫羅圖的分類中，它屬於甚麼類型恆星？ (2 分)

The radius of Star Y is 50 times of the Sun radius. According to the classification in HR Diagram, what type of star does Star Y belong to? (2 marks)

(c) 恆星 Y 可以造成甚麼星雲？試描述過程。 (3 分)

What type of nebula can Star Y evolve to be? Briefly describe the process. (3 marks)

### 參考資料 Reference



恆星光譜分類圖 Star Spectral Classification

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