

注意：

允許學生個人、非營利性的圖書館或公立學校合理使用本基金會網站所提供之各項試題及其解答。可直接下載而不須申請。

重版、系統地複製或大量重製這些資料的任何部分，必須獲得財團法人臺北市九章數學教育基金會的授權許可。

申請此項授權請電郵 [ccmp@seed.net.tw](mailto:ccmp@seed.net.tw)

**Notice:**

**Individual students, nonprofit libraries, or schools are permitted to make fair use of the papers and its solutions. Republication, systematic copying, or multiple reproduction of any part of this material is permitted only under license from the Chiuchang Mathematics Foundation.**

**Requests for such permission should be made by e-mailing Mr. Wen-Hsien SUN [ccmp@seed.net.tw](mailto:ccmp@seed.net.tw)**

**ANSWER**

**THEORY I: (PHYSICS) (QUESTIONS 1 - 11)**

- Question 1** Answer: ..... **B. Radiation only** ..... (1 point)
- Question 2 (2.1)** Answer: ..... **bulge out or crack** ..... (0.5 point)
- (2.2)** Answer: ..... **shrink** ..... (0.5 point)
- Question 3** Answer: ..... **B. Light energy** ..... (1 point)
- Question 4** Answer: ..... **C. The umbra is getting bigger. The penumbra is getting smaller** ..... (1 point)
- Question 5** Answer: ..... **C** ..... (1 point)
- Question 6** Answer: ..... **A. Her larynx is vibrating very fast.** ..... (1 point)
- Question 7** Answer: ..... **air , mercury , glass** ..... (1 point)
- Question 8** Answer: ..... **B** ..... (1 point)
- Question 9** Answer: ..... **C (8 , 2)** ..... (1 point)
- Question 10** Answer: ..... **S (Darcy should install the switch S)** ..... (1 point)
- Question 11 (11.1)** Answer: ..... **1m/s** ..... (1 point)
- (11.2)** Answer: ..... **zero** ..... (0.5 point)
- (11.3)** Answer .....  **$4/7 = 0.57 \text{ m/s}$**  ..... (0.5 point)

**ANSWER**

**THEORY I: (BIOLOGY) (QUESTIONS 12 - 23)**

- Question 12** Answer: ..... **C. protection of all physical and biological components.** ..... ( 1 point )
- Question 13** Answer: .... **Vulture , Millipede , Termite** .... (2/3 corrects = 0.5 point , 3 corrects = 1 point )  
( 1 point )
- Question 14** Answer: . .... **A. Bioaccumulation allows mercury to build up in the larger predatory fish.** ...  
( 1 point )
- Question 15** Answer: ..... **C. Green** ..... ( 1 point )
- Question 16** Answer: ..... **B. Tank B** ..... ( 1 point )
- Question 17** Answer: ..... **B. Genes accelerating the formation of plant cell wall.** ..... ( 1 point )
- Question 18** Answer: ..... **A. DNA finger printing** ..... ( 1 point )
- Question 19** Answer: ..... **B. Coleopteran** ..... ( 1 point )
- Question 20** Answer: ..... **D. Lactic acid fermentation** ..... ( 1 point )
- Question 21** Answer: ..... **C. Sharp teeth** ..... ( 1 point )
- Question 22** Answer: ..... **D. Oviparousness** ..... ( 1 point )
- Question 23** Answer: ..... **D. stomach, duodenum, mouth** ..... ( 1 point )

**ANSWER**

**THEORY I: (EARTH SCIENCE) (QUESTIONS 24 - 33)**

- Question 24** Answer: ...**B. The distance between two closet outer planets is increasing when the distance between the Sun and the planet closer to the Sun is increasing.** ...  
(1 pont )
- Question 25** Answer: ..... **A. Both of a solar eclipse and a spring tide** ..... (1 point)
- Question 26** Answer: ..... **B. January, Summer** ..... (1 point)
- Question 27** Answer: ..... **B. 1.5 - 2.0 degree** ..... (1 point)
- Question 28** Answer: ..... **C. Earth and Venus** ..... (1 point)
- Question 29** Answer: ..... **B. 34 meters** ..... (1 point)
- Question 30** Answer: ..... **C. smaller particles** ..... (1 point)
- Question 31** Answer: ..... **D. Cirrostratus** ..... (1 point)
- Question 32** Answer: ..... **D** ..... (1 point)
- Question 33** Answer: ..... **B. Photosynthesis** ..... (1 point)

**ANSWER**

**THEORY I: (CHEMISTRY) (QUESTIONS 34 - 38)**

**Question 34** Answer: ..... **HDPE** and **LDPE** ..... (1 point)

**Question 35** Answer: ..... **A. Maalox Alum Milk** ..... (1 point)

**Question 36** (2 points)

Substance	Volume	Shape
Wood	<b>Remain the same</b>	<b>Remain the same</b>
Salad oil	<b>Remain the same</b>	<b>Liquid pool, taking the shape of the surface it comes into contact with. or Liquid pool with large area</b>
Oxygen	<b>Occupy the entire volume of the large container</b>	<b>Take the shape of the large container</b>

**Scoring** Full credit: 1 point for volume and 1 point for shape

Partial credit: 0.5 point for correction in two out of three states of matter

**Question 37** (1 point)

The ball will .....**explan**..... because .....**the air volume increases with increasing temperature**...

**Scoring** Full credit: correct answer with explanation

Partial credit: 0.5 point for correct answer without explanation

**Question 38** Answer: ..... **B<C<A<D** .....

**Scoring** Full credit:  $B < C < A < D$