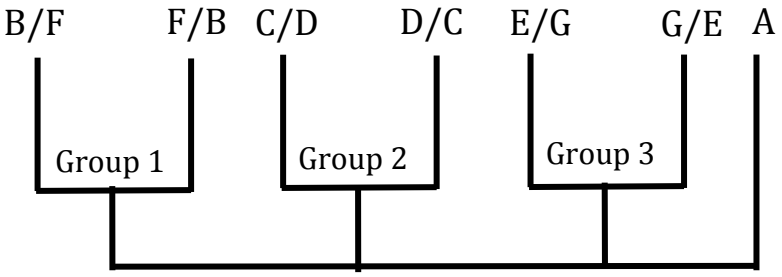
Theoritical Test II Answer Sheet

(answer the questions)

1. **(4 points)**



Nb: position between group 1, group 2, and group 3 can be switched In any order

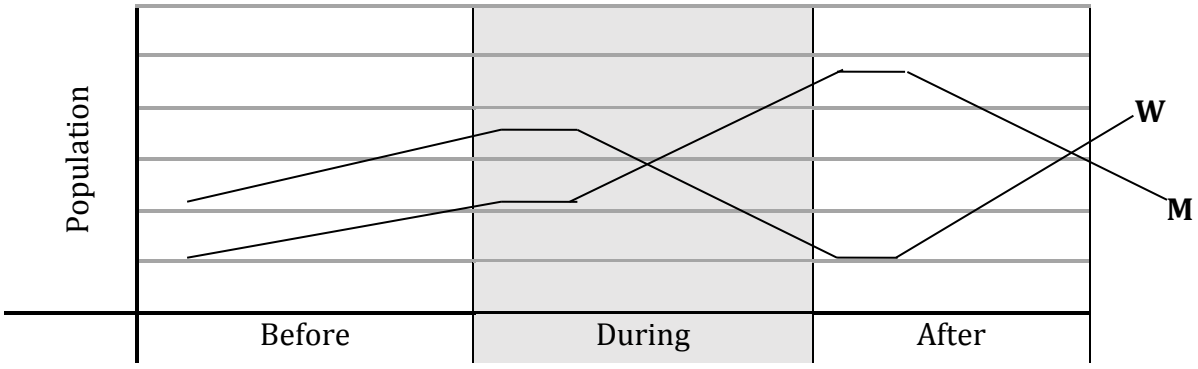
2. A. **(1 point)**
   - species W will decrease and species M will increase or survive/
   - There will be resistance effect of insecticide ABC

B. **(2 points)**
   - Use in proper dose
   - Use different type /brand of insecticide
   - Do not use insecticide to often
   - Do not use insecticide in a long period

C. **(1 point)**
   - the ratio will be back to normal
   - same like the begining which is species W and Species M, 4 to 1

D. **(3 points)**

Graphic Pattern of W and M Ladybug Population



3. A. **(2 points)**

Trachea	Bronchus	Bronchiolus	Alveolus
√	√	**X**	**X**

key
✓ = present
x = absent

B. **(2 points)**
- Filtering
- Traping
- Sweeping
  (if the answer only one of them still get 2 points)

4. A. **(1.5 point)**

Non-insectivorous plant	Insectivorous plant
P and Q	R, S, T, and U

B. **(0.5 point)** U (*Nepenthes*)

C. **(3 points)**
- Smell / fragrance
- Color
- Nectar/sugar

D. **(2 points)**
- Because they need Nitrogen and phosphorus from the insect
- Because they live in habitat that poor or lack of nitrogen and phosporus
  (if the answer only one substances then it will be 1 point)

5. A. **(1 point)** 1

B. **(1 point)**
- the earth will full with death organism
- there is no decaying process

C. **(1 point)** Root nodule/nodule

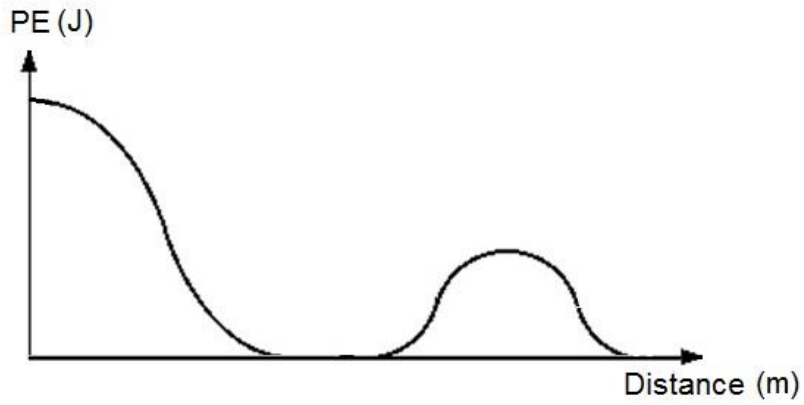
6. A. **(1 point)**

PE = mgh		(0.25 point)
PE = mgh = 100,000 /100		(0.5 point)
PE = mgh = 100,000 J /100 kJ		(1 point)

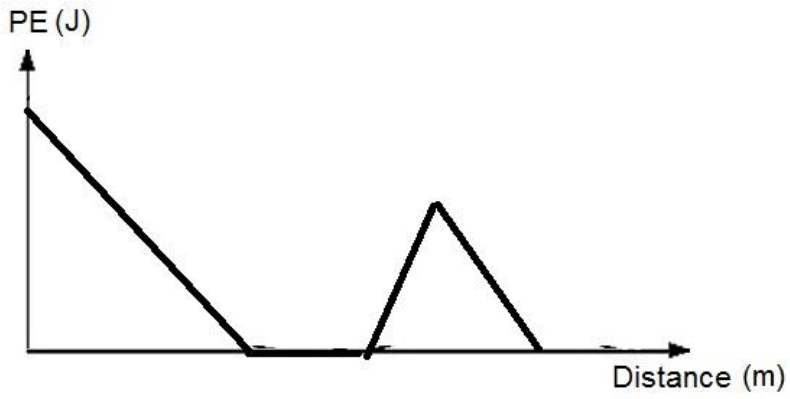
B. **(1 point)**

$ME_A = ME_B = ME_C$		(0.25 point)
Vc = $\sqrt{2100} = 10\sqrt{21}\ m/s$	(without unit)	(0.5 point)
Vc = $\sqrt{2100} = 10\sqrt{21}\ m/s$		(1 point)

C. **(2 point)**



Or



7. A. **(1 point)**

$P = F/A$	(0.25 point)
$P = F/A = 40{,}000$	(0.5 point)
$P = F/A = 40{,}000$ Pa $= 40{,}000$ N/m^2	(1 point)

B. **(1 point)**

$F_1/A_1 = F_2/A_2$	(0.25 point)
$F_1/A_1 = F_2/A_2 \rightarrow F_2 = 60$ `	(0.5 point)
$F_1/A_1 = F_2/A_2 \rightarrow F_2 = 60$ N	(1 point)

C. **(1 points)**

$V_{right} = V_{right}$	(0.25 point)
Right Volume = Left Volume $\rightarrow h_{left} = 10$ or 10 cm	(1 point)

8. A. **(1 point)**

Volume = 6 ml = 6 cm^3 = 6 x 10^{-6} m^3	(1 point)

B. **(1 point)**

$\rho = m/V$	(0.25 point)
$\rho = m/V = 2.5 = 2500$	(0.5 point)
$\rho = m/V = 2.5$ gr/cm$^3 = 2500$ kg/m^3	(1 point)

C. **(2 points)**

Participant only answer one of these parts

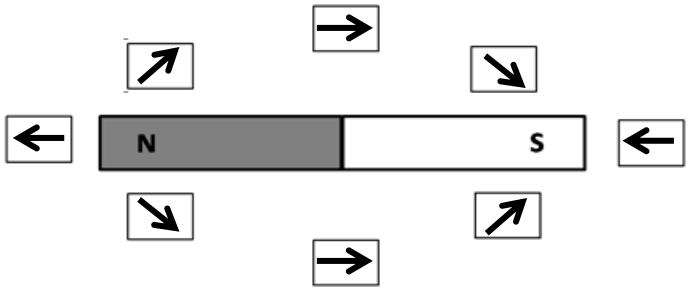
$M_{water} = 2/3.\ M_{stone} = 10$	(0.5 point)
$M_{water} = 2/3.\ M_{stone} = 10$ gr	(1 point)

Participant can find the mass of cylinder

$M_{cylinder`} = 4.60$	(1.5 point)
$M_{cylinder`} = 4.60$ gr	(2 point)

9. A. **(0.8 point)**

Each arrow 0.1 point



B. **(1.2 point)**

Following magnetic field lines / magnet bar attract the compass needle (1,2 point)

C. **(1 point)**

They will hava same directions (0.5 point)

They will have same directions due to earth magnetic field (1 point)

10. A. **(1 point)**

$v = \lambda f$ (0.25 point)

$f = \frac{v}{\lambda} = \frac{1480}{0.04} = 37{,}000\ Hz$ (without unit) (0.5 point)

$f = \frac{v}{\lambda} = \frac{1480}{0.04} = 37{,}000\ Hz$ (1 point)

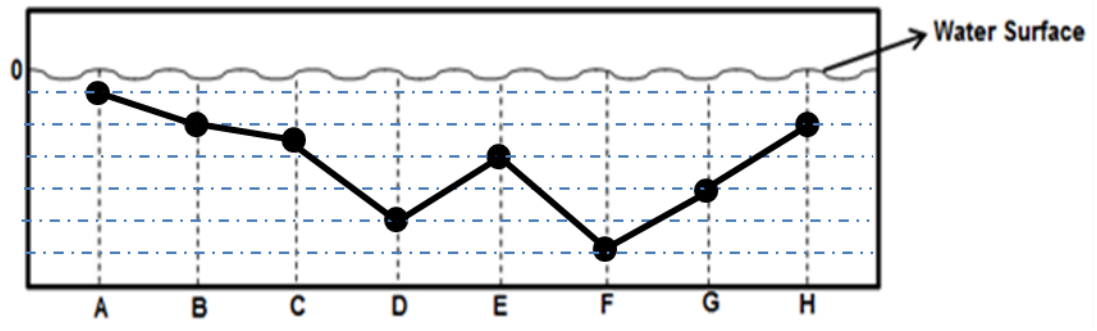
B. **(1 point)**

$v = \frac{2d}{t}$ (0.25 point)

$t = \frac{2d}{v} = \frac{2 \times 3330}{1480} = 4.5\ s$ (without unit) (0.5 point)

$t = \frac{2d}{v} = \frac{2 \times 3330}{1480} = 4.5\ s$ (1 point)

C. **(2 points)**



Same pattern with scale (2 point)

Same pattern without pattern (1 point)

11. A. **(2.5 points)**

Statements	True/False
Bamboo can reproduce through vegetative	T
Bamboo is classified as non-flowering plant	F
Bamboo has no branches	F
Picture 1 shows the population of bamboo trees.	F
Bamboo can be cultivated from seed	T

B. **(1 point)**
Resonansi is two waves or more that vibrate together (1 point)

C. **(1 point)**
Longitudinal wave / mechanical wave (1 point)

D. **(1 point)**
$v = \lambda f$ (0.25 point)
$v = \lambda f \rightarrow \lambda = 0.5$ (0.5 point)
$v = \lambda f \rightarrow \lambda = 0.5$ m (1 point)

E. **(1 point)**
X – Y – Z (1 point)

F. **(2 points)**
The wavelength is inversely proportional to frequency (2 point)

12. **(1 point)**
Dyes or natural pigment capture the sun light. Then, the energy of sun light excites the electron. As a result, it provides electrical current
(1 point)

B. **(1.5 point)**
Light energy → chemical energy → electrical energy → (light energy + heat energy) (1,5 point)

C. **(2 points)**
Absorbance increase with the concentration of mulberry/
The higher concentration, the more absorbance
The mulberry has two peaks (2 point)

D. **(2.5 points)**

Statements	**TRUE or FALSE**
Anthocyanin is one of photosynthetic pigment	F
Anthocyanin can express more than one color	T
Chlorophyll can be used as insect attractant in pollination	F
Anthocyanin can be found in plastids	F
Chlorophyll can help plant to produce organic mollecule	T