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FINAL EXAMINATION

ACADEMIC YEAR 2011 / 2012

PACKAGE A

Subject	: SCIENCE
Grade/ Semester	:/ 2
Day / Date	: May, 2012
Time	: 07.30 – 09.30 WIB

INSTRUCTION

1. Write your *name*, *class* and *student number* on the top right side in the available column of the answer sheet.
2. Check and read the test items carefully before you answer them.
3. Report to the observer, if there is/are unclear typing, damage or incomplete test item(s).
4. It is not permitted to use dictionary, cell phone, or other facilities!
5. The way to answer the test:
 - a. For the multiple choice items, cross the correct answer (X) in your answer sheet.
If you want to change your answer, revise the wrong answer by drawing two horizontal lines, then cross the correct one.

Example: Former answer C: ABCD ✕

Correct answer B: ABC ✕ ✕

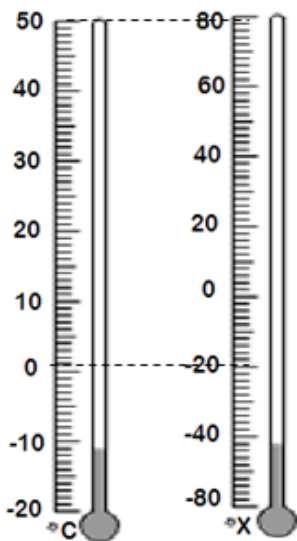
- b. For the essay test items, do them at the available space.
6. Recheck your answer carefully before you submit it to the observer.

1. Which of the pair of fundamental quantity and its SI unit are true?

No	Physical Quantities	SI unit
I	Mass	kilogram
II	Velocity	meter per second
III	Force	dyne
IV	time	second

- A. I and II
- B. I and III
- C. I and IV
- D. II and IV

2. Observe the following figure.

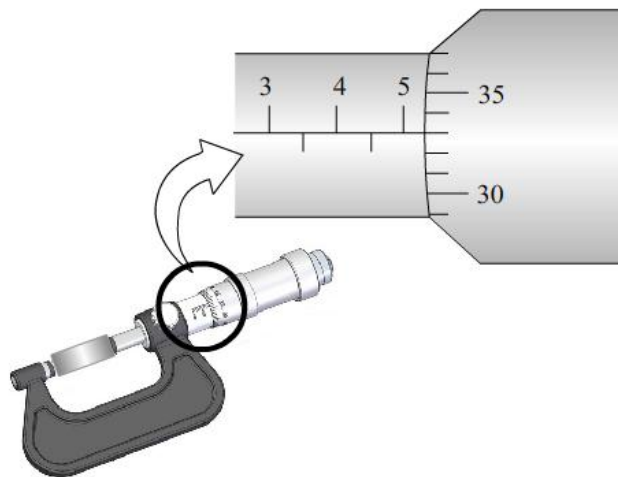


Based from the figure, the temperature of X thermometer in the boil water is....

- A. 80 °X
- B. 120 °X
- C. 140 °X
- D. 180 °X

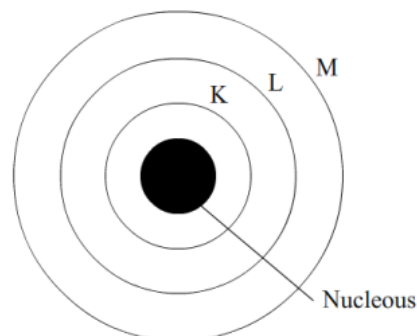
3. Someone use a micrometer to measure the length of an object that is shown by the figure. Based from the data of the figure, the length of the object is

- A. 4.23 mm
- B. 4.73 mm
- C. 5.33 mm
- D. 5.83 mm



4. The figure beside show a diagram of an atom. K, L and M are the shells of an atom starting from the shell that nearest of the nucleus. The maximum number of electron of shell L is

- A. 2
- B. 8
- C. 18
- D. 32

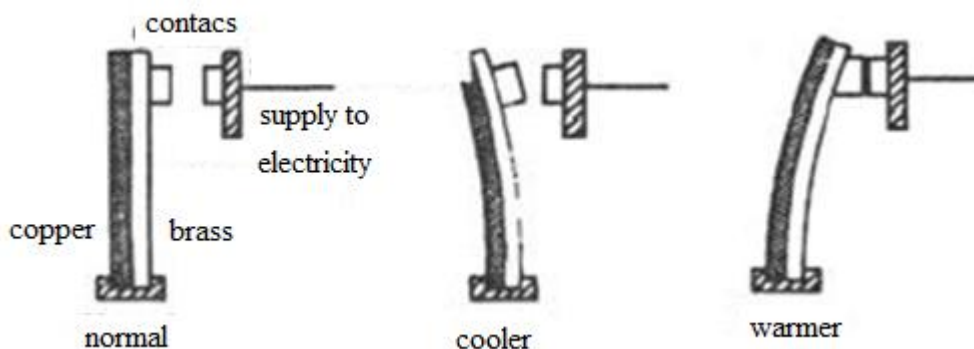


5. Three kinds of gases were observed of the following figure. Mass of three gases was measured by the balance as shown as the figure below.



All containers have same volume. How the comparison of the density?

- A. The density of $A < B < C$
 - B. The density of $A < C < B$
 - C. The density of $C < B < A$
 - D. The density of $B < C < A$
6. Observe the following figure.



Based from the figure, if the bimetal was heated, it will....

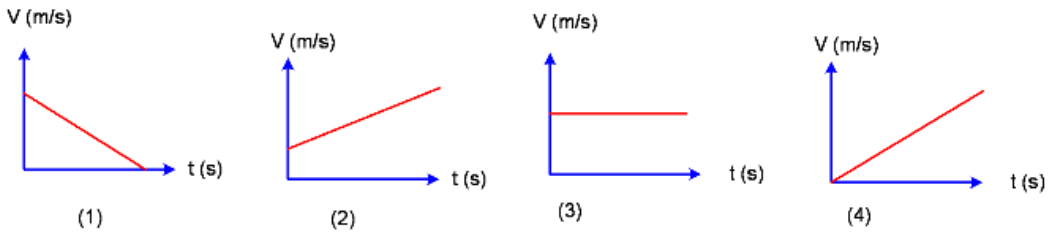
- A. become longer in straight position
 - B. bent to the bigger coefficient of length expansion metal
 - C. bent to right direction of electric circuit.
 - D. bent to the smaller coefficient of length expansion metal
7. If water has a mass 200 g and is heated from 25°C up to 45°C, the amount of heat energy needed is
($C_{water} = 4200 \text{ J/kg}^\circ\text{C}$).
- A. 16,800,000 joule
 - B. 1,680,000 joule
 - C. 168,000 joule
 - D. 16,800 joule
8. Observe the following table that shows the chemical formula of many substances.

	Substances
1	O_2
2	$\text{C}_6\text{H}_{12}\text{O}_6$
3	H_2
4	H_2O

Which of the data from the table include compound molecules

- A. 1 dan 2
- B. 1 dan 4
- C. 2 dan 4
- D. 3 dan 4

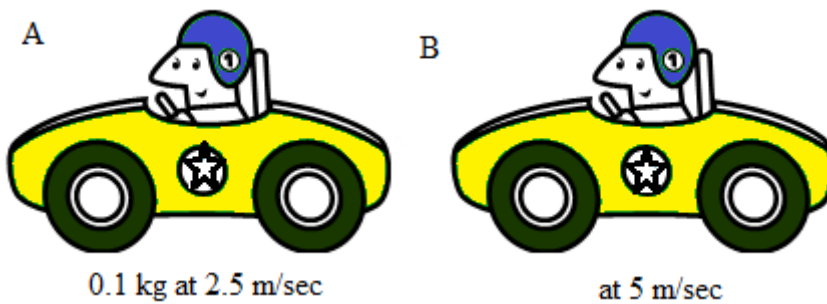
9. Observe the following graphs



The right graph that shows linier accelerated motion is.....

- A. 1 and 3
- B. 1 and 2
- C. 2 and 4
- D. 3 and 4

10. Observe the following figure in lab investigation of toy car.

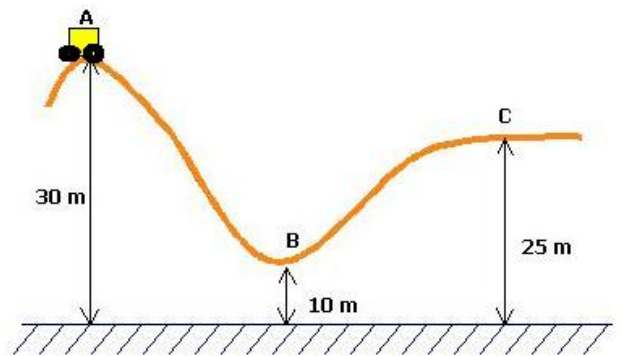


Calculate the kinetic energy comparison of the car for the point of A and B using the speed and mass values above.

- A. 1 : 2
- B. 1 : 4
- C. 2 : 1
- D. 4 : 1

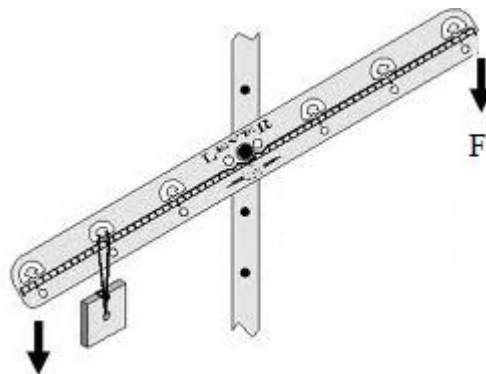
11. Observe the figure on the right. A roller coaster car moves from point A to B then C. What is the potential energy at B and C relative to A?

- A. Potential energy of roller coaster at point A more than B
- B. Potential energy of roller coaster at point B more than C
- C. Potential energy of roller coaster at point C more than A
- D. Potential energy of roller coaster at point B more than A

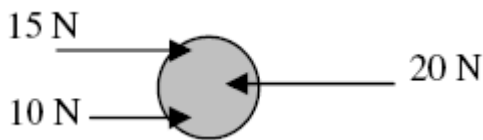


12. Observe the following figure. The lever is out of balance because there is a load on one side, the mechanical advantage of this system is.....

- A. 3
- B. 2
- C. 3/2
- D. 2/3

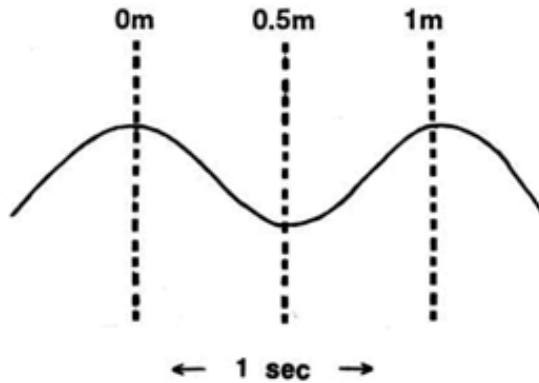


13. A ball was given three forces as shown as the following figure.



The resultant force is....

- A. 45 N
 - B. 25 N
 - C. 15 N
 - D. 5 N
14. Two experimental data of wave was observed as shown as the figure. The period of wave is....



- A. 1 second
- B. 2 second
- C. 3 second
- D. 4 second

15. The atomic number of Magnesium is 12. Electron configuration of this element is....

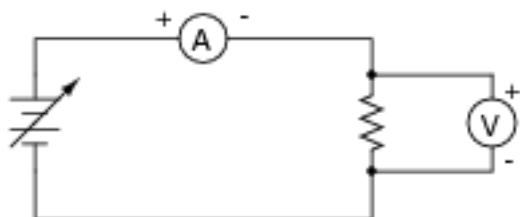
- A. 2, 10
- B. 2, 8, 2
- C. 2, 2, 8
- D. 2, 2, 6, 2

16. Observe the electron configuration from the table below

The number of electron in shell..			
	Atomic symbol	K	L
1	Li	2	1
2	Be	2	2
3	B	2	3
4	C	2	4
5	N	2	7

what is the special characteristic of the these atoms?

- A. All atoms placed in the same period
 - B. All atoms placed in the same group
 - C. All atoms placed in the same shell
 - D. All atoms placed in the same
17. Suppose you were to build this circuit and take measurements of current through the resistor and voltage across the resistor:



The table below shows the result of this experiment:

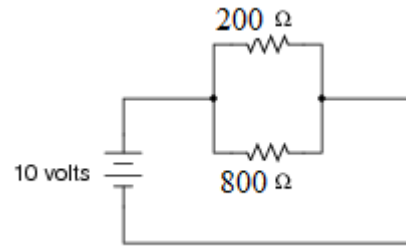
	Current	Voltage
P	0.22 A	0.66 V
Q	0.85 A	2.54 V
R	1.05 A	3.18 V
S	1.80 A	5.41 V

Base on the Ohm's Law, which conductor has the biggest resistance?

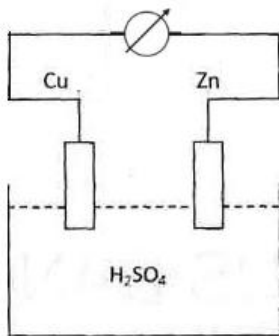
- A. P
- B. Q
- C. R
- D. S

18. A common electricity circuit is that always takes the path of least resistance. Observe the following circuit. The total resistance of the circuit is....

- A. 1000 Ohm
- B. 600 Ohm
- C. 240 Ohm
- D. 160 Ohm



19. The following figure is one of the electric source

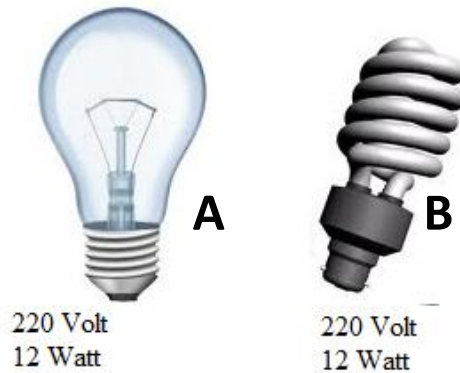


Which part has function to be the positive pole?

- A. Cu
- B. Zn
- C. H₂SO₄
- D. Cu, Zn

20. The students comparing of two electric iron base on the following data. Based from the figure, which of the right statement?

- A. A has the power more than B
- B. A has the same power with B
- C. A has the power less than B
- D. A need the different voltage with B

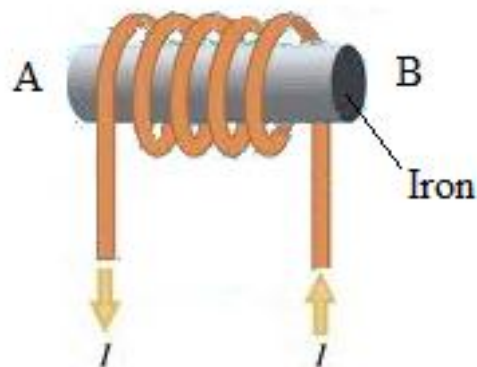


21. The following figure is one of magnetization process of an iron bar. The following statements based on the activity:

1. A to be the North pole
2. B to be the South pole
3. A to be the South pole
4. B to be the North pole

The right answer is....

- A. 1 and 2
- B. 1 and 3
- C. 2 and 3
- D. 3 and 4



22. Two students do the activity to produce electric from the coils.

		A	B
1	The number of coils	200 coils	120 coils
2	The metal core	steel	iron
3	Shape of coils	circle	Square
4	The speed of magnet motion	20 m/s	12 m/s
5	The direction of magnet pole	North	South

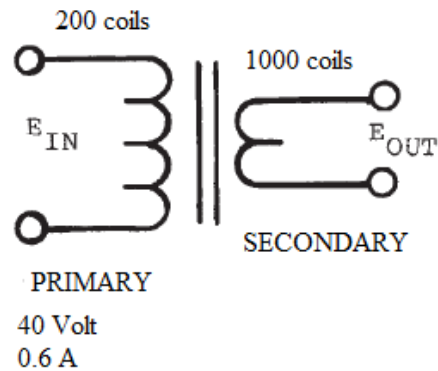
Which of the factors that cannot affect EMF induction?

- A. 1 and 3
- B. 2 and 4
- C. 3 and 5
- D. 4 and 5

23. Observe the figure of transformer.

Base from the data, define the Secondary Voltage and electric current.

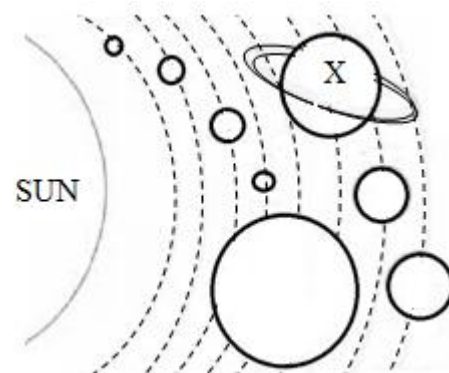
	Secondary Voltage	Secondary current
A	200 Volt	0.12 Amp
B	8 Volt	3 Amp
C	200 Volt	3 Amp
D	8 Volt	0.12 Amp



24. Observe the picture below.

What is the characteristic of X planet?

- A. One of superior planets
- B. Terrestrial planet, consist of Silicon and Aluminum
- C. The smallest planet in our solar system
- D. The outer most planet in solar system



25. Two elements Cl and Na have the configuration 2, 8, 7 and 2, 8, 1, the chemical bonding of these elements are.....

- A. NaCl
- B. Na Cl₂
- C. Na₂Cl
- D. Na₂ Cl₂

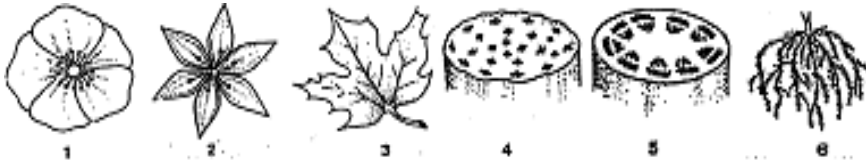
26. Identify the following data:

1. autotroph
2. breathing
3. moving freely
4. doing photosynthesis
5. doing reproduction
6. heterotroph

The characteristics of animal are

- A. 1, 2, dan 4
- B. 1, 3, dan 5
- C. 2, 3, dan 5
- D. 3, 4, dan 6

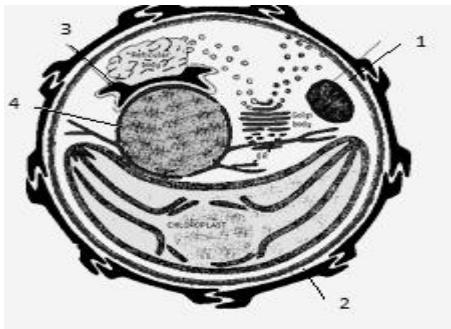
27. Consider the characteristics of organ below!



The characteristics of dicotyledoneae are

- A. 1, 3 and 5
- B. 1, 4 and 6
- C. 2, 3 and 4
- D. 2, 3 and 5

28. The diagram below shows the structure of animal cell.



The part of cell which has function to control all cell activities shown by number

- A. 1
- B. 2
- C. 3
- D. 4

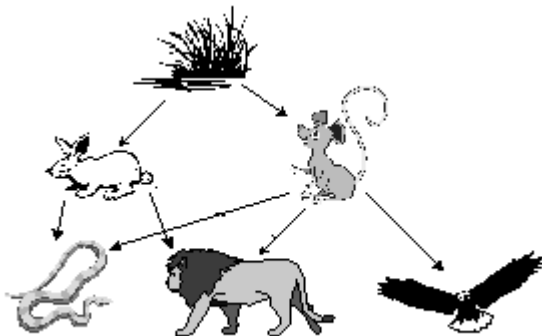
29. The data below are ecological relationship:

- 1. flower with honeybee
- 2. human with bacteria *Escherechia coli*
- 3. fungi with algae
- 4. orchid with mango
- 5. parasite with guava

Mutualism symbiosis shown by number....

- A. 1-2-3
- B. 1-3-5
- C. 2-4-5
- D. 3-4-5

30. Identify the following figure:



If the population of mouse decrease, so population of....

- A. rabbit decrease, lion increase
- B. rabbit increase, snake decrease

- C. grass increase, eagle decrease
D. eagle increase, snake decrease
31. In an ecosystem there are paddy, mouse, snake, eagle and sparrow, when in this ecosystem, human kill a lot of mouse so the population of...
- A. paddy increase
B. snake increase
C. sparrow decrease
D. eagle increase
32. *Pongo pigmeus* in Tanjung Puting Kalimantan is an endangered animal; it is caused by the illegal logging. An effort to preserve it is....
- A. cultivate it animal
B. built the zoo to preserve them
C. rehabilitation of conservation program of *Pongo pigmeus*
D. conservation of their natural habitat
33. At this time, there are so many human activities that cause pollution. Smoke from factories and motor vehicles give the great contribution of pollution. If there is an increasing amount of sulphur in the atmosphere, the people and environment will get the effect. One of the effects is
- A. acid rain
B. eutrophication
C. blooming algae
D. green house effect
34. Blooming algae in the river shows pollution in that place. That case happens because
- A. the discharge off garbage in the river
B. the giving of high-dosage pesticide
C. the using of excessive fertilizer
D. the regular planting by farmer
35. Look at the figure below!



- That muscle tissue will be found at the
- A. heart
B. liver
C. skeleton
D. lungs
36. The correct combination of enzymes and its function....
- | Number | Enzyme | Letter | The result of enzyme digestion |
|--------|---------|--------|--------------------------------|
| 1 | Tripsin | A | lipid acid and glicerol |
| 2 | Amilase | B | glucose |
| 3 | Lipase | C | amino acid |
- A. 1-B, 2-A, 3-C
B. 1-C, 2-A, 3-B
C. 1-A, 2-C, 3-B
D. 1-C, 2-B, 3-C
37. The final digestion of paddy and salmon fish is...
- A. glucose and amino acid
B. fructose and albumin

- C. maltose and pepton
- D. sucrose and protein

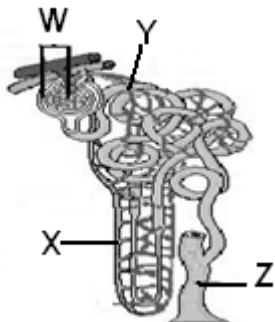
38. Consider the following table!

	Characteristics of blood vessel
1	Has elastic thick wall and strong
2	The valves are many, large, and along the vessel
3	Bring the blood from the heart
4	The beat is detected
5	If hurts the blood will spread out

The characteristics of artery vessel are shown by number...

- A. 1-2-3
- B. 1-3-4
- C. 2-3-4
- D. 3-4-5

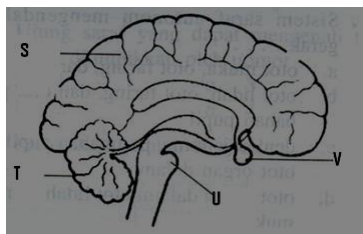
39. Look at the picture of nephron below!



The reabsorption process takes place in the part pointed by...

- A. W
- B. X
- C. Y
- D. Z

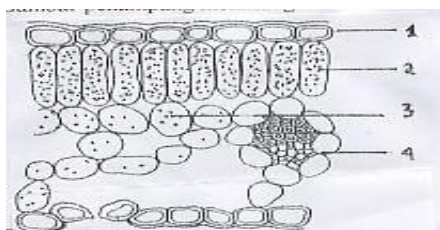
40. Observe the picture of human brain below!



The centre of thinking shown by number

- A. S
- B. T
- C. U
- D. V

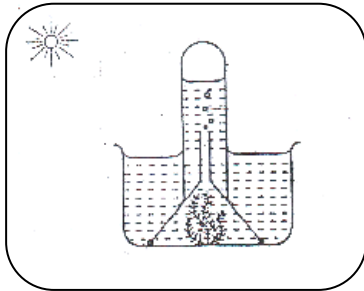
41. Look at the figure.



The parts of leaf which has function for holding photosynthesis process shown by number

- A. 1 and 3
- B. 1 and 4
- C. 2 and 3
- D. 2 and 4

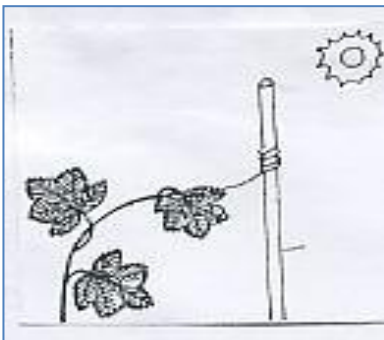
42. Attention to the diagram of photosynthesis experiment below!



The factors which increase the volume of oxygen gas that accumulates on the top of the tube are

- A. water and air
- B. air and carbon dioxide
- C. air and chlorophyll of the plant
- D. chlorophyll of the plant and sunray

43. Look at the figure below!



That is the growth of betel plant. The response of the spiral is caused

- A. soil
- B. water
- C. stake
- D. sunray

44. A cuttlefish will secrete ink to protect itself from the predator. The similar adaptation with the illustration is

- A. a chameleon will change the body color to protect itself from enemy
- B. a termite can produce cellulase enzyme to break down cellulose
- C. a camel has long eyelash to protect its eyes from dust
- D. an eagle has hefty beak to hold its prey

45. Round-yellow seed is crossed with a wrinkled-green seed. Round and yellow are dominant to the wrinkled and green. It produces round-yellow seed for the first generation. If the same first generations are crossed, it will produce some offspring with four different kinds of phenotype. The ratio of offspring phenotype is 9:3:3:1, so the possibility phenotype of offspring which has quantity $\frac{3}{16}$ is

- A. round-green seed
- B. round-yellow seed
- C. wrinkled-white seed
- D. wrinkled-green seed

46. The following is crossing of soybean plant.



- If one of the soybean plant has red flower heterozygote and the other has white flower, while M is dominant gene and m is recessive gene, so the probability of next generation will be
- A. 100% pink
B. 25% pink, 75% red
C. 50% red, 50% white
D. 75% red, 25% white
47. In this modern-day, reproduction technology is increasingly developed. One of the technologies used to produce clones of a plant. We can produce many plants in a brief time and the offspring will be same with the parental. For doing the technique, we need a nutrient medium to plant the explants under sterile conditions, and then we keep waiting the callus afterwards the plantlet to be ready planting on the real place. The type of this technology applied is called
- A. cloning
B. tissue culture
C. in vitro technique
D. artificial insemination
48. There are some biotechnology products in the world, one of them is insulin. Insulin is a biotechnology product which made using *Escherechia coli* bacteria. Usually this product is produced in great scales because it has many advantages. The correct advantage of insulin is
- A. can be used for the single cell calories
B. can be substituted for protein-rich foods
C. can cure the sufferer of diabetes insipidus
D. can help the sufferer of diabetes mellitus
49. Sweet salad fruit is one of a meal which is commonly consumed by people. It's very delicious and fresh if consumed in a hot day. The possibly natural food additive that is used to preserve the salad is
- A. benzoat
B. anisol
C. sugar
D. salt
50. Many people die because of consuming cigarette in their life. They've known that smoking is not good for their health but they still use it because they thought that it can make them relax and enjoy. Not only adults consume the cigarette but also teenagers. Therefore, it must informed that there are several effect of smoking cigarette. First, we can get lung and cancer diseases and second, we can be addicted. One of harmful substances in cigarette which cause addiction effect is
- A. carbon monoxide
B. nicotine
C. tannin
D. tar