

國立南科國際實驗高級中學 105 學年度第一次教師甄選

科別：雙語部(國小階段) 一般教師

Write your answer on the separate answer sheets provided, and label the question number clearly.

Multiple Choice (2pts/ each, 70 pts in total)

Identify the choice that best completes the statement or answers the question.

- ___ 1. Which biome is characterized by cool winters, hot summers, thick fertile soil, and many animals with teeth designed for grinding?
- a. deciduous forest
 - b. taiga
 - c. grassland
 - d. tropical rain forest
- ___ 2. The job of decomposers is to break down dead plants and animals into useful substances. This job is their ___.
- a. adaptation
 - b. skill
 - c. niche
 - d. habitat
- ___ 3. A ___ is an animal that gets nutrients from dead animals that it did not hunt or kill.
- a. predator
 - b. scavenger
 - c. producer
 - d. carnivore
- ___ 4. Which statement is not true about environmental change?
- a. It affects the organisms that live in the ecosystem where it occurs.
 - b. It always happens quickly.
 - c. It can be caused by natural disasters.
 - d. It can cause destruction of food.
- ___ 5. All are functions of a wetland except ___.
- a. erosion control
 - b. flood protection
 - c. water filters
 - d. air pollution control
- ___ 6. Which can change a rock into a metamorphic rock?
- a. compaction and cementation
 - b. heat and pressure
 - c. weathering and erosion
 - d. melting and cooling

___ 7. Glass has a hardness of 5.5. According to the table, which could glass scratch?

Hardness	Example
1	Talc
2	Gypsum
3	Calcite
4	Fluorite
5	Apatite
6	Feldspar
7	Quartz
8	Topaz
9	Corundum
10	Diamond

- a. topaz
b. apatite
c. feldspar
d. diamond

___ 8. When one space object crosses in front of another, the first object can sometimes block the view of the second. This process is called a(n) ____.

- a. umbra
b. penumbra
c. gibbous
d. eclipse

___ 9. The gravitational pull between Earth and ____ causes tides.

- a. the Sun
b. Mercury
c. the Moon
d. Mars

___ 10. Which is the largest of all the planets?

- a. Neptune
b. Saturn
c. Uranus
d. Jupiter

___ 11. A planet is a large object that orbits a(n) _____.

- a. asteroid
b. meteor
c. star
d. moon

___ 12. How do the reactants and products compare in a chemical reaction?

- a. The reactants have more mass.
b. The products have more mass.
c. The products are much simpler substances.
d. The reactants and products have different physical and chemical properties.

___ 13. Which process involves splitting a nucleus into two or more pieces?

- a. radioactive tracing
b. radiation therapy
c. nuclear fission
d. nuclear fusion

___ 14. Which measures the average kinetic energy of the molecules in a material?

- a. temperature
- b. velocity
- c. heat
- d. calories

___ 15. A rock falls from a cliff. The table shows the speed and acceleration of the rock at different times.

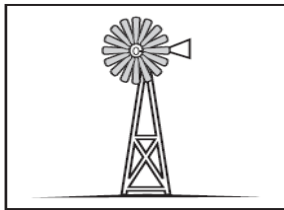
Acceleration of a Falling Rock

Time (sec)	Velocity of Rock	Acceleration of Rock
0	0 m/s	9.8 m/s ²
0.1	0.98 m/s	9.8 m/s ²
0.2	2.0 m/s	9.8 m/s ²
0.3	2.9 m/s	9.8 m/s ²
0.4	3.9 m/s	9.8 m/s ²
0.5	4.9 m/s	9.8 m/s ²
0.6	5.9 m/s	9.8 m/s ²

The weight of the rock is 250 N. What is the mass of the rock?

- a. 2.5 kg
- b. 240 kg
- c. 25 kg
- d. 2,500 kg

___ 16. A windmill harnesses the power of ___.



- a. electrical energy that can be converted into heat energy
- b. chemical energy that can be converted into light energy
- c. mechanical energy that can be converted into electrical energy.
- d. chemical energy that can be converted into mechanical energy.

___ 17. An object at rest tends to stay at rest, and an object in motion tends to stay in motion. Which one of Newton's laws of motion does this statement represent?

- a. fourth
- b. third
- c. second
- d. first

___ 18. The conversion of one form of energy into another is called ___.

- a. thermal transformation
- b. kinetic energy
- c. energy transformation
- d. work transformation

___ 19. A change in the velocity of an object over time is ___.

- a. acceleration
- b. speed
- c. force
- d. distance

_____ 20. When one object exerts a force on another object, the pair of forces that act are called _____.

- a. action-reaction forces
- b. balanced-unbalanced forces
- c. friction-drag forces
- d. positive-negative forces

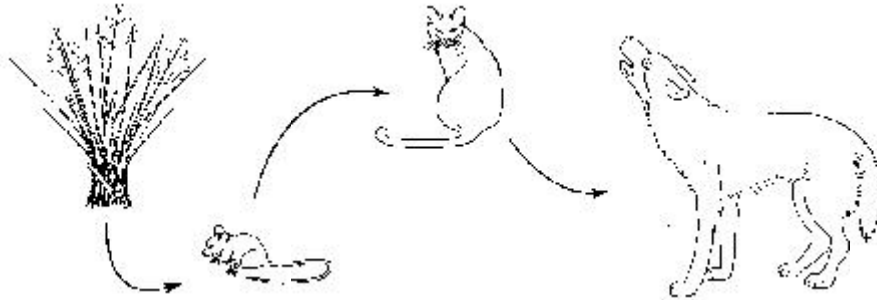
_____ 21) The theme that reflects the idea that there has been a gradual change in the characteristics of species over time is _____.

- A) energy
- B) unity within diversity
- C) reproduction
- D) evolution

_____ 22) Some birds are known as honey guides because they may be followed by humans to wild beehives. When the humans take honey from the hives, the birds are able to feast on the honey and bees, too. This type of relationship can best be described as _____.

- A) parasitism
- B) commensalism
- C) mutualism
- D) symbiosis

_____ 23) Referring to the figure below, as matter and energy move from grasses to coyotes, the amount of available energy _____.



- A) increases
- B) decreases
- C) decreases then increases
- D) increases or decreases but population size remains the same

_____ 24) The nucleus of an atom contains _____.

- A) protons and neutrons
- B) neutrons and electrons
- C) protons and electrons
- D) protons, neutrons, and electrons

_____ 25) What are the basic building blocks of proteins?

- A) nucleic acids
- B) peptide bonds
- C) amino acids
- D) glycerol and fatty acids

_____ 26) Which of the following organisms do not have cell walls?

- A) plants
- B) fungi
- C) bacteria
- D) animals

_____ 27) Each of the following is a main idea of the cell theory except _____.

- A) all organisms are composed of cells
- B) the cell is the basic unit of organization of organisms
- C) all cells are similar in structure and function
- D) all cells come from preexisting cells

- _____ 28) Which of the following equations best represents photosynthesis?
A) $C + O_2 + H_2O \rightarrow CO_2 + HOH$ C) $6C + 6H_2O \rightarrow C_6H_{12}O_6$
B) $6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$ D) $C_6H_{12}O_6 \rightarrow 6CO_2 + 6H_2O$
- _____ 29) The statement: "In meiosis, the way in which a chromosome pair separates does not affect the way other pairs separate," is another way of expressing Mendel's law of _____.
A) dominance C) independent assortment
B) first filial generations D) Punnett squares
- _____ 30) Scientists agree that two developments must have occurred for life to come into being: the formation of simple organic molecules important to life and _____.
A) development of prokaryotic cells in early oceans
B) organization of molecules into complex organic molecules
C) appearance of amino acids, monosaccharides, and lipids
D) an atmosphere rich in water vapor, oxygen, and ATP
- _____ 31) Natural selection can best be defined as the _____.
A) survival of the biggest and strongest organisms in a population
B) elimination of the smallest organisms by the biggest organisms
C) survival and reproduction of the organisms that occupy the largest area
D) survival and reproduction of the organisms that are genetically best adapted to the environment
- _____ 32) What is the primary function of plant leaves?
A) to support the plant C) to take in water
B) to produce flowers D) to trap sunlight for photosynthesis
- _____ 33) Animal communication can occur through _____.
A) sounds C) smells
B) touches D) all of these
- _____ 34) The hormone that causes a decrease in blood glucose is _____.
A) glucagon C) gastrin
B) insulin D) nuclease
- _____ 35) Which of the following is part of the digestive tract?
A) liver C) gallbladder
B) small intestine D) pancreas

Essay Question (15 pts/ each, 30 pts in total)

1. In general terms, we may divide assessment into two types of formative assessment (形成性評量) and summative assessment (總結性評量). Which type do you prefer for your measuring of students' course performance? Explain your reasons.
2. Please make a comparison between the way you were taught and the way you are going to teach in science class.

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MULTIPLE CHOICE Answers

1. C	2. C	3. B	4. B	5. D
6. B	7. B	8. D	9. C	10. D
11. C	12. D	13. C	14. A	15. C
16. C	17. D	18. C	19. A	20. A
21. D	22. C	23. B	24. A	25. C
26. D	27. C	28. B	29. C	30. B
31. D	32. D	33. D	34. B	35. B