

# Theoretical Examination I

(60 minutes)

## Instructions

- [1] Types of problems in this examination consist of:
  - a) Multiple choices with only one correct answer.
  - b) Multiple choices with more than one correct answer.
  - c) Matching the left and the right list.
  - d) Questions with short answer.
  - e) Essay questions with explanation.
- [2] You must fill the answer only at the answer sheet.
- [3] Write your name and country at each page of answer sheet.
- [4] For multiple choices, you can just mark the correct answers by circling (O)
- [5] Jury will consider only the answer sheet.

## Multiple choices with one correct answer

- 1) Mark one correct statement from the list below **(score 1)**
  - a) The sharks are mammalian because they give birth.
  - b) The killer whales like other mammalian are herbivorous.
  - c) The lizards like other reptiles are poikilothermic.
  - d) The cockroaches are arachnid because they have 4 pairs of legs.
  - e) The donkeys are carnivorous mammalian.
  
- 2) Icebergs float on the seawater. Mark one of the following statements that correctly explain this phenomenon **(Score 1)**.
  - a) Mass of iceberg is smaller than the mass of seawater.
  - b) Mass of iceberg is larger than the mass of seawater.
  - c) Density of iceberg is smaller than density of seawater.
  - d) Density of iceberg is larger than density of seawater.
  - e) Iceberg size is very big so that it could not sink in the water.

3) The pictures below show different stages in frog's growth.

(1)



(2)



(3)



(4)



Which one is the correct order of frog's growth stages? **(Score 1)**

a) 1, 2, 4, 3.

**b) 2, 1, 3, 4.**

c) 1, 2, 3, 4.

**d) 2, 1, 4, 3.**

e) 1, 3, 4, 2.

4) The following lists are the structure of the Earth. Which one has the highest temperature? **(Score 1)**

a) **Inner core.**

b) Crust.

c) Atmosphere.

d) Outer core.

e) Mantle.

5) When we see green color of the grass in daylight, it means that color of sunlight reflected by the grass is ..... **(Score 1)**

- a) all colors except green.
- b) **green.**
- c) the same as the sunlight color.
- d) independent on the color of the source of light.
- e) all colors including green.

6) Which one of the following processes does not have friction force? **(Score 1)**

- a) A skier sliding down a hill.
- b) A space shuttle approaching the Earth.
- c) A person swimming.
- d) A man climbing a mountain.
- e) **A space shuttle approaching the Moon.**

7) Small fishes enter into the mouth of a big fish to eat the parasites inside its mouth **(Score 1.5)**

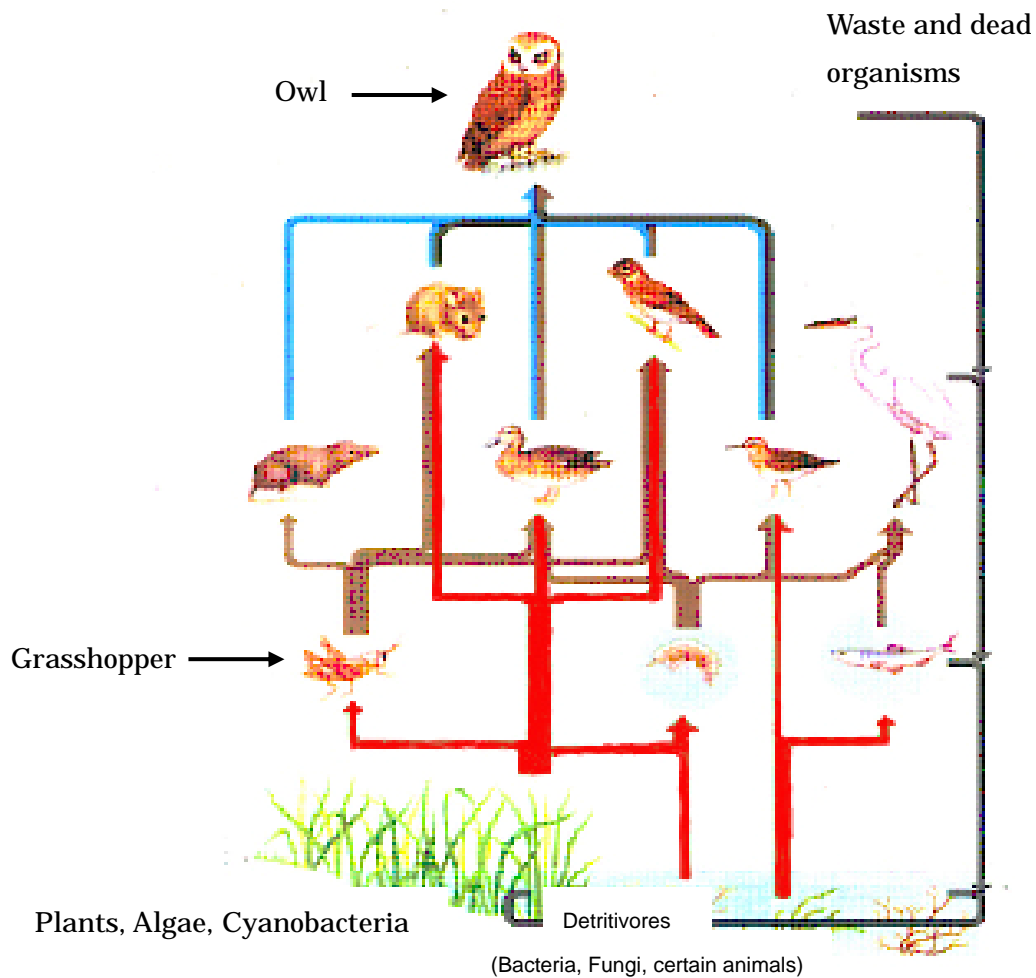


Small fish

The relationship above is similar to one of the relationships below.

- a) Mouse eats cheese on the table.
- b) **Bird eats insects on cow's skin.**
- c) Orchid grows on the palm tree.
- d) Mosquito sucks human blood.
- e) Orchid fertilizes hibiscus.

The following picture is used for problems 8 and 9.



8) An owl in the figure is classified as.... **(score 1)**

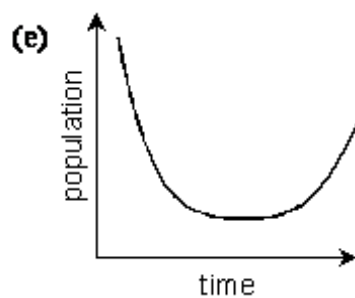
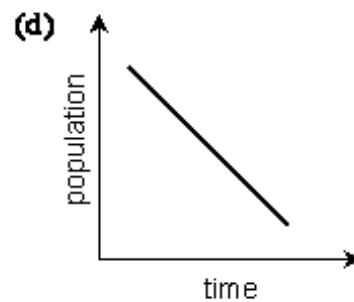
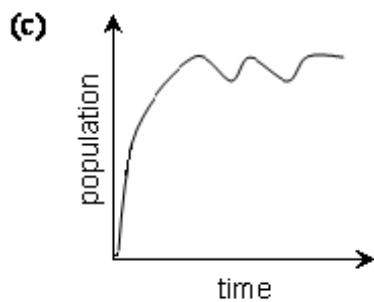
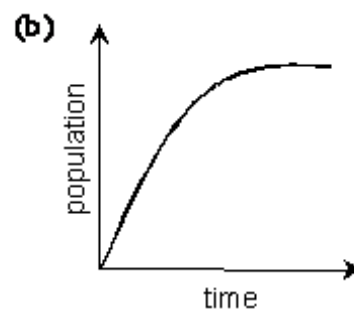
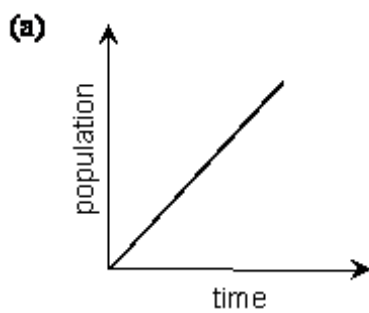
- a) primary consumer only.
- b) secondary consumer only.
- c) tertiary consumer only.
- d) can be secondary and tertiary consumer.**
- e) can be primary, secondary and tertiary consume.

9) A grasshopper in the figure is classified as.... **(score 1.5)**

- a) primary consumer only.**
- b) secondary consumer only.
- c) tertiary consumer only.
- d) can be secondary and tertiary consumer.
- e) can be primary, secondary and tertiary consumer.

10) The animal below is an endangered (rare) animal.

Which graph correctly describes the change of the populations of the animal in relation to time? **(Score 2)**



**Answer : D**

Questions number 11 to 13 have more than one correct answers (each question score 2) **(Note: 0 or full mark)**

11) The following animals cannot move or can move very slowly if the temperature is much lower than room temperature.

**(Note: b and c, or b,c and d are correct)**

- a) Cat and dog.
- b) Turtle and snake.**
- c) Lizard and frog.**
- d) Snake and fly.**
- e) Dog and frog.

12) From the following lists, which underlined materials or objects have lost their thermal energies?

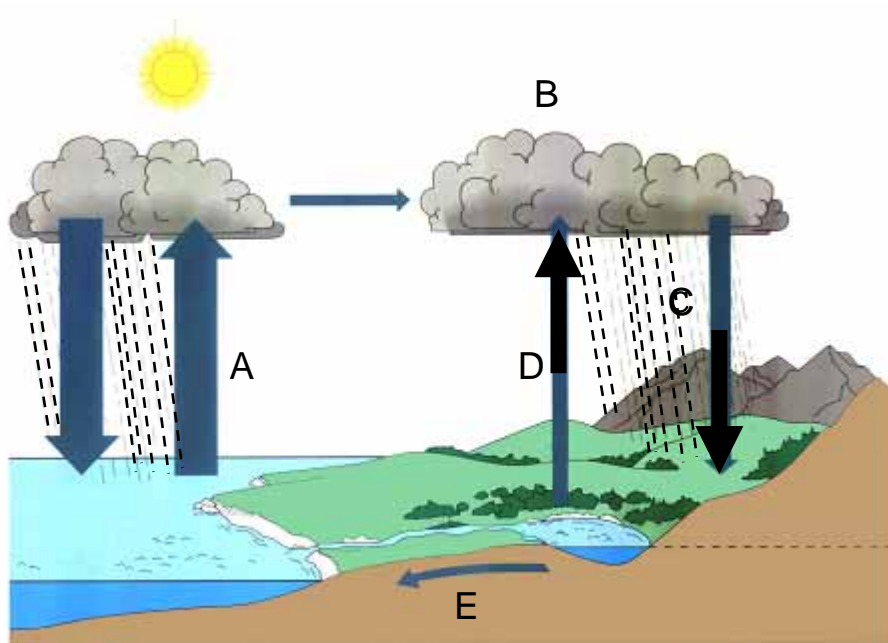
- a) Switched on electrical iron
- b) Drinking glass filled with hot water.
- c) Hand touching ice.**
- d) Drinking glass filled with cold water.**
- e) Melting ice.

13) Tropical region is well known for its high biodiversity. Which statements below are **incorrect**

- a) There are many plant and animal species, and the abundance each species is high.**
- b) The abundance of each animal and plant species is high, but the variation of the species is low.**
- c) There are many variations for each plant and animal species.
- d) The region has many types of ecosystems.
- e) There are many plant and animal species, but the abundance of each species is low.

### Matching Questions

14) Match the letter in column (I) with the number in column II (**score 3**).



(Note: Full mark otherwise ½ for one correct answered)

Letter (I)	Processes (II)
A.....	1. Condensation
B.....	2. Evaporation
C .....	3. Run off
D.....	4. Precipitation
E.....	5. Evapotranspiration
	6. Transpiration

Answer : A. 2; B.1; C.4; D.5; E.3

15) Match the phenomena in the left column to the processes in the right column  
(Score 2)

	Left	Right
1	Blue sky ( c )	a. interference
2	Rainbow (d) and/or (b)	b. reflection
3	Color in a soap bubble (a)	c. scattering
4	Light that propagates in optical fiber (b) and/or (d)	d. refraction

16) Fill the space in left column with the correct answer listed in the right column  
(Score 3)

	Left
a)	An example of some clinical applications of gravitation ( 3 )
b)	An example of some clinical applications of circular motion ( 5 )
c)	The main cause of blood circulation in our body ( 4 )

	Right
1)	diffusion
2)	transport across living membranes
3)	for administration of intravenous fluids, transfusions
4)	pressure
5)	centrifuge

### Questions with short answer

17) Explain how an hourglass can show time. (Score 1)

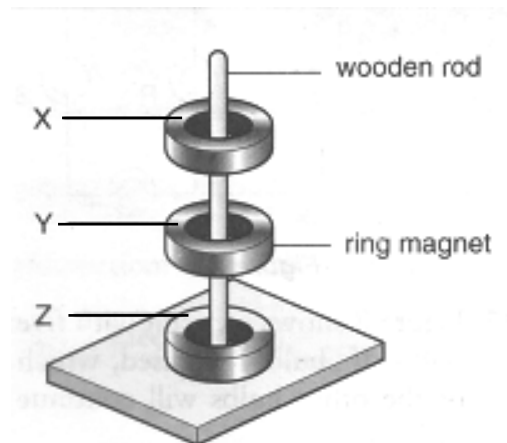
Answer: Duration of falling sands has constant speed that is proportional to time or similar meaning.





18) Figure below shows three magnet rings placed in a wooden rod. Determine the magnetic poles at poles X, Y and Z. **(Score 2)**

(Note: 0 or 2 score)



X	Y	Z
N	S	N

Or

X	Y	Z
S	N	S

19) When observed by naked eyes, the Moon surface looks smooth, but when observed using a telescope, the Moon surface looks very rough. Explain why those two observations look different. **(Score 2)**

(Note: Telescope has a higher magnification/resolution or large image → full mark)

Answer: telescope has higher magnification than eye or telescope can enlarge an image better than eye

20) Describe the process how the handle of a pan becomes warm when it is burned on a stove, even though only the base of the pan touches the burner. **(Score 2)**

Answer: because the metal (pan) conducts the heat from the burner to the handle or heat transfer or heat travel from stove to pan.