

College of Engineering English 123
BA, LNK, SJH, CEA Revised Jan. 2007

Student Name _____

Section Number _____

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إن أي شكل من أشكال التخطيط أفضل
من عدم التخطيط على الإطلاق.

Unit 2 - Reading 3

The Effects of Temperature

- (1) ¹Temperature affects matter in many ways. ²As a substance gets hotter, its molecules move faster and its properties are altered. ³The physical state of a substance is affected by its temperature. ⁴For example, at a temperature of 0° C or below, water is solid (ice); above 0° C it becomes a liquid; and at 100° C it turns to a gas (steam). ⁵Almost all other substances are similarly affected by temperature.
- (2) ⁶Temperature alters the color of matter. ⁷Iron, for example, turns red, then orange, and then white at increasingly high temperatures. (⁸You have seen the iron burner on a stove turn red.) ⁹An incandescent light bulb provides another example of a color change, for its tungsten wire gives off a white light when it is hot.
- (3) ¹⁰The size of an object is affected by temperature. ¹¹Most materials expand when they are heated and contract when they are cooled. ¹²A glass may break when boiling water is poured into it because part of the glass heats up and expands more rapidly than the rest.
- (4) ¹³Temperature also affects the pressure of a gas. ¹⁴As a gas is heated, its molecules begin to move rapidly, colliding with the walls of the container, ¹⁵If a closed glass tube is heated, the increased pressure inside will cause it to break.
- (5) ¹⁶The ability of metal to resist electricity varies with its temperature. ¹⁷The increased movement of its molecules makes the molecules more resistant to electrical charge. ¹⁸Heated wires cause excess electrical movement, which can damage machines. ¹⁹Computers and other sensitive machines function best in air-conditioned rooms.
- (6) ²⁰Living things are very sensitive to comparatively small temperature changes. ²¹This is exemplified when we touch something very hot or cold and feel pain. ²²The pain serves to protect us, because living things cannot stand extremes of temperature. ²³Using the same principle, we pasteurize milk and cook meat to kill harmful bacteria and other organisms that cannot tolerate the heat.

أرني شخصاً بلا أهداف كي أريك أحد أنواع الموتى الذين تتحرك أجسادهم.

1. The main idea of Paragraph 1 is that temperature influences the speed of molecules and thus affects _____.

- a) matter in many ways
- b) the physical state of H₂O
- c) the physical state of matter**
- d) none of the above

2. The main idea of Paragraph 2 is that temperature affects the _____.

- a) color of matter.**
- b) color of tungsten
- c) iron burners on stoves
- d) none of the above

3. The main idea of Paragraph 3 is that temperature affects _____.

- a) boiling water
- b) the size of a glass
- c) the size of matter**
- d) none of the above

4. The main idea of Paragraph 4 is that temperature affects the _____.

- a) pressure of gases**
- b) walls of containers
- c) pressure of closed glass tubes
- d) none of the above

5. The main idea of Paragraph 5 is that temperature affects _____.

- a) heated wires
- b) computers and sensitive machines
- c) the ability of metals to resist electricity**
- d) none of the above

6. The main idea of Paragraph 6 is that temperature affects _____.

- a) milk
- b) living matter**
- c) meat and bacteria
- d) none of the above

7. The main idea of Reading 3 is that temperature affects the speed of molecules and thus affects _____.

- a) matter in many ways**
- b) the color of matter
- c) the size of matter
- d) gas pressure

كما تتجذب المياه لمجراها الطبيعي،
ينجذب النجاح للمستعدين له.

Unit 2 - Reading 4

How Heat Is Transferred

- (1) ¹Heat is energy that warms our houses and cooks our food. ²It is the transfer of energy from a warmer body to a cooler body. ³How does this heat transfer take place?
- (2) ⁴Conduction is one method of heat transfer that takes place when there is a difference in temperature between two objects. ⁵For example, if a silver spoon is *inserted* into a pot of hot tea, the handle of the spoon will immediately become hot. ⁶This is because the molecules at the *submerged* end speed up, which causes the slow-moving molecules at the cold end to move faster. ⁷Energy is thus transferred or *conducted*.
- (3) ⁸Heat flows from a warmer object to a cooler one until the temperatures are equal. ⁹Substances like metals are good conductors because heat transfers readily from one molecule to another. ¹⁰All substances conduct some heat, but substances like glass, plastic, and wood act as *insulators* because their molecules make very little contact with which to pass on the energy. ¹¹The warmest materials are those that trap little pockets of air, such as wool, fiberglass, asbestos, and down. ¹²A vacuum would make an ideal insulator because it has no molecules to transfer the heat.
- (4) ¹³Although molecules in a *fluid* do not conduct heat very well, they do transfer heat by convection. ¹⁴Convection is the upward flow of masses of liquid or gas molecules as they are heated from below. ¹⁵The hot air rising above a radiator is an example of convection. ¹⁶As the heat causes the air to expand, it becomes less dense and rises. ¹⁷Convection is used in hot air furnaces, in which air is heated and then forced into a room to replace the cold air, which is then drawn into the furnace to be heated. ¹⁸Winds and ocean currents are examples of convection found in nature.
- (5) ¹⁹*Radiation* is the third method of heat transfer. ²⁰All life on earth is dependent on the radiation of the sun's heat and light energy. ²¹One fascinating aspect of the sun's radiation is that the electromagnetic rays that carry warmth and light to the earth are themselves *invisible* and without heat. ²²We know this because the space between the earth and the sun is dark and cold, but when the rays reach the earth, they light the atmosphere and warm our world. ²³In contrast to conducted and convected heat, radiated heat passes through a vacuum.
- (6) ²⁴All objects *emit*, or give off, radiation. ²⁵For example, when two objects are near each other, the one that is warmer will give off more energy than the cooler one, thus transferring energy from one to the other. ²⁶Usually, objects do not absorb all the energy but reflect some of it. ²⁷Light colors reflect more energy than dark colors. ²⁸Highly polished surfaces reflect more energy than dull ones.
- (7) ²⁹The three modes of heat transfer - conduction, convection, and radiation - are subject to two conditions: ³⁰First, heat is transferred only when there is a *disparity* in temperature, and second, the flow is always from hot to cold.

يقضي معظم الناس في الإعداد لحفلات ميلادهم
أكثر مما يقضونه في التخطيط لحياتهم.

1. According to the reading, which of the following statements is not true?

- a) The three methods of heat transfer are conduction, convection, and radiation.
- b) Heat can pass through a vacuum.
- c) Wood is a good conductor of heat.**
- d) none of the above

2. It can be concluded from Paragraph 6 in the reading that on a sunny day _____.

- a) a black car will absorb less energy from the sun than a white car
- b) a white car will absorb more energy from the sun than a black car
- c) the color of a car does not affect how much energy it absorbs from the sun
- d) none of the above**

3. It can be concluded from the reading that when you place a glass of hot tea against your face, heat is transferred _____.

- a) from your face to the glass by conduction
- b) from the glass to your face by conduction**
- c) from the glass to your face by convection
- d) none of the above

4. According to Paragraph 5 in the reading, the space between the earth and the sun _____.

- a) is a vacuum
- b) is cold and dark
- c) allows electromagnetic rays to pass through
- d) all of the above**

5. According to Paragraph 4 in the reading, the fact that _____ helps to explain the upward flow of heat known as convection.

- a) heat causes expansion
- b) expansion reduces density
- c) less dense liquids and gases will rise
- d) all of the above**

تسلط البعض لا يمكن حدوثه
إلا عن طريق جبن آخرين.

UNIT 2 VOCABULARY

C. Write your answers (a, b, c, or d) on the blanks provided.

1. The pigeons were eating something in the street, but they b when a car passed by.

- a) flowed **b) dispersed** c) affected d) replaced

2. In order to start your car, you must first a the key in the ignition.

- a) insert** b) absorb c) reflect d) emit

3. In the summer, desert plants and animals are a to high temperatures and a lack of water.

- a) subject** b) caused c) serve d) contracted

4. With the addition or d of heat, almost all substances can be changed from one physical state to another.

- a) constant b) evaporation c) moisture **d) subtraction**

5. Liquids that evaporate readily, such as perfume, are called c liquids.

- a) insulated b) invisible **c) volatile** d) sufficient

6. The quiz was too difficult, so the teachers decided to a it.

- a) modify** b) modification c) modifying d) modified

7. Heat does not transfer between two objects that are in a state of b.

- a) conversion **b) equilibrium** c) evaporation d) radiation

8. The engine of the car became very hot and c a lot of heat.

- a) inserted b) solidified **c) radiated** d) insulated

9. People should not sit too close to televisions because televisions a dangerous rays.

- a) emit** b) contract c) expand d) replace

10. Einstein understood the d that control energy and matter.

- a) fluids b) containers c) rates **d) principles**

اغفر لنفسك أخطائك السابقة،
لا تجعلها تفتك.

UNIT 2 VOCABULARY (Chapter 6 - Exemplifying)

1) insert	enter	يُدخل، يحشر
2) submerged	sunk	مغمور
3) conduct	carry	يوصل
4) insulated	covered	معزول
5) fluids	liquid and gases	موانع
6) invisible	unable to be seen	غير مرئي
7) emit	give off	يشع
8) radiate	give off	يشع
9) disparity	difference	اختلاف، فرق
10) subtraction	removal	حذف، طرح
11) conversion	transformation	تحول
12) gradually	slowly	تدرجياً، ببطء
13) sufficient	enough	كافي
14) solidify	harden	يُصلب
15) evaporate	vaporize	يتبخّر
16) dispersed	scattered	متناثر
17) volatile	evaporates easily	سريع التطاير
18) moisture	wetness	رطوبة
19) rate	speed	سرعة، معدل
20) equilibrium	balance	اتزان
21) constant	unchanging	ثابت

Suffixes

1) -en	verb word ending
2) -ify	verb word ending
3) -cation	noun word ending

الأمر ليس سيئاً كما تعتقد، وفي الصباح سيبدو الأمر أفضل.

1) temperature	حرارة	27) body	جسم
2) affect	يؤثر	28) thus	وهكذا، وبالتالي
3) matter	مدة	29) flow	ينساب
4) properties	خواص	30) readily	بسهولة، بسرعة
5) alter	يغير	31) act as	بمثابة
6) turn	يتحول	32) contract	ينكمش
7) expand	يتمدد	33) pass on	ينقل، يمر
8) contract	يتقلص	34) vacuum	فراغ
9) pour	يصب	35) ideal	مثالي
10) pressure	ضغط	36) convection	انتقال حراري
11) collide	يصطدم	37) mass	كتلة
12) container	وعاء	38) rise	يرتفع
13) cause	يسبب	39) dense	كثيف
14) resist	يقاوم	40) replace	يستبدل
15) vary	يختلف	41) draw	يسحب
16) excess	زيادة	42) currents	تيارات
17) sensitive	حساس	43) dependent	تابع، معتمدة على
18) function	وظيفة	44) aspect	وجه
19) comparatively	نسبياً	45) in contrast	في المقابل
20) exemplify	يعطي مثال	46) absorb	يتمص
21) serve	يخدم	47) reflect	يعكس
22) protect	يحمي، يصون	48) surface	سطح
23) extreme	درجة قصوى	49) mode	طريقة، أسلوب، حالة
24) principle	مبدأ	50) subject to	عرضة لـ
25) harmful	مؤذي، ضار	51) condition	حالة، شرط
26) tolerate	يتحمل		

الجزع عن المصيبة، مصيبة أخرى.