Exam IV Physical Science (PSC 102) Form A   12/3/18 M 9   am MWF   Dr. Hahn   Exam # _____ *totally*

Name ___*Key*___ (print) Name *unrelated - wrong* (sign) *answer*

Please show work for partial credit on the Long Answers and in some of the Short Answer Questions. Multiple choice questi
have no partial credit.   Please write anything you want graded legibly.   If I cannot read your work, I obviously cannot
grade it. (2 pts print AND sign exam)

Part I   MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.   (No
Partial Credit for MC) (3 pts per question, 24 pts pts total)

Green

BA = bad attempt

1) Latitude is the angular measurement in degrees
   A) north or south of the equator
   C) east or west of the international date line
   B) none of the above
   D) east or west of the prime meridian

1) __A__

NA = not attempted

2) The motion of the Foucault pendulum proves that Earth is
   A) processing
   C) an oblate spheroid
   B) rotating on its axis
   D) revolving around the sun

2) __B__

3) The longest day (daylight) of the year for the Northern Hemisphere occurs at the time of the
   A) autumnal equinox
   C) winter solstice
   B) summer solstice
   D) vernal equinox

3) __B__

4) The process by which liquid fats, such as vegetable oils (with double bonds - alkenes),
   can be converted to solid fats (without double bonds by adding hydrogens) is called
   A) hydrogenation   B) carbonation   C) saturation   D) oxygenation

4) __A__

5) The largest planet in the solar system is
   A) Uranus   B) Mercury   C) Earth   D) Jupiter

5) __D__

6) Polymers are formed from fundamental repeating units called
   A) groups   B) amino acids   C) complexes   D) monomers

6) __D__

7) An imaginary line from one geographic pole to the other along the surface of Earth
   perpendicular to the equator, and that passes through Greenwich, England, is called
   A) latitude
   C) International Date Line
   B) the prime meridian
   D) longitude

7) __B__

8) The planet with the most well known (& most visible) rings is
   A) Saturn   B) Pluto   C) Earth   D) Mars

8) __A__

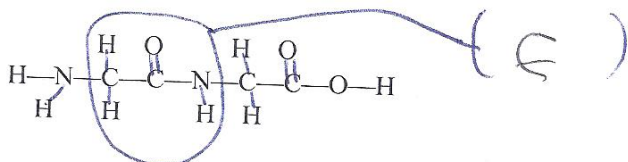**Part II:** **Short Answers** (46 pts) Show work on all questions for **partial and full credit** even on questions which do not specify.

1. Given the following biochemical molecule, fill in the blank with the label of the functional group (4 pts)
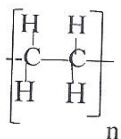
(A) Alkyl halide R—X   (B) Alcohol R—O—H   (C) Amine R—NH$_2$

(D) carboxylic acid R—$\overset{O}{\overset{\|}{C}}$—O—H   (E) Amide R—$\overset{O}{\overset{\|}{C}}$—NHR'   (F) ester R—$\overset{O}{\overset{\|}{C}}$—O—R'

H—N—$\overset{H}{\underset{H}{C}}$—$\overset{O}{\overset{\|}{C}}$—N—$\overset{H}{\underset{H}{C}}$—$\overset{O}{\overset{\|}{C}}$—O—H   (E)

2. Given the following:

a.   What does the n mean ? [(very large repeating unit) or (nitrogen)] (6 pts, 3 pts each)

$$\left[\begin{matrix} H & H \\ | & | \\ -C & -C- \\ | & | \\ H & H \end{matrix} \right]_n$$

b. What does the figure inside the brackets mean ? (I am not asking for the name of the specific structure name but just a general explanation)

[(functional group) or (monomer repeating unit)]

3. Fill in the parenthesis with the letter of the word   (A) north pole   (B) south pole (C) equator   (D) meridian   (E) parallel   (F) latitude   (G) longitude   (6 pts, 3 pts each)

(E) or (F)

(B) pole

4. From the list of planets in our solar system circle all which are Jovian planets (8 pts)

Jupiter   Earth   Mercury   Neptune   Venus   Mars   Uranus   Saturn

5. Match the following by filling in the blank with the letter of your choices. (8 pts, 2 pts each)

albedo __A__   Parallex __D__   Kepler's 2nd Law __B__   AU __C__

A. The fraction of incident sunlight reflected by an object.   Measure of how reflective the surface of a planet or other object is.

B. A planet moves faster when it is closer to the sun in its elliptical path. (law of equal areas)

C. Astronomical Unit is the average distance between Earth and the Sun (1.5×10^8 km).

D. Apparent motion between two fixed objects when the observer changes position.   (can be used to prove that the earth revolves around the sun) (example: finger over distant object, move head)

6. In the following paragraph, circle the one correct (parenthesis) within each [bracket]. (14 pts, 2 pts each)

The solar system is made up of the [(sun) or (earth)] (cirle one) at its center with planets circling the center.

In our solar system   [(the Sun) or (Jupiter)] is 99.87% of the mass of the solar system.

All planets in the solar system [(rotate on its axis) or (are in orbit around the sun) or (all planets do both)].

Jovian planets are [(closer to the Sun) or (further away from the Sun)] than the Earth.

[(Mercury) or (Jupiter)] is the closest planet to the Sun.

The planet [(Saturn) or (Mars)] has polar ice caps made up of frozen CO_2 and frozen water.

Jovian planets are in general [(much larger) or (much smaller)] than the Terrestrial planets.

Part III: Long Answers (30 pts) Show work on all questions for partial and full credit even on questions which do not specify.   Remember "attempt" points.

attempt -2½

BA - 5

1.   a)   Using the figure explain what causes our earth day.   Be sure to explain what relationship between the sun and earth results in daylight and which results in night ? (10 pts)
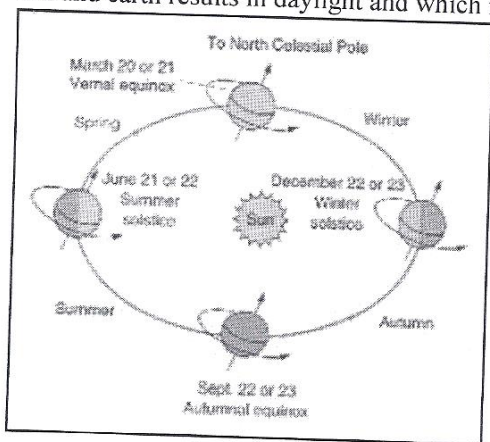
Earth day is due to rotation of the earth on its axis, when half of earth faces the sun it is daylight when it is facing away from the sun it is night

b) Do all the other planets (not earth) in the solar system have a 365.25 day year like the earth ? Explain mentioning something about Kepler's 3rd law ($T^2 = kR^3$, R = average distance of planet to sun, T = time for one revolution of a planet around the sun) (10 pts)
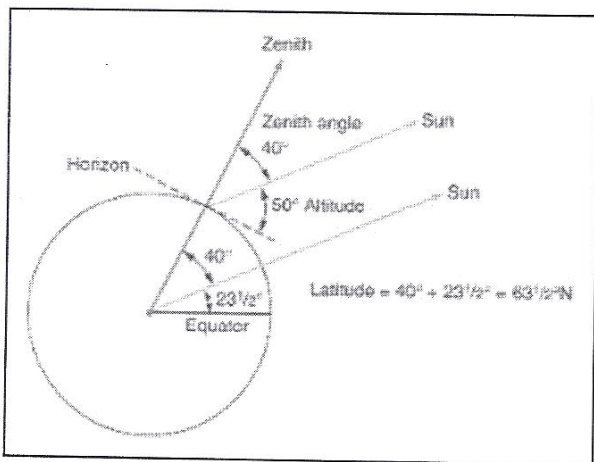
No, By Kepler's 3rd law planets closer to the sun have a T (time for revolution) governed by R (distance of planet to sun)

B A = -5   attempt -2½

2. You are lost on a deserted island with a GPS cell phone that has lost all of its battery but with a watch that has not yet lost its battery. You somehow happen to have this figure from your Physical Science exam. It is also June 21 when the sun is overhead at the 23 ½ altitude. (in this question try to answer using as much detail as possible. However if you write down something that is factually incorrect, you will lose points.)

B A - 5   attempt -2½

How could you use the figure to figure out your GPS latitude coordinates ? Explain in a few sentences. (10 pts)

① at noon day sun you would measure from the horizon to the sun getting altitude angle. (50°)

90° - altitude angle 50° = Zenith angle. = 40°

Latitude = 23.5° + Zenith angle = 63.5° N
angle of   40°
sun a
June 21

of course your altitude angle would be different

unrelated - totally wrong answer

Name_____*Key*_____ (print) Name _____(sign)

Please show work for partial credit on the Long Answers and in some of the Short Answer Questions.   Multiple choice questi
have no partial credit.   Please write anything you want graded legibly.   If I cannot read your work, I obviously cannot
grade it. (2 pts print AND sign exam)

BA = bad attempt

Part I   MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.   (No
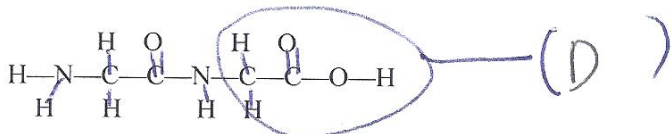Partial Credit for MC) (3 pts per question, 24 pts pts total)

NA = not attempted

1) The process by which liquid fats, such as vegetable oils (with double bonds - alkenes),
can be converted to solid fats (without double bonds by adding hydrogens) is called
   A) hydrogenation   B) oxygenation   C) carbonation   D) saturation

1) __A__

2) An imaginary line from one geographic pole to the other along the surface of Earth
perpendicular to the equator, and that passes through Greenwich, England, is called
   A) International Date Line   B) longitude
   C) the prime meridian   D) latitude

2) __C__

3) The longest day (daylight) of the year for the Northern Hemisphere occurs at the time of the
   A) summer solstice   B) winter solstice
   C) vernal equinox   D) autumnal equinox

3) __A__

4) The largest planet in the solar system is
   A) Earth   B) Uranus   C) Jupiter   D) Mercury

4) __C__

5) Latitude is the angular measurement in degrees
   A) none of the above   B) east or west of the prime meridian
   C) east or west of the international date line   D) north or south of the equator

5) __D__

6) The planet with the most well known (& most visible) rings is
   A) Pluto   B) Mars   C) Saturn   D) Earth

6) __C__

7) Polymers are formed from fundamental repeating units called
   A) monomers   B) complexes   C) amino acids   D) groups

7) __A__

8) The motion of the Foucault pendulum proves that Earth is
   A) revolving around the sun   B) rotating on its axis
   C) processing   D) an oblate spheroid

8) __B__

Part II: **Short Answers** (46 pts) Show work on all questions for **partial and full credit** even on questions which do not specify.

1. Given the following biochemical molecule, fill in the blank with the label of the functional group (4 pts)
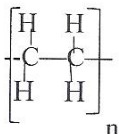
(A) Alkyl halide   R—X   (B) Alcohol R—O—H   (C) Amine R—NH$_2$

(D) carboxylic acid R—$\overset{\text{O}}{\overset{\|}{\text{C}}}$—O—H   (E) Amide R—$\overset{\text{O}}{\overset{\|}{\text{C}}}$—NHR'   (F) ester R—$\overset{\text{O}}{\overset{\|}{\text{C}}}$—O—R'

H—N—$\overset{\text{H}}{\overset{|}{\text{C}}}$—$\overset{\text{O}}{\overset{\|}{\text{C}}}$—N—$\overset{\text{H}}{\overset{|}{\text{C}}}$—$\overset{\text{O}}{\overset{\|}{\text{C}}}$—O—H   — (D)

2. Given the following:

a.   What does the n mean ? [(nitrogen) or (very large repeating unit)] (6 pts, 3 pts each)

$$\left[\begin{array}{cc} \overset{\text{H}}{\underset{\text{H}}{\text{C}}} & \overset{\text{H}}{\underset{\text{H}}{\text{C}}} \end{array} \right]_n$$

b. What does the figure inside the brackets mean ? (I am not asking for the name of the specific structure name but just a general explanation)

[(monomer repeating unit) or (functional group)]

3. Fill in the parenthesis with the letter of the word   (A) north pole (B) south pole (C) equator (D) meridian
    (E) parallel   (F) latitude   (G) longitude   (6 pts, 3 pts each)

(A)pole

(D) or G
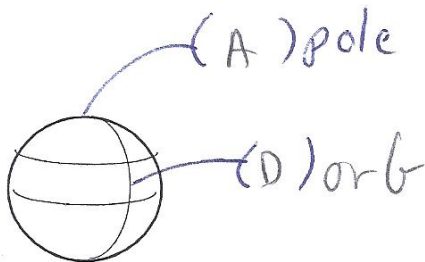
4. From the list of planets in our solar system circle all which are Terrestrial planets   (8 pts)

Venus   Mars   Uranus   Saturn   Jupiter   Earth   Mercury   Neptune

5. Match the following by filling in the blank with the letter of your choices. (8 pts, 2 pts each)

Parallex __D__   Kepler's 2nd Law __B__   albedo __A__   AU __C__

A. The fraction of incident sunlight reflected by an object.   Measure of how reflective the surface of a planet or other object is.

B. A planet moves faster when it is closer to the sun in its elliptical path. (law of equal areas)

C. Astronomical Unit is the average distance between Earth and the Sun (1.5×10^8 km).

D. Apparent motion between two fixed objects when the observer changes position.   (can be used to prove that the earth revolves around the sun) (example: finger over distant object, move head)

6. In the following paragraph, circle the one correct (parenthesis) within each [bracket]. (14 pts, 2 pts each)

The solar system is made up of the [(earth) or (sun)] (cirle one) at its center with planets circling the center.

In our solar system   [(Jupiter) or   (the Sun)] is 99.87% of the mass of the solar system.

All planets in the solar system [(rotate on its axis) or (are in orbit around the sun) or (all planets do both)].

Jovian planets are [(closer to the Sun, or (further away from the Sun)] than the Earth.

[(Jupiter) or (Mercury)] is the closest planet to the Sun.

The planet [(Saturn) or (Mars)] has polar ice caps made up of frozen CO_2 and frozen water.

Jovian planets are in general [(much smaller) or (much larger)] than the Terrestrial planets.

Part III: Long Answers (30 pts) Show work on all questions for partial and full credit even on questions which do not specify.   Remember "attempt" points.
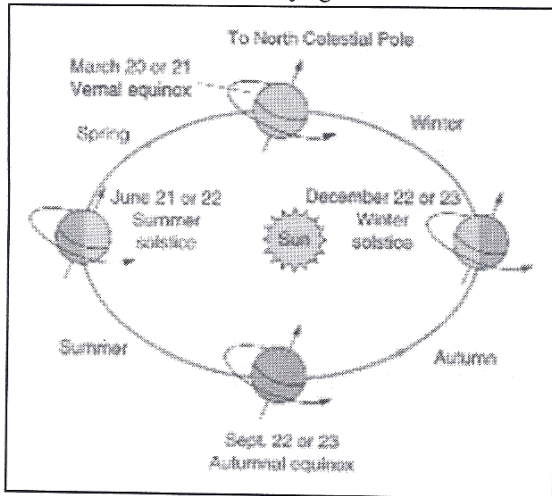
1.   You are lost on a deserted island with a GPS cell phone that has lost all of its battery but with a watch that has not yet lost its battery. You somehow happen to have this figure from your Physical Science exam.   It is also June 21 when the sun is overhead at the 23 ½ altitude.   (in this question try to answer using as much detail as possible.   However if you write down something that is factually incorrect, you will lose points.)

How could you use the figure to figure out your GPS latitude coordinates ?   Explain in a few sentences. (10 pts)

Handwritten in red: BA -5 / attempt / -2½

Handwritten answer:
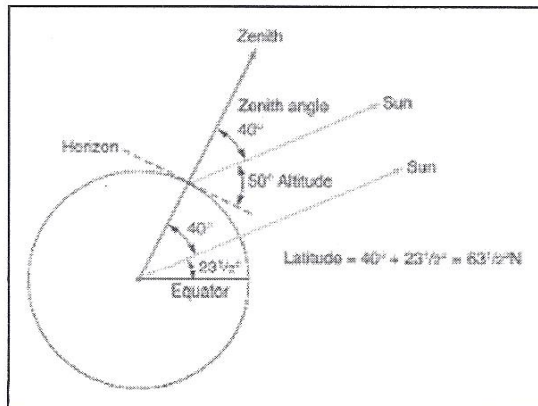
(a) at noon day sun - you well sure to horizon to get altitude angle (50°) (b) 90° - altitude = zenith angle

Latitude = 23.5° angle of sun at June 21 + 40° zenith angle = 63.5°N

2. a) Using the figure explain what causes our earth day.   Be sure to explain what relationship between the sun and earth results in daylight and which results in night ? (10 pts) (BA - 5) (attempt -2 ½)

To North Celestial Pole
March 20 or 21
Vernal equinox
Spring
Winter
June 21 or 22
Summer solstice
December 22 or 23
Winter solstice
Sun
Summer
Autumn
Sept. 22 or 23
Autumnal equinox

earth day is due to rotation of the earth on its axis. When half earth faces the sun that half is in daylight. when the other half is facing away from sun it is dark.

b) Do all the other planets (not earth) in the solar system have a 365.25 day year like the earth ? Explain mentioning something about Kepler's 3rd law ($T^2 = kR^3$, R = average distance of planet to sun, T = time for one revolution of a planet around the sun) (10 pts)

No - because none of the planets are the same distance (R) from the sun + ($T^2 = kR^3$) where T = time for one revolution of the planet around sun, none of the planets in solar system have the same T. T give time for one revolution - or one year for the planet

(BA -5) (attempt -2½)

unrelated - totally wrong answer

Exam IV Physical Science (PSC 102) Form A 12/3/18 M 11 am MWF Dr. Hahn Exam # _____

Name __Key__ (print) Name _____ (sign)

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have no partial credit. Please write anything you want graded legibly. If I cannot read your work, I obviously cannot
grade it. (2 pts print AND sign exam)

green

Part I   MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question. (No Partial Credit for MC) (3 pts per question, 24 pts pts total)
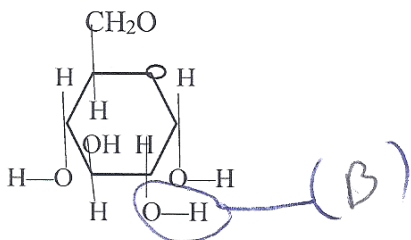
BA = bad attempt

1) Latitude is the angular measurement in degrees
   A) east or west of the prime meridian   B) none of the above
   C) east or west of the international date line   D) north or south of the equator

1) __D__

NA = not attempted

2) The planet with the most well known (& most visible) rings is
   A) Saturn   B) Mars   C) Earth   D) Pluto

2) __A__

3) The process by which liquid fats, such as vegetable oils (with double bonds - alkenes),
   can be converted to solid fats (without double bonds by adding hydrogens) is called
   A) carbonation   B) saturation   C) hydrogenation   D) oxygenation

3) __C__

4) The longest day (daylight) of the year for the Northern Hemisphere occurs at the time of the
   A) winter solstice   B) autumnal equinox
   C) summer solstice   D) vernal equinox

4) __C__

5) Polymers are formed from fundamental repeating units called
   A) groups   B) monomers   C) complexes   D) amino acids

5) __B__

6) The motion of the Foucault pendulum proves that Earth is
   A) processing   B) an oblate spheroid
   C) revolving around the sun   D) rotating on its axis

6) __D__

7) The largest planet in the solar system is
   A) Uranus   B) Jupiter   C) Mercury   D) Earth

7) __B__

8) An imaginary line from one geographic pole to the other along the surface of Earth
   perpendicular to the equator, and that passes through Greenwich, England, is called
   A) longitude   B) latitude
   C) International Date Line   D) the prime meridian

8) __D__

Part II: **Short Answers** (46 pts) Show work on all questions for **partial and full credit** even on questions which do not specify.

1. Given the following biochemical molecule, fill in the blank with the label of the functional group (4 pts)
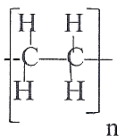
(A) Alkyl halide R—X   (B) Alcohol R—O—H   (C) Amine R—NH$_2$

(D) carboxylic acid R—$\overset{\text{O}}{\overset{\|}{\text{C}}}$—O—H   (E) Amide R—$\overset{\text{O}}{\overset{\|}{\text{C}}}$—NHR'   (F) ester   R—$\overset{\text{O}}{\overset{\|}{\text{C}}}$—O—R'

CH$_2$O

H   H
   H
  OH H
H—O   O—H   (B)
    H   O—H

2. Given the following:

a.   What does the n mean ?   [(very large repeating unit) or (nitrogen)] (6 pts, 3 pts each)

$$\left[\begin{matrix} H & H \\ -C & -C- \\ H & H \end{matrix}\right]_n$$

b. What does the figure inside the brackets mean ? (I am not asking for the name of the specific structure name but just a general explanation)

[(functional group) or (monomer repeating unit)]

3. Fill in the parenthesis with the letter of the word   (A) north pole   (B) south pole (C) equator   (D) meridian
   (E) parallel   (F) latitude   (G) longitude   (6 pts, 3 pts each)

(A) pole

(E) F — (C not accepted)

4. From the list of planets in our solar system circle all which are Jovian planets (8 pts)

(Jupiter)   Earth   Mercury   (Neptune)   Venus   Mars   (Uranus) (Saturn)

5 Match the following by filling in the blank with the letter of your choices. (8 pts, 2 pts each)

inferior planet __C__   Kepler's 3rd Law __D__   Heliocentric Model __A__   Foucault Pendulum __B__

A. A scientific model where the sun is the center of the solar system and planets revolve around the Sun.
B. Used by astronomers to determine that the earth rotates on its axis at 15° per hour.
C. Planet which is closer to the sun than the earth.
D. $T^2 = kR^3$ where T = time for one revolution of a planet around the sun and where R = average distance of the planet to the sun.   This law allows astronomers to calculate time for one revolution of a planet around the sun for a known average distance of the planet to the sun\

6 In the following paragraph, circle the one correct (parenthesis) within each [bracket]. (14 pts, 2 pts each)

Aberration of Starlight which results because the earth revolves around the sun is similar to [(rain appearing to come at an angle because a car is moving) or (stars blinking)]

[(Jupiter) or (Venus)] is the closest planet to earth.

Unmanned spacecraft [(has) or (has never)] landed on Mars

Jovian planets are mainly made up of [(gases like Helium and Hydrogen) or (hard minerals like iron oxide)] on its surface

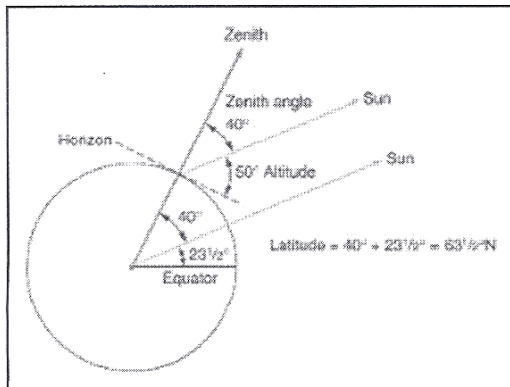The earth revolution is in the form of an [(round circle) or (ellipse)]. (Kepler's 1st Law)

Planets which are further away from the Sun than Earth are called [(inferior planets) or (superior planets)]

Terrestrial planets are [(smaller) or (larger)] than the Jovian planets.

Part III: Long Answers (30 pts) Show work on all questions for partial and full credit even on questions which do not specify.   Remember "attempt" points.

attempt – 2½
BA = S

1. You are lost on a deserted island with a GPS cell phone that has lost all of its battery but with a watch that has not yet lost its battery. You somehow happen to have this figure from your Physical Science exam.   It is also June 21 when the sun is overhead at the 23 ½ altitude.   (in this question try to answer using as much detail as possible.   However if you write down something that is factually incorrect, you will lose points.)

your altitude angle would be different

How could you use the figure to figure out your GPS latitude coordinates ?   Explain in a few sentences. (10 pts)

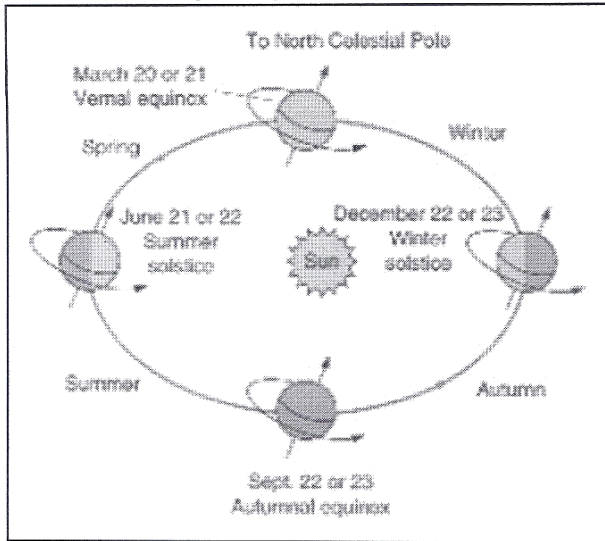① at noon day sun you would measure from the horizon to the sun getting altitude angle (50°) — 90° - altitude = 40°
Zenith angle
latitude = 23.5° sun angle + Zenith angle = 63.5°
at June 21   40°

2. a) Using the figure explain what astronomical motion of the earth results in our earth year. (10 pts)

earth year is the
revolution of the earth
around the sun.

B A - 5

attempt - 2½

b) Do all the other planets (not earth) in the solar system have a 365.25 day year like the earth ? Explain mentioning something about Kepler's 3rd law ($T^2 = kR^3$, R = average distance of planet to sun, T = time for one revolution of a planet around the sun) (10 pts)

No - all planets in the solar system do
not have the same distance to the sun
(R) Kepler's 3rd law relates distance
to the sun (R) to T = time for revolution
of planet around the sun. Since R is
different T must also be different.
T = year for a planet

B A - 5   attempt

-2½

unrelated- totally wrong answer

Exam IV Physical Science (PSC 102) Form B 12/3/18 M 11 am MWF Dr. Hahn   Exam # _____

Name_____*Key*_____ (print) Name _____(sign)

Please show work for partial credit on the Long Answers and in some of the Short Answer Questions.   Multiple choice questi
have no partial credit.   Please write anything you want graded legibly.   If I cannot read your work, I obviously cannot
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Part I   MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.   (No
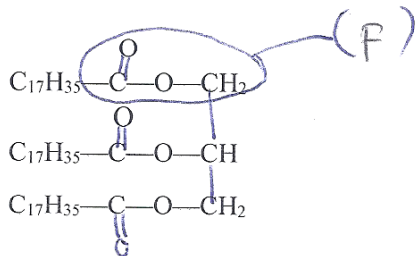Partial Credit for MC) (3 pts per question, 24 pts pts total)

1) Polymers are formed from fundamental repeating units called   1) __A__
    A) monomers   B) amino acids   C) complexes   D) groups
                        NA = not attempted
2) The largest planet in the solar system is   2) __A__
    A) Jupiter   B) Earth   C) Mercury   D) Uranus

3) The planet with the most well known (& most visible) rings is   3) __B__
    A) Earth   B) Saturn   C) Pluto   D) Mars

4) Latitude is the angular measurement in degrees   4) __C__
    A) none of the above   B) east or west of the international date line
    C) north or south of the equator   D) east or west of the prime meridian

5) An imaginary line from one geographic pole to the other along the surface of Earth   5) __B__
    perpendicular to the equator, and that passes through Greenwich, England, is called
    A) International Date Line   B) the prime meridian
    C) latitude   D) longitude

6) The longest day (daylight) of the year for the Northern Hemisphere occurs at the time of the   6) __A__
    A) summer solstice   B) vernal equinox
    C) winter solstice   D) autumnal equinox

7) The motion of the Foucault pendulum proves that Earth is   7) __D__
    A) processing   B) revolving around the sun
    C) an oblate spheroid   D) rotating on its axis

8) The process by which liquid fats, such as vegetable oils (with double bonds - alkenes),   8) __C__
    can be converted to solid fats (without double bonds by adding hydrogens) is called
    A) saturation   B) oxygenation   C) hydrogenation   D) carbonation

Part II: **Short Answers** (46 pts) Show work on all questions for **partial and full credit** even on questions which do not specify.

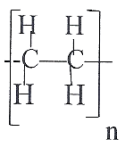1. Given the following biochemical molecule, fill in the blank with the label of the functional group (4 pts)

(A) Alkyl halide   R—X   (B) Alcohol R—O—H   (C) Amine R—NH$_2$

(D) carboxylic acid R—$\overset{\overset{O}{\|}}{C}$—O—H   (E) Amide R—$\overset{\overset{O}{\|}}{C}$—NHR'   (F) ester R—$\overset{\overset{O}{\|}}{C}$—O—R'

C$_{17}$H$_{35}$—$\overset{\overset{O}{\|}}{C}$—O—CH$_2$ — (F)

C$_{17}$H$_{35}$—$\overset{\overset{O}{\|}}{C}$—O—CH

C$_{17}$H$_{35}$—C—O—CH$_2$

2. Given the following:

a.   What does the n mean ?   [(nitrogen) or (very large repeating unit)] (6 pts, 3 pts each)

[H H]
[-C—C-]
[H H]
        n

b. What does the figure inside the brackets mean ? (I am not asking for the name of the specific structure name but just a general explanation)

[(functional group) or (monomer repeating unit)]

3. Fill in the parenthesis with the letter of the word   (A) north pole   (B) south pole (C) equator   (D) meridian
   (E) parallel   (F) latitude   (G) longitude   (6 pts, 3 pts each)

(C) ½ way from poles
D ok

G (D)

4. From the list of planets in our solar system circle all which are Terrestrial planets   (8 pts)

Neptune   Venus   Jupiter   Earth   Mercury   Mars   Uranus   Saturn

Heliocentric Model __D__   Foucault Pendulum __A__   inferior planet __B__   Kepler's 3rd Law __C__

A. Used by astronomers to determine that the earth rotates on its axis at 15° per hour.
B. Planet which is closer to the sun than the earth.
C. $T^2 = kR^3$ where T = time for one revolution of a planet around the sun and where R = average distance of the planet to the sun.   This law allows astronomers to calculate time for one revolution of a planet around the sun for a known average distance of the planet to the sun\
D. A scientific model where the sun is the center of the solar system and planets revolve around the Sun.

6   In the following paragraph, circle the one correct (parenthesis) within each [bracket]. (14 pts, 2 pts each)

The earth revolution is in the form of an [(round circle) or (ellipse)]. (Kepler's 1st Law)

Planets which are further away from the Sun than Earth are called [(inferior planets) or (superior planets)]

Terrestrial planets are [(smaller) or (larger)] than the Jovian planets.

Aberration of Starlight which results because the earth revolves around the sun is similar to [(rain appearing to come at an angle because a car is moving) or (stars blinking)]

[(Jupiter) or (Venus)] is the closest planet to earth.

Unmanned spacecraft [(has) or (has never)] landed on Mars

Jovian planets are mainly made up of [(gases like Helium and Hydrogen) or (hard minerals like iron oxide)] on its surface

Part III: Long Answers (30 pts) Show work on all questions for partial and full credit even on questions which do not specify.   Remember "attempt" points.

1.   a)   Using the figure explain what astronomical motion of the earth results in our earth year.   (10 pts)
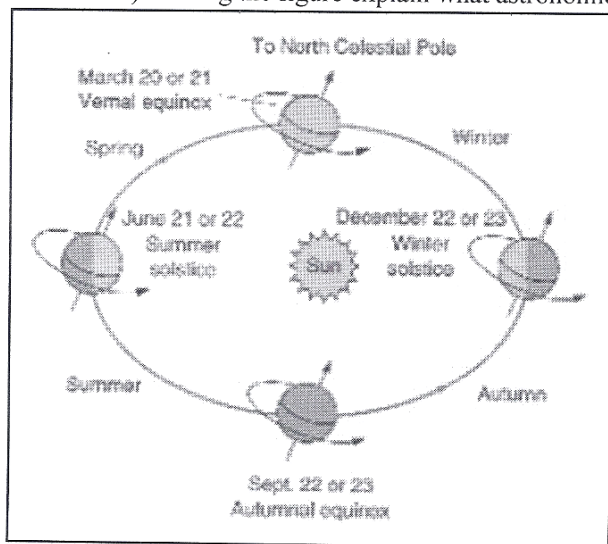
earth year is revolution of planet around Sun (earth)

BA→5

attempt −2½

b) Do all the other planets (not earth) in the solar system have a 365.25 day year like the earth ? Explain mentioning something about Kepler's 3rd law ($T^2 = kR^3$, R = average distance of planet to sun, T = time for one revolution of a planet around the sun) (10 pts)

no — Since T (planet year) = time for revolution of a planet around the sun is related to R = distance of planet to the sun — + all planets have different distance to the sun — none of the planets should have the same year

BA -5 attempt *-2½*

2. You are lost on a deserted island with a GPS cell phone that has lost all of its battery but with a watch that has not yet lost its battery. You somehow happen to have this figure from your Physical Science exam. It is also June 21 when the sun is overhead at the 23 ½ altitude. (in this question try to answer using as much detail as possible. However if you write down something that is factually incorrect, you will lose points.)

BA = -5 attempt -2½

How could you use the figure to figure out your GPS latitude coordinates ? Explain in a few sentences. (10 pts)
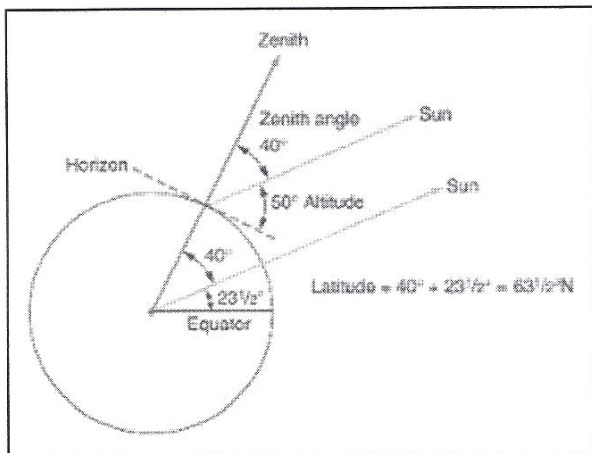
you would measure altitude angle by measuring from the horizon to the noon day sun. Since it is June 21, the sun angle should be 23.5. From altitude angle you can calculate zenith angle (90° - altitude angle = zenith angle - in figure 90° - 50° = 40°) To calculate latitude you add zenith angle to sun angle on June 21 - in figure 40° = 23.5° = latitude. Your altitude angle would be different based on your latitude.