

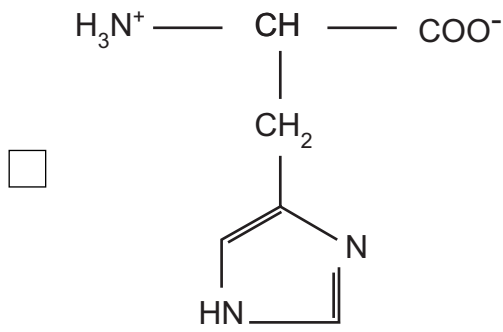
المعلومات العامة

الأسئلة المعلنه للعام الدراسي 2010

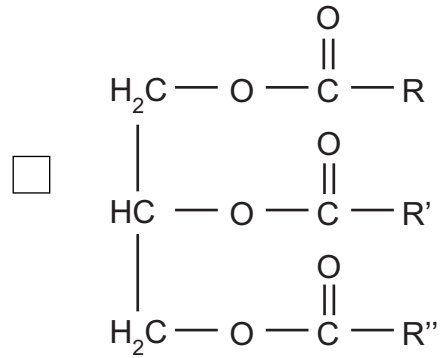
10

1

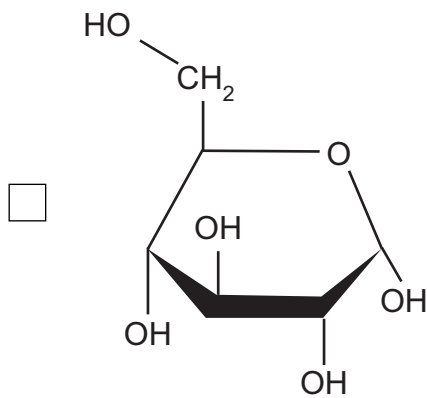
Which of the following structures encodes genetic information?



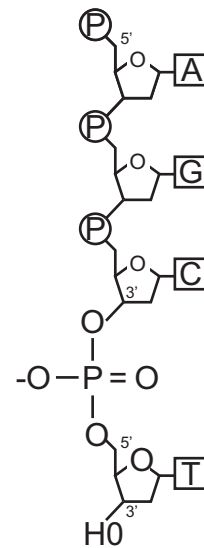
(A)



(C)



(B)



(D)

Key: 4

Strand: Biology

Standard: 10.3 Know that the base sequence on DNA forms the genetic code and is passed from generation to generation.

DOK: 01 Understanding

2

Through which medium does sound travel fastest?

- air
- oil
- metal
- water

Key: 3

Strand: Physics

Standard: 24.5 Know that the velocity of sound depends on the medium through which it travels, and that it travels faster and more efficiently through media in which the particles are close together.

DOK: 01 Understanding

3

In which part of the periodic table does the atom with the smallest atomic radius exist?

IA																				O			
1 H	IIA															III A	IV A	V A	VI A	VII A	2 He		
3 Li	4 Be											5 B	6 C	7 N	8 O	9 F	10 Ne						
11 Na	12 Mg											13 Al	14 Si	15 P	16 S	17 Cl	18 Ar						
		IIB	IVB		VB	VIB	VIIB		VII		IB	IIB											
19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr						
37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe						
55 Cs	56 Ba	57 La	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn						
87 Fr	88 Ra	89 Ac	104 Rf	105 Ha	106 Sg	107 Ns	108 Hs	109 Mt	110 110	111 111	112 112	113 113											

- Group 1, 4th period
- Group 2, 2nd period
- Group 2, 6th period
- Group 7, 2nd period

Key: 4

Strand: Chemistry

Standard: 17.2 Account qualitatively for the periodic trends in atomic radius, ionic radius, melting point and electrical conductivity of the elements, and show how these properties are periodic.

DOK: 01 Understanding

The periodic table is shown below.

Periodic Table of Elements

1 H 1.0																	2 He 4.0
3 Li 6.9	4 Be 9.0											5 B 10.8	6 C 12.0	7 N 14.0	8 O 16.0	9 F 19.0	10 Ne 20.2
11 Na 23.0	12 Mg 24.3											13 Al 27.0	14 Si 28.1	15 P 31.0	16 S 32.1	17 Cl 35.5	18 Ar 39.9
19 K 39.1	20 Ca 40.1	21 Sc 45.0	22 Ti 47.9	23 V 50.9	24 Cr 52.0	25 Mn 54.9	26 Fe 55.8	27 Co 58.9	28 Ni 58.7	29 Cu 63.5	30 Zn 65.4	31 Ga 69.7	32 Ge 72.6	33 As 74.9	34 Se 79.0	35 Br 79.9	36 Kr 83.8
37 Rb 85.5	38 Sr 87.6	39 Y 88.9	40 Zr 91.2	41 Nb 92.9	42 Mo 95.9	43 Tc 98.0	44 Ru 101.1	45 Rh 102.9	46 Pd 106.4	47 Ag 107.9	48 Cd 112.4	49 In 114.8	50 Sn 118.7	51 Sb 121.8	52 Te 127.6	53 I 126.9	54 Xe 131.3
55 Cs 132.9	56 Ba 137.3	57 La 138.9	72 Hf 178.5	73 Ta 180.9	74 W 183.9	75 Re 186.2	76 Os 190.2	77 Ir 192.2	78 Pt 195.1	79 Au 197.0	80 Hg 200.6	81 Tl 204.4	82 Pb 207.2	83 Bi 209.0	84 Po 209.0	85 At 210.0	86 Rn 222.0
87 Fr 223.0	88 Ra 226.0	89 Ac 227.0	Lanthanum Series														
			58 Ce 140.1	59 Pr 140.9	60 Nd 144.2	61 Pm 145.0	62 Sm 150.4	63 Eu 152.0	64 Gd 157.3	65 Tb 158.9	66 Dy 162.5	67 Ho 164.9	68 Er 167.3	69 Tm 168.9	70 Yb 173.0	71 Lu 175.0	
			Actinium Series														
			90 Th 232.0	91 Pa 231.0	92 U 238.0	93 Np 237.0	94 Pu 244.0	95 Am 243.0	96 Cm 247.0	97 Bk 247.0	98 Cf 251.0	99 Es 252.0	100 Fm 258.0	101 Md 258.0	102 No 259.0	103 Lr 260.0	

B

As you move in the direction of arrow A, does atomic radius increase or decrease? Why?

Answer: _____

4 (continued)

As you move in the direction of arrow B, does electrical conductivity increase or decrease? Why?

Answer: _____

Correct Answer:

A. Atomic radius decreases in direction of A
AND
because atoms have fewer electron shells.

B. Conductivity decreases in direction of B
AND
because electrons are held more tightly as we move in the direction of B
/increasing electronegativity in the direction of B.

Key Elements:

- 1 for indicating that atomic radius decreases and explaining why
- 1 for indicating that conductivity decreases and explaining why

2 key elements	2 pts
1 key element	1 pt
Incorrect answer	0 pts
No answer	Blank

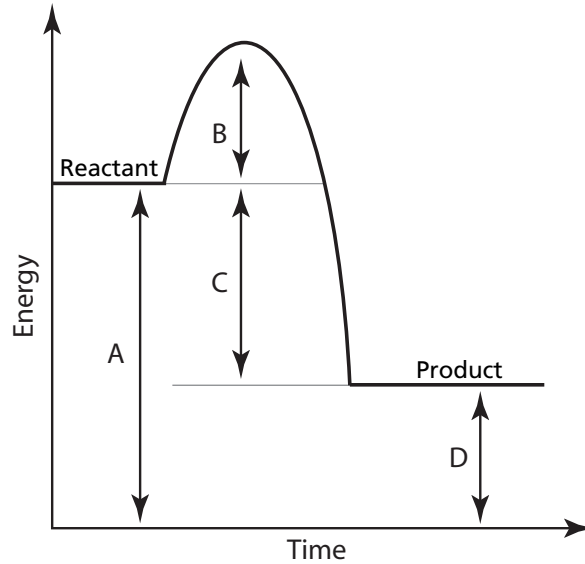
Points: 2

Strand: Chemistry

Standard: 17.2 Account qualitatively for the periodic trends in atomic radius, ionic radius, melting point and electrical conductivity of the elements, and show how these properties are periodic.

DOK: 01 Understanding

The human body produces an enzyme to catalyze a chemical reaction. Shown below is the energy profile of the chemical reaction without the enzyme.



Which arrow(s) in the reaction profile will be changed by the addition of an enzyme? Explain your answer.

Answer: _____

List two factors that would affect the rate of enzyme action.

Answer:
1: _____
2: _____

Correct Answer:

A. Arrow B would change AND it would be decreased.

B. Any two factors that would effect the ability of the enzyme to catalyze:

- temperature
- pH
- substrate concentration

(Scoring Note: a maximum of two key elements can be credited)

Key Elements:

- 1 for naming the arrow AND describing how it would change
- 1 for each factor listed that affects the rate of enzyme action

3 key elements	3 pts
2 key elements	2 pts
1 key element	1 pt
Incorrect answer	0 pts
No answer	Blank

Points: 3

Strand: Chemistry

Standard: 20.2 Know and measure the effect on reaction rates of concentration, temperature and particle size, and explain the effect in terms of a kinetic particle model.

DOK: 02 Application

Name two uses of the hydraulic transmission of a force.

Answer: _____

Explain the principle of the hydraulic transmission of a force. Include a diagram in your answer. Show your work in the box below.

Points: 3

Strand: Physics

Standard: 23.8 Explain, in terms of the particle model, the hydraulic transmission of a force and know and explain quantitatively some common applications.

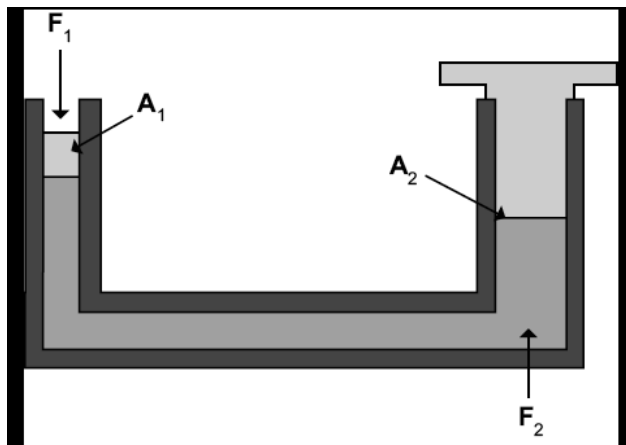
DOK: 02 Application

Correct Answer:

A. Any two of the following:

- Vehicle brakes
- Cranes
- Compressors
- hydraulic lifts or presses
- hydraulic pumps
- any other valid use of hydraulic transmission

B. A response indicating that when there is an increase in pressure at any point of a confined fluid, there is an equal increase at every other point in the container OR an explanation of Pascal's Law OR a force F_1 is applied to a small piston of area A_1 , the pressure is transmitted through a liquid to a larger piston of area A_2 . Since the pressure is the same on both sides, we see that $P = F_1/A_1 = F_2/A_2$. Therefore, the force F_2 is larger than F_1 by multiplying factor A_2/A_1 .



Key Elements:

- 1 for identifying 2 uses of a hydraulic press
- 1 for correct explanation of a hydraulic press
- 1 for correct diagram of a hydraulic press

	3 key elements	3 pts
	2 key elements	2 pts
	1 key element	1 pt
	Incorrect answer	0 pts
	No answer	Blank