Mansoura University
Faculty of Science
Chemistry Department
Jan. 2010

Physical Chemistry Exam
1st Year Chemistry Students
Time allowed, 2 hours
Prof. Dr. Salem El-Sayed Samra

Answer the following Questions: - ***(60 marks)***

Q1: a- Derive the expression for the pressure exerted by one mole of an ideal gas. *(6 marks)*

b - The volume of a sample of nitrogen is 6.00 liters at 35°C and 740 torr. What volume will it occupy at STP? *(3 marks)*

c – What would be the effect of the pressure on the following systems at equilibrium? *(3 marks)*

$2\ CO\ (g) + O_2 \ <---> \ 2\ CO_2\ (g)$

$H_2\ (g) + I_2\ (g) <---> 2HI\ (g)$

$N_2O_4\ (g) \ <---> \ 2NO_2\ (g)$

Q2: a- Will the normal boiling point of an aqueous solution and pure water be the same? Why? *(3 marks)*

b - Given these standard heats of reaction

$2\ A \rightarrow B + C \qquad \Delta H^o = -5.0\ kJ$

$B + 2\ A \rightarrow E \qquad \Delta H^o = -15.0\ kJ$

please find ΔH^o for each of the following reactions:

i) 6 A --> 3 B + 3 C ii) B + C --> 2 A iii) 2 B + C --> E *(6 marks)*

c - A mixture of 0.50 mol $H_2(g)$ and 0.50 mol $N_2(g)$ is introduced into a 15.0 liter container having a pinhole leak at 30°C. After a period of time, which of the following is true? *(3 marks)*

(i) The partial pressure of H_2 exceeds that of N_2 in the container.
(ii) The partial pressure of N_2 exceeds that of H_2 in the container.
(iii) The partial pressures of the two gases remain equal.
(iv)The partial pressures of both gases increase above their initial values

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Q3: a- Calculate pH for the following aqueous solutions: - *(6 marks)*

1 – 0.1 M NaOH ($pK_w = 14$)

2 – 0.1M CH_3COOH ($Ka = 1.8x10^{-5}$)

3 – [0.1M CH_3COOH ($Ka = 1.8x10^{-5}$) + 0.2M CH_3COONa]

b - Discuss the following: - *(6 marks)*

1- common ion effect 2- buffer solution 3- ideal solution

Q4 a - A 24.00 g sample of a liquid is heated from 25.0°C to 75.0°C. This required 314.4 joules of heat. Please calculate the specific heat (capacity) of the liquid in J g^{-1} $°C^{-1}$. (4 marks)

b - Which of the following aqueous solutions would have the lowest vapor pressure at 25°C? *(3 marks)*

1) 0.01 m $CaCl_2$ 2) 0.01 m NaCl 3) 0.02 m NaCl 4) 0.02 m $CaCI_2$

c - If the equilibrium constant for the reaction $A + 2B \rightleftarrows C + 5/2\ D$ has a value of 4.0, what is the value of the equilibrium constant for the reaction $2C + 5D \rightleftarrows 2A + 4B$ at the same Temperature? *(5 marks)*

(1) 0.25 (2) 0.063 (3) 2.0 (4) 8.0 (5) 16

With My Best Wishes

Mansoura University	**First Level**
Faculty of Science	**Date: Jan. 2010**
Chemistry Department	**Time Allowed : 2 hours**
Subject: Chemistry	**Full Mark: 60 Marks**
Course: Basic Inorganic Chemistry (121)	

ANSER THE FOLLOWING QUESTIONS:

1) a- **How many nitrogen atoms are there in 0.34 g N_2O_5 (N = 14, O = 16)** **[4 Mark[**

b- **Diagram the resonance forms of SO_2 (S = 16, O =8)** **[4 Mark]**

c- **Use VSEPR theory to predict the shape of the following:**

i) SCl_4 ii) BF_3 (S = 16, Cl = 17, B = 5, F = 9) **[6 Mark]**

d- **Explain Why:** **[6 Mark]**

i) N_2 is more stable than O_2 using molecular orbital theory (N = 7).

ii) The second ionization energy is more than the first.

2) a- **A sample compound containing carbon and hydrogen weighs 2.8 g is burned in air and produced 3.6 g CO_2 and 8.8 g H_2O, If its molecular weight is 140, What is molecular formula?** **[8 Mark]**

b- **Diagram Lewis structure for the following:** **[6 Mark]**

i) ClO_4^- ii) CO_3^{--}

c) **Calculate the wavelength (nm) and energy (j) of the line of $_{20}Ca^{40}$ when its last electron jumps to its sixth level (R= 109678 cm^{-1}, h= 6.066x10^{-34} j, C = 3x10^8 ms^{-1})** **[6 Mark]**

3) a- **Nitrogen reacts with oxygen to form NO_2. If 0.8 g of N_2 mixed with 0.75 g O_2. Calculate the amount of NO_2** **[6 Mark]**

b- **Which of the following sets of quantum numbers are allowed for an electron in the atom:** **[4 Mark]**

	n	l	m	s
1)	4	2	+2	-½
2)	5	3	0	-½
3)	2	2	0	-½
4)	3	1	-1	0

c- **According to the valence bond theory, predict the type of hybridization in the following: PCl_5 and H_2S (P = 15, Cl = 17, H = 1, S = 16)** **[6 Mark]**

d- **Draw Born-Haber cycle for Na_2O** **[4 Mark]**

Examiners: Prof Dr El-Asmy; Prof Dr Abo El-Reash; Prof Dr Nawar

Mansoura University
Faculty of Science
Geology Department

Exam date: **16/1/2010**

First Term Exam (January 2010)
First Level (Chemistry Programme)
Subject: G-102 (Crystallography-Mineralogy)
Time: 2 hours **Total Marks: 60**

Answer the following questions:

Question ONE: Choose the correct word (*write only the number and word(s)*: (20 marks)

1- The polymorphic mineral of graphite is (**galena – pyrite – diamond – orthoclase**).

2- Amber is not a mineral because it is (**organic – solid – natural – crystalline**) materials.

3- Symmetry symbol of monoclinic system is (**3m, $3A_2$, i - m, A_2, i - 9m, $3A_4$, $6A_2$, i - 7m, A_6, $6A_2$, i**)

4- Equant crystal is crystallized in (**hexagonal - monoclinic - triclinic – cubic**) system.

5- Ferromagnetic character characterizes (**hematite – pyrite – magnetite – muscovite**) mineral.

6- Silicate are electrically (**good conductor, semi-conductor, insulator, magnetic**) minerals.

7- Inclination of one crystal axis in a crystal should be (**b – a – a_2 – c**) axis.

8- Crystal forms are distinguished by (**number of faces - Miller index - number of faces and Miller index - crystal axes**).

9- γ-angle in hexagonal system equal (**<90° - 90° - 120° - >90°**).

10- To orient an orthorhombic crystal, you should follow (**a>b>c - c>b>a - b>a>c - b<c>a**).

11- Unit-cell dimension is determined using (**polarizing microscope – electron microscope – electron microprobe - X-ray**).

12- Miller index of dome-a crystal form is { **(111) - (101) - (110) – (011)** }

13- Nickel is more abundant in the Earth's (**mantle – core – crust - rocks**)

14- High electric conductive minerals have (**ionic – metallic – covalent – Van der Waals**) bonding.

15- The most abundant chemical element in the Earth's crust is (**H – O – Si – Al**).

16- The best classification of minerals is based on (**cations – hardness – luster - anions**).

17- Hardness of talc is (**7 – 5 – 1 - 3**) .

18- The specific gravity of gold mineral is (**extremely heavy - heavy – average – super heavy**).

19- Crystal with full faces describes as (**subhedral – anhedral – euhedral - prismatic**) crystal.

20- The smallest unit in the universe is (**atom - crystal– molecule - electron**).

Question TWO: Complete the following (write only the number and word(s): (20 marks)

- Diamond of ...(1)... chemical composition and ...(2) ... chemical bond crystallized in ...(3)... system.
- Pinacoids of ...(4)... faces are the only crystal form in ...(5)... system.

P.T.O.

- Quartz of hardness ...(6)... has variable colours due to ...(7)... and ...(8)...
- At Um Bogma area, Sinai, ...(9)...mineral of ...(10)... chemical composition is mined and used as Mn ore.
- c-axis is ...(11)...of symmetry in hexagonal system and ...(12)... in cubic system.
- The heaviest non-metallic luster mineral is ...(13)..., which used to prepare ...(14)...in petroleum prospecting.
- Streak of pyrite is ...(15)..., while that of cassiterite is ...(16)...
- Ancient Egyptian used ...(17)... mineral as Khohl and ...(18)... for red painting.
- Good thermal conducting minerals feel ...(19)... in hand, while talc mineral feels ...(20)...

Question THREE: Define the wrong words and correct it (*write in a table*): **(20 Marks)**

1- Prism crystal forms should be meeting c-axis.
2- Hardness of orthoclase is 5 according to Moho's scale.
3- Contact goniometer is used to measure inter-axial angles in crystals.
4- Gold is distinguished by its black streak.
5- Our universe is contracting since its birth.
6- Perfect cleavage in muscovite tends to covalent chemical bonding.
7- The maximum crystal faces occur in Trapezohedron crystal form.
8- HF acid is manufactured from halite.
9- Crystal symmetry increases with decreasing the crystal ideality.
10- Bladed crystal habit characterized the tetragonal system.
11- Crystal with open forms should be simple.
12- Geometrical pattern characterized the amorphous chemical materials.
13- Miller index of trisoctahedron is (211).
14- Minimum crystal symmetry characterized the cubic system.
15- Mineral fractures reflect internal structure.
16- Calcite of metallic luster has high hardness than gypsum.
17- Calcite mineral exhibits cubic cleavage.
18- Domes are characterized the tetragonal system.
19- Ruby gem contain Fe-impurity.
20- Crystal faces is not essential in crystals.

With Our Best Wishes

Exam Committee:

Prof. Dr. Mahmoud Kora ***Prof. Dr. Adam El-Shahat***

Dr. Mahrous Abu El-Enen ***Dr. Hamdy Serag El-Din***

Mansoura University
Faculty of Science
January, 27th, 2010

First year
Time allowed: 2hrs
English Language Exam

Section One: Reading Skills

Read the following passage and then answer the questions that follow:

Carbon is a very special material, and there are atoms of it in many things: for instance the "lead" of a pencil is made of carbon, coal is made of carbon, and so are diamonds. A number of other things such as wood, plants and oil are made very largely of carbon, but have other substances as well. The molecules which make up our bodies depend on carbon.

Carbon atoms are so special because they have the property of joining together into molecules in different ways. For instance the atoms of coal and diamonds are joined together to make crystals, but each in its own patterns, are consequently from carbon atoms come two things so different to look at. A pencil "lead" is also carbon, but here the atoms are arranged not in crystals but in flat sheets, far and too small, of course, to see. When we press a pencil onto a paper, the paper pulls some of the sheets atoms away, and these make the pencil marks. Paper may feel smooth, but it is rough enough to slide off some sheets of atoms. If you try to write on glass and cellophane, your pencil leaves no marks, for these are too smooth to pull the sheets away from the pencil "lead".

Besides forming into crystals and making sheets, carbon atoms can also form into long series of atoms, like chains. No other substance can do this so well. Each chain of carbon atoms can also have other substances attached to the links of the carbon chain. If the carbon chain has hydrogen atoms joined on to it, we have what scientists call a "hydrocarbon". Hydrocarbons give us molecules of oil, petrol, paraffin, tar, and neutral gas, like that found under the North Sea.

Scientists have discovered that carbon chains can be very long, and can contain thousands of both carbon and other atoms. These long carbon chains are single molecules, but much more complicated than the single molecules of water, for instance, which are made of only three atoms (one of oxygen and two of hydrogen). These are the molecules of very complicated substances such as complicated ways. They can also be arranged in rings. The different kinds of oils, such as petrol and paraffin, depends on the way in which the atoms are arranged can make the petrol or paraffin from the oil out of an oil-well by heating it enough to change the pattern of the atoms in its molecules.

The chemist today has found out how to make new substances by heating materials made of hydrocarbon chains, such as oil or coal, in giant pressure cookers and mixing with them other chemicals. When very hot indeed, the atoms of the other chemicals fit into the hydrocarbon chain and combine to make molecules of a new pattern. The result of this may be a plastic for making cups or washing-up bowels, or an artificial fiber for making clothes. Nylon, for example, is a man-made fiber with molecules made out of carbon chains in which atoms of nitrogen, hydrogen, and oxygen fit in a particular arrangements. Milk contains carbon, and the chemist can

extract these and reform them into a plastic for making solid things such as buttons and door handles.

The carbon chain in living things are even more complicated than those in oils, plastics, or artificial fibers, and may contain hundreds of atoms; there is often more than one chain in each molecule, and these may be twisted together like ropes or bundles. It is a difficult problem for the scientist to unravel these complicated molecules, and therefore, although he can make an artificial fiber, has not yet been able to fit the molecules together to make a living plant or animal.

1. Answer the following questions:

a. What is the difference between petrol and paraffin?
b. Why are carbon atoms special?
c. How is hydrocarbon made?
d. Why the pencil doesn't leave marks on glass?
e. How can the scientists make plastic?

2. Read the following sentences and then decide they are True or False:

a. Carbon atoms can join just in one way. ( )
b. Hydrocarbons give us molecules of paraffin only. ( )
c. Milk contains carbon chains. ( )
d. The carbon chains are more complicated in oils, plastics or artificial fibers than those in living things. ( )

3. Complete the following sentences according to the passage:

a. The molecules which make up our bodies depend on_____.
b. When we press a pencil onto paper, the paper pulls some of the_____of_____away.
c. If the carbon chain has hydrogen atoms joined on to it, so we have what is called_____.
d. The chemist has found out how to make new substances by_____ materials made of_____chains.

4. Choose the correct answer:

1- The carbon atoms in the pencil "lead" are arranged in _____.
a. crystals b. chains c. rings d. sheets

2- The chemist can extract the carbon chains which are in_____and reform them into plastic.
a. plants b. oil c. milk d. tar

3- The long carbon chains are single_____.
a. substances b. molecules c. atoms d. chains

4- By_____materials made of hydrocarbon and mixing with other chemicals, the chemist has found the way of making new substances.
a. heating b. coiled up c. joining d. using

5. What do the underlined words refer to?

1. They (paragraph 2) 2. These (paragraph 2)
3. They (paragraph 4) 4. Those (paragraph 6)

Section Two: Language Skills:

1- Put the word in brackets into the correct form. You will have to use prefixes and/or suffixes.

1. He was sitting _____ in his seat on the train. (comfort)
2. The team that he supported were able to win the_____ . (champion)
3. She looked at her _____ in the mirror. (reflect)
4. The bacteria are so small that you need a _____ to see them. (scope)
5. She looked at him _____ , and started to cry. (happy)

2- Give *two* words from the following roots using the needed suffixes or prefixes:

1. Cycle
2. Auto
3. Logy
4. Scope
5. Leg

3- Please provide a conjunction in the following sentences.

1. Either Andrew _____ Peter will help our pastor.
2. Did the team win _____ lose?
3. The team tried hard _____ still lost the game.
4. The police officer spoke politely _____ firmly.
5. The story was long _____ interesting.

Section Three: Writing Skills:

- The value of time.
- Security on the internet.
- The effect of global warming.

Choose one of the above topics to write on. Follow the instructions below:

1- Write *at least* **4** paragraphs
2- Introduction and conclusion *not less than* **5** sentences
3- Body paragraphs *not less than* **8** sentences
4- Show your plan (tree).
5- You must identify the Linking words, if used.

GOOD LUCK

Mansoura University
Faculty of Science
Zoology Department
El- Mansoura, Egypt

جامعة المنصورة
كلية العلوم
قسم علم الحيوان
المنصورة - مصر

First Semester, Jan. 2009

Educational year: First Level | Program: Chemistry
Time: 2hr | Subject: Functional Morphology
Date: 25/1/2010 | Course (s): Z 122
Full Mark: 60

Answer all the following questions

Q1- Choose the correct answer : **(15 marks)**

1- γ globulin, function in.....
a- maintains blood pressure. b- immune response.
c- transport vitamins. d- blood coagulation.

2- During swallowing, epiglottis close the .....
a- pharynx. b- trachea. c- larynx. d- oral cavity

3- Blood group O.....
a- have agglutinogen A. b- have agglutinogen B
c- have agglutinogen A and B. d- hav'nt any agglutinogens.

4- Most carbon dioxide in blood is in the form of .....
a- dissolved Co_2 b- bicarbonate.
c- carbonic acid. d- carbaminohemoglobin.

5- Macrophages are derived from white blood cells precursors, called.....
a- monocytes. b- lymphocytes. c- basophils. d- eusinophils.

6- When you inhale, the diaphragm .....
a- relaxes. b- flattens. c- contract. d- both b and c

7- Which of the following white blood cells act as antihistaminic and anticoagulants .....
a- basophils. b- eusinophils. c-neutrophils d- monocytes

8- 1)Blood clot. 2)Platelet plug. 3)Vascular spasm. 4) Vessel repair
Steps that happen to protect blood from loss when the vessel injured. Put the steps above in a true sequence.
a- 3, 2, 1, 4. b- 2, 3 , 1, 4.
c- 1, 4, 2, 3. d- 2, 3, 1, 4.

9- Hypothyrodism may result in .....
a- cretinism. b- myxodema.
c- restless and sleepless. d- both a or b.

10- Steroid hormones .....
a- have receptors inside the target cell nucleus.
b- their effect are rapidly.
c- turning enzyme on or off.
d- all are correct.

11- The chemical digestion of ---------- begins in the mouth through the action of the enzyme ----------
a- Fat – lipase b- Fat – bile
c- Carbohydrates – salivary amylase d- Protein – pepsin.

12- Maltose contains which of the following monosaccharide?
a- Glucose and galactose b- Glucose and fructose
c- Glucose only d- None of the above

13- The end product of protein digestion are ----------
a- Peptones b- amino acids
c- Monosaccharides d- Fatty acids and glycerol

14- The mineral which is essential for the formation of thyroxin is.....
a- Iron b- Iodine c- Calcium d- Phosphorus

15- The first product of fatty acid catabolism is ----------
a- Glycerol b- Pyruvate c- Acetyl CoA d- Triglycerides

16- The breakdown of glycogen from glucose in liver is ----------
a- Glycogenesis b- Glycogenolysis
c- Glycolysis d- gluconeogenesis

17- Hormone -------- promotes sodium ion and water reabsorption in the distal tubule and collecting duct.
a- aldosterone b- renin c- erythropoietin d- creatinine

18- The functional unit of the kidney is called ----------
a- Glomerulus b- Nephron c- Corpuscle d- Ureter

19- Most amino acids are reabsorbed in the ----------
a- Proximal convoluted tubule b- Collecting duct
c- Distal. convoluted tubule d- Loop of Henle

20-The central nervous system (CNS) includes the ----------
a- Brain and cranial nerves b- Brain and spinal nerves
c- Brain and spinal cord d- Brain only

21- The stage in an action potential that immediately follows depolarization is----------
a- Polarization b- Repolarization
c- The resting period d- Threshold

22- The digestive juice that contains enzymes capable of digesting carbohydrates, lipids and proteins is ----------
a- Saliva b- Gastric c- Intestinal d- pancreatic

23- HCl is formed in cells that contain an enzyme called ----------
that catalyze the reaction between ---------- and water.
a- Carbonic anhydrase – CO_2 b- amylase – HCO_3
c- Carbonic anhydrase – HCO_3 d- Pepsin – CO_2

24- Rickets can be caused by the deficiency of vitamin ----------
a- A b- B1 c- D d- C

25- The conversion of one molecule of glucose to $CO_2 + H_2O$ results in the net formation of ----------
a- 2 molecules of ATP b- 6 molecules of ATP
c- 3 molecules of ATP d- 38 molecules of ATP

26- The digestion of lipids is completed in the ----------
a- stomach b- small intestine c- large intestine d- mouth

27- The axon of a neuron ----------
a- Conducts nerve impulses towards the nerve cell body
b- Conducts nerve impulses away from the nerve cell body
c- Is the single main cell process of a multipolar neuron
d- Both b and c above are correct.

28- Synaptic transmission is made possible by ----------
a- Membrane transport b- An ion pump
c- Saltatory conduction d- Neurotransmitters

29- The different charge between the outside and the inside of a neuron at rest is called ----------
a- Equilibrium potential b- Synaptic potential
c- Resting membrane potential d-Action potential

30- Neurotransmitters are stored in vesicles that are located primarily in specialized portion of the ----------
a- soma b- axon c- dendrite d- none of the above

Q2- Complete the following: **(15 marks)**

1- Polycythemia caused due to .....or.....
2- Parathyroid hormone regulate .....by increasing .....
3- Alpha cells of iselet of Langerhans secreate .....which function in .....by.....
4- The. .....is the airway that connects the pharynx with the .....
5- Aneuro-muscular junction is .....
6- Total lung capacity equals to .....
7- The two sex steroid hormones released from ovaries are .....and.....

8- Each skeletal muscle composed of many .....which composed each of them of many .....that cpmposed of many repeated .....

9- Hormones affecting erythropoiesis are ....., ..., ...and....

10- The outer most part of the cortical region of adrenal gland called .....and secrete .....hormones , the middle region called .....and secrete ....., and the inner region called .....which secrete .....

11- Three enzymes of pancreatic juice are:

a- ..... b- ..... c- .....

12- Two functions of HCl are:

a-..... b- .....

13- Two types of the voltage gated channels are:

a- ..... b- .....

14- Two types of dietary proteins are:

a- ..... b- .....

15- Urine is formed as a result of three processes which are:

a- ..... b- ..... c- .....

Q3- Give an account on each of the following:- (15 marks)

a- Muscle contraction (sliding filament model).

b- Hormones of anterior lobe of pituitary gland.

c- Types of anemia.

Q4:

A- Identify five only of the following: **(5 marks)**

1- Beta oxidation. 2- Gluconeogenesis. 3- Transamination.

4- Autonomic nervous system. 5- Triglycerides. 6- Bile.

B- Give an account on four only of the following: **(10 marks)**

1- Functions of the kidney..

2- Factors affecting the enzyme activity.

3- Types of neurons.

4- Forms and functions of vitamin A.

5- Hormonal control of digestive secretion.

Dr. El-sayed M. El-Habiby Dr. Hanaa Serag

Mansoura University Faculty of Science Physics Department		Educational Year :First level Date : 20/1/2010 Time allowed : 2 hours
Course : Heat & properties of matter (Phys. 101)		Full Mark: 60.

Answer the following questions. The questions are in two pages

1. a) Explain giving mathematical details: [8 Mark]
I- The banking of the curved railway lines and roads.
II- What do you expect in case of there is no banking in these roads? What do you suggest to get safety trip?

b) Prove that the moment of inertia (I) of a solid sphere about its diameter is I= $\frac{2}{5}MR^2$, where M and R are the mass and the radius of the sphere respectively. [6 Mark]

c) Show that the compound pendulum executes simple harmonic motion and obtain an expression for its time period. [6 Mark]

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2. a) Find the radial heat flow of a spherical container with internal & external radii and temperatures $(r_1 \& r_2)$ and $(\theta_1 1 \& \theta_2)$ respectively. [6 Mark]

b) What mass of steam initially at 120 ^{o}C need to worm 300g of water in 100g glass container from 25 ^{o}C to 50 ^{o}C ? [The specific heat capacity: of Steam= 0.5 $cal/g.K$, of water =1 $cal/g.K$, of glass=0.2 $cal/g.K$ and the latent heat of vaporization of water= $0.5x10^3$ cal/g]. [6 Mark]

c) A glass flask with volume of 400 cm^3 is filled to the brim with mercury at 25°C. How much mercury is overflows when the temperature of the system is raised to 100°C? [The volume expansion coefficient of glass=$10^{-5}/K$, and of mercury=$1.8x10^{-4}/K$]. [5 Mark]

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3. **Choose the correct answer** [23 Mark]

كل اختيار صحيح بدرجة ويخصم نصف درجة للاختيار الخاطئ

1. The unique temperature at which the ice, pure water and water vapor can exist together in equilibrium is known as
   A) lower fixed point B) upper fixed point C) tripe point
2. The temperature change of 45°C on the Fahrenheit scale is
   A) 25°F B) 45°F C) 81°F
3. The quantity of heat required to raise the temperature of one gram of water one Celsius degree is known as
   A) Calorie B) specific heat capacity of water C) both A) and B)
4. Thermal conduction occurs in non-metallic solids and liquids as a result of
   A) molecules movement B) free electrons movement C) molecules collisions
5. The main advantage of the thermocouples is that, their heat capacities are
   A) very low B) very high C) neither A) nor B
6. The temperature gradient .....with the distance from the hot end of perfectly uniform lagged bar
   A) is constant B) decreases C) increases

7. The temperature gradient .....with the distance from the hot end of an unlagged uniform bar
   A) is constant B) decreases C) increases
8. The thermal resistance of a wall of thickness d, section area A, and thermal conductivity coefficient K, is
   A) $\frac{d}{KA}$ B) $K\frac{d}{A}$ C) $\frac{KA}{d}$
9. According to the Prevost's theory of exchange, a body emits radiation at rate determined by the nature of its surface and
   A) its temperature B) its surroundings' temperature C) both A) and B)
10. A black body emits radiations which depends on
   A) its temperature B) nature of its surface C) both A) and B)
11. The work done adiabatically by an ideal gas .....its temperature.
   A) decreases B) increases C) keeps constant
12. The heat energy transferred to the system of ideal gas isothermally equals the
   A) work done by the system B) change of internal energy C) either A) or B)
13. The heat energy transferred to the system of ideal gas isovolumetrically equals the
   A) work done by the system B) change of internal energy C) either A) or B)
14. The direction of the surface tension force is..... to the surface of the liquid.
   A) tangential B) perpendicular C)makes 45°
15. The viscosity of a fluid is a measure of the
   A) internal friction of a fluid B) resistance to flow a fluid C) both A) and B)
16. The reason that the free surface of a liquid always tends to have minimum area is to.....the potential energy of the molecules in the surface film.
   A) keep constant B) increase C) decrease
17. The plastic deformation is a measure of ..... of a material
   A) elasticity B) brittleness C) ductility
18. The excess pressure inside a spherical soap bubble whose radius r and surface tension T is
   A) $\frac{2T}{r}$ B) $\frac{T}{2r}$ C) $\frac{4T}{r}$
19. The angle of contact between the solid and liquid depends upon
   A) the nature of the liquid and solid
   B) the angle of inclination of the solid to the liquid surface C) both A) and B)
20. The pressure of a steady, non-viscous, irrotational, and incompressible fluid .....as the speed of fluid increases
   A) remains constant B) increases C) decreases
21. According to Torricelli's theory, the escape velocity of fluid from hole of a tank of depth h and cross section area A is
   A) $2\sqrt{gh}$ B) $A\sqrt{2gh}$ C) $\sqrt{2gh}$
22. A $10^8 Pa$ stress is applied to a steel wire having $10m$ long, knowing that, the Young's modulus for steel is $2x10^{11}Pa$. Then the elongation of the wire is
   A) $0.01m$ B) $0.25x10^{-5}m$ C) $2x10^{-3}m$
23. Knowing that the Young's modulus of a material is Y , Poisson's ratio is $\frac{1}{3}$, the Bulk modulus is
   A) $2Y$ B) $\frac{1}{3}Y$ C) $0.5Y$

With my best wishes

Dr. Hassan Elhadidy

جامعة المنصورة كليـــة العلـــوم	امتحان دور يناير ٢٠١٠ المستوى الأول (مستجدون) بنظام الساعات المعتمدة	المادة: حقوق الإنسان تاريخ الامتحان: ٢٠١٠/١/٢٣

أجب عن السؤالين الآتيين:

السؤال الأول:-

توجد علاقة وثيقة بين احترام المجتمع لحقوق الإنسان وكفالة حمايتها من ناحية، والتقدم كقيمة اجتماعية من ناحية أخرى، اشرح هذه العبارة؟

السؤال الثاني:

في إطار دراستك لحق الإنسان في الحياة، تكلم عن الاختلافات الفقهية الو ردة بشأن مدى ضرورة الإبقاء على عقوبة الإعدام أو إلغائها، مع بيان رأيك الشخصي في هذه المسألة؟

مع أطيب التمنيات بدوام التوفيق

المستوى : الأول المادة: جبر وهندسة كود المادة : ر ١١١	قسم الرياضيات – كلية العلوم	الفصل الدراسي الأول: دور يناير ٢٠١٠ التاريخ: ١٨ / ١ / ٢٠١٠ م الزمن: ساعتان
برامج : كيمياء – الكيمياء الحيوية – ميكروبيولوجى – كيمياء وحيوان – كيمياء و نبات– علوم بيئة – جيولوجيا – جيوفيزيقا		

أجب عن الأسئلة التالية:-

السؤال الأول: (٢٠ درجة)

أ- اثبت باستخدام الاستنتاج الرياضي أن $1^2+2^2+3^2+\ldots+n^2=\frac{1}{6}n(n+1)(2n+1)$ (١٠ درجات)

ب- حلل الكسر $\frac{6x+2}{(x-2)(x^2+x+1)}$ إلى كسوره الجزئية. (١٠ درجات)

السؤال الثاني: (٢٠ درجة)

أ- عين معادلة القطع المكافئ الذي رأسه $(-2,3)$ وبؤرته $(1,3)$. ثم أوجد معادلتي المحور والدليل و طول الوتر البؤري العمودي و ارسمه (١٠ درجات)

ب- أوجد مفكوك كل من $\sin 4\theta, \cos 4\theta$ بدلالة قوى $\sin\theta, \cos\theta$. (١٠ درجات)

السؤال الثالث: (٢٠ درجة)

أ- باستخدام قاعدة كرا مر أوجد حل المعادلات الآتية (١٠ درجات)

$$x-4y+z=3\ , \qquad 2x-y-2z=5\ , \qquad x-y+z=6$$

ب- ارسم القطع $x^2+4y^2+6x+16y+21=0$

موضحا جميع المعلومات الخاصة به. (١٠ درجات)

السؤال الرابع : (٢٠ درجة)

أ- أوجد المقياس و السعة للعدد المركب $z=1+\sqrt{3}i$ ثم أوجد قيمة z^6 (١٠ درجات)

ب – بين ما إذا كان المستقيمين $3x-2y+1=0$ & $x+2y-5=0$ متقاطعين أم لا.

وإذا كان متقاطعين أوجد معادلة المستقيم المار بنقطة تقاطعهما وعمودي على المستقيم $2x+3y+7=0$ (١٠ درجات)

مع أطيب التمنيات بالنجاح و التوفيق

أسرة التدريس