

جامعة أسيوط - كلية الصيدلة

الفرقة الأولى

برنامج الصيدلة الاكلينيكية

حقوق الانسان

يونيه ٢٠١٣

الزمن: ساعتان

---

اجب عن سؤالين فقط من الأسئلة الآتية:

السؤال الأول: اشرح بالتفصيل السمات العامة لحقوق الإنسان

السؤال الثاني: اكتب ماتعرفه عن الإعلان العالمي لحقوق الإنسان موضحا أسباب إصداره وطبيعته القانونية ومضمونه

السؤال الثالث:

أذكر ضمانات الحق في الحياة في الشريعة الإسلامية

Assiut University  
Faculty of Pharmacy  
Dept. Pharm. Organic Chemistry  
Pharm. Organic Chemistry Exam.

Clinical Pharmacy  
1<sup>st</sup> level, 2<sup>nd</sup> semester  
June 5, 2010

Time allowed 2h

**Illustrate your answers by chemical equations and reaction mechanisms  
whenever possible**

الامتحانات الشفهية عقب الامتحان النظرى مباشرة لجميع الطلاب

This booklet is composed of 6 pages

Answers should be in the specified places

لجنة الامتحان

Prof. Dr. Abdel Alim M. Abdel Alim

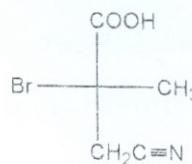
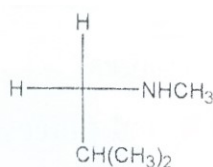
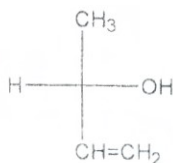
Dr. Hajjaj H. Mohammed

Section A (60 min. 25 points)

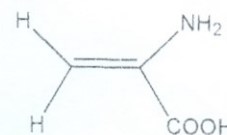
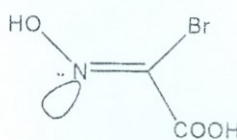
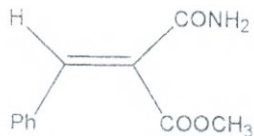
1- Compare between enantiomers and diastereomers according the following table (4 points):

	Physical properties	Chemical properties	Method of separation	Examples
Pair of enantiomers				
Pair of diastereomers				

2) Assign the (R) or (S) to the following structures (3 points)



3) Assign the (E) or (Z) configuration to structures (3 points)



4) Find the conc. of the sample of cane sugar if its  $[\alpha]^{20}_D$  was found to be  $+40^\circ$  when measured in a tube of  $15 \text{ cm}^3$  and observed angle was  $+12^\circ$  (2 points):

*See next page*

5) Draw the conformers of trans-1-methyl-2-isopropyl cyclohexane (ring flip) and comment on their stability (3 points):

6) Give one example for the following reactions (2 points):

a) Stereoselective

b) Regioselective

**II- Complete the following statements or allocate (✓) or (X) whenever required (6 points):**

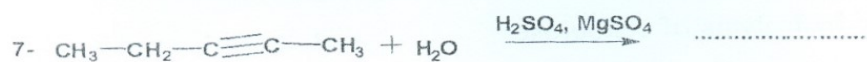
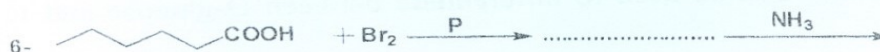
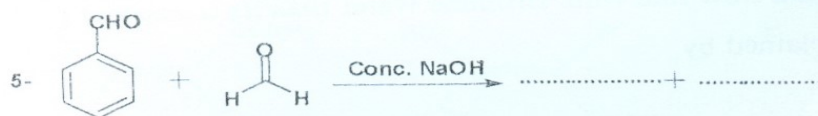
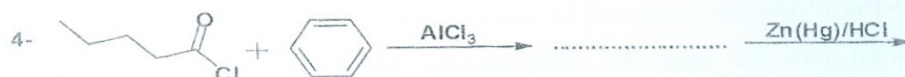
- 1) Dilute HNO<sub>3</sub> can be used to differentiate of D-glucose and D-galactose ( ).
- 2) D-glucose and D-mannose can be used to differentiate by osazone teste ( ).
- 3) Bromine water can can be used to differentiate between D-glucose and D-fructose ( ).
- 4) β-D-glucose oxidizes at a slow rate with Bromine water than its α-anomer ( )
- 5) Statement 4 can be explained  
by.....  
.....
- 6) Periodic acid oxidation can be used to differentiate between D-glucose and D-fructose ( ).
- 7) The products of oxidation of D-fructose by periodic acid are .....
- 8) The products of acid hydrolysis of cellobiose .....
- 9) Cellobiose is a non reducing disaccharide ( ).
- 10) Maltose and celobiose can be differentiated by .....
- 11) Glycogen has a large molecular weight than amylopectin ( ).
- 12) Cellulose suits its function by being .....

*See next page*

III- How to convert D-ribose into meso tartaric acid (2 points)

Section B (60 min, 25 points)

A. Complete the following equations (6.5 points)



8- The reducing property of formic acid is due to .....

9- The frequency of the stretching vibrations and location in IR spectra depend on:

a-

b-

*See next page*

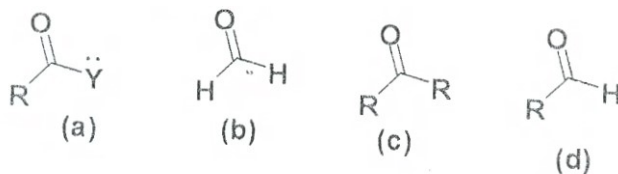
B- Assign true or false and correct the false one (3 points)

- 1- Benzoic acid does not have a hydrogen and gives Hell- Volhard-Zelinisky reaction ( )
- 2- Aldehydes and ketones could be obtained by ozonolysis of alkenes and hydration of alkynes ( )
- 3- Acid halides are highly reactive and can be used for the synthesis of other acid derivatives, aldehydes and ketones. ( )

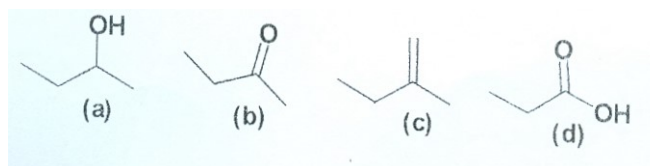
C- Show how you might use a cyclic acetal in carrying out the following transformation (2 points)



D- Arrange the following carbonyl compounds in decreasing order of reactivity in nucleophilic addition: (2 points)



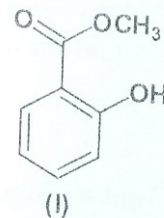
E- Arrange the following structures in increasing order of their boiling points: (2 points)



F- The IR spectrum of methyl salicylat (I), has peaks at 3300, 3050, 2990, 1700, 1590 cm<sup>-1</sup>. Correlate these peaks with the following:

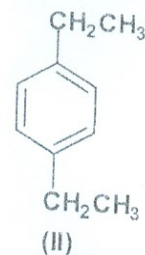
*See next page*

(a) CH<sub>3</sub>, (b) C=O, (c) OH, and (d) aromatic ring. (2 points)



G- Predict the proton NMR spectrum of compound (II) by answering the following questions: (4 points)

- How many different signals would you expect?
- Estimate the chemical shift
- What is the integration of each signal?
- What is the splitting of each signal?



H- Match the type of spectrometer with the kind of information which it could provide (1.5 points)

- |                                      |                       |
|--------------------------------------|-----------------------|
| 1- Mass                              | A. Proton environment |
| 2- Infrared                          | B. Molecular weights  |
| 3- Proton nuclear magnetic resonance | C. Functional group   |
|                                      | D. Carbon environment |

1- Explain the following: (2 points)

- All alkyl benzenes have a prominent fragment at  $m/z = 91$
- Aldehydes show intense peaks at M-I and at  $m/z = 29$ .

*Good luck*

*All questions to be answered*

لاحظ أن أسئلة الامتحان في ٧ صفحات

**1- Give the missed part in the given table replacing the numbers: (15 marks)**

- The Egyptian leaves you have studied are .....(1) and ... (2), both are characterized micromorphologically by their being ..... (3), the type of stomata in both are .....(4) and .....(5) respectively.
- Non-branched, non-glandular pluriseriate hair is composed of ..... (6), named ..... (7), present in .....(8); while the glandular pluriseriate stalked hair with one or more secreting cells is found in ..•... (9). In cannabis, the hair contain .....(10) it is called .....(11)
- The pharmaceutical preparations used in the following cases: bile duct troubles ..... ( 12) and ..... ( 13), constipation with flatulent dyspepsia ..... (14) and in increased ocular pressure .....(15).

*Answers of question I*

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	



14	
15	

**II- Give the scientific expression replacing the following statements: (5 marks)**

- 1- Androecium with 4 long and 2 short stamens.
- 2- The stamens are adhered to style.
- 3- The male sex organ upon ovary
- 4- The structure responsible for the velvety "appearance of corolla.
- 5- The youngest segments of the flower growing at the end of pedicel.
- 6- The whole ovule is bent on itself.
- 7- Elongation of receptacle between calyx and ovary.
- 8- The pits through which the pollen tube protrudes.
- 9- Like raceme but with shorter axis and pedicels of different lengths.
- 10- The factor affecting change of flower colour from red-blue-violet.

Answers of question II

1		6	
2		7	
3		8	
4		9	
5		10	

**III- Give the missed part in the given table replacing the numbers: (10 marks)** (from 1 to 10=5 marks, from 11-14=5 marks)

- The bark can be brought from Oregon is ..... (1), can be replaced by ..... (2) which is preferable on account of its .....(3).
- Rhytidoma is formed in ..... (4) by successive development of ..... (5).

- The lenticels are formed by .....(6), composed of .....(7) followed by .....(8); these are .....(9) in size and .....(10) in number than stomata which are formed to replace .
- The young bark is composed of ..... (11) layers, while the old bark is formed of .....(12) layers, the layers of the young one are .....(13) and those of the old one are .....(14). (Note: both 13 and 14 must be given in the correct arrangement from outside to inside)

Answers of question III

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	

**IV- Choose the correct answer and put it in the table:** (18x0.5=9 marks)

1- Eugenol is present in:

- a- cinchona bark
- b- cinnamon bark
- c- quassia wood
- d- non of them

2- Prunasin is present in:

- a- wild cherry bark
- b- canella bark
- c- pomegranate bark
- d- non of them

3- Pelletierine, isopelletierine are alkaloids present in :

- a- cinchona bark
- b- cinnamon bark
- c- galls . -
- d- non of them

4- The following drug (s) contain tannins:

- a- pomegranate bark
- b- cinchona bark
- c- cinnamon bark
- d- all

5- Cinchonine and cinchonidine are used as:

- a- anti-malaria
- b- antirheumatic
- c- purgative
- d- antifungal

6- Triangular pollen grains are present in:

- a-german chamomile
- b- roman chamomile
- c- clove
- d- pyrethrum

7- Concerning lavender flower:

- a- it belongs to family Labiatae
- b- used In perfume industries
- c- contain volatile oil
- d- all

8- Galls are used:

- a- in manufacturer of ink
- b- as astringent
- c- in tanning and dyeing process
- d- all

9- Concerning Chinese Safflower

- a- Obtained from *Crocus sativus*
- c- contain calendin
- c- belongs to family myrtaceae
- d- non of them

- 10- Concerning roman chamomile:
- a- it is single capitulum
  - b- has no paleae
  - c-used in teeth pain
  - d- non of them
- 11- Alkaloids are present in:
- a- cinchona and cascara
  - b- cascara and wild cherry
  - c- cinchona and pomegranate
  - d- pomegranate and witch-hazel
- 12- Concerning saffron, the part used is:
- a- expanded flower head
  - b- unexpanded flower bud
  - c- calyx and epicalyx
  - d- stigma and tops of style
- 13- The family compositae includes:
- a- clove and pyrethrum
  - b- santonica and pyrethrum
  - c- chamomile and lavender
  - d- non of them
- 14- Mucilage is present in the following drugs except:
- a- cascara
  - b- frangula
  - c- cassia
  - d- cinnamon
- 15- Volatile oils are present in the following drugs except:
- a- sandal wood
  - b- canella bark
  - c- cinnamon bark
  - d- quillaia bark
- 16- Elongated cells with no sharply pointed ends are:
- a- tracheids
  - b- wood fibers
  - c- wood parenchyma
  - d- septate fibers
- 17- The function;is support and transport for the following:
- a- vessels
  - b- tracheids
  - c- (a+b)
  - d- wood fibers
- 18- Concerning Heartwood, all are true except:
- a- dark in colour
  - b- consists of living cells
  - c- mostly blocked
  - d- possess medicinal effects

*Answers of question IV*

1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18

V- Draw the following key elements:

(5x1=5 marks)

Sclereids of cinnamon

Pollen grains of

Clove

chamomile

Non-glandular and glandular hair of pyrethrum

Tyloses

Fiber of cinchona

**VI- Write (✓) or (x) and correct the false for the following (fix the underline words): (8x0.5=4 marks)**

1- In the annual rings, the inner layer is the spring wood while the outer layer is the summer wood .....(..... )  
.....

2- Pterocarpus santalinus belongs to the family Santalaceae..... (.....)  
.....

3- Santalum album contains santalol and used in perfume industry .....(.....)  
.....

4- Cassia bark contain eugenol and tannins.....(.....)  
.....

5- Blue galls contain alkaloids and used for bleeding.....(..... )  
.....

6- Substitute fibers are non living cells, lignified contain cell content as starch  
..... ( ..... ) .....

7- Quinidine is a glycoside present in cinchona bark.....( ..... )  
.....

8- Quassia wood has insecticidal activity..... (..... )  
.....

**VII- How can you test for the active constituents of the following?: (2 mark)**

1- Insecticidal flower (one test)  
.....  
.....

2- Chamomile flower (two different tests)  
.....  
.....

Answer the following

I-Complete the following (10 Marks) $\frac{1}{2} \times 20$

- a- Pectins are.....1..... and used as..... 2.....
- b- Plant gums used as.....3..... and examples of them .....4 .... and .....5.
- c- Cardiac glycosides are used as.....6.....while phenolic glycosides are used as.....7.....
- d- Starch composed of.....8..... and.....9.....,while glycosides composed of.....10.....and .....11..... .
- e- Anthraquinone glycosides can be tested by.....12.....,while diosmin gives.....13..... with alkali
- f- Lycopodium related to.Family.....14.....,while lupulin related to Fam . .....15..... and Kamala related to Fam.....16.....
- g- Natural drying include.....17..... and .....18.....
- h- .....19..... are sources of readily digested carbohydrate for infants, and prepared from starch by.....20.....

II- Draw only the different forms of calcium oxalate (5 Marks)

III- Write short notes on the following

- 1- Lyophilization and its advantages (2 Marks)
- 2- Give the natural products identify by the following reagents (3 Marks)

Ruthenium	Mayers reagent	Dudan III
Iodin	Ferric Chloride	Sodium Hydroxide

IV-Choose the correct answer and put it in a table (1X5=5Marks)

1- The salts of alkaloids are soluble in.( a) organic solvents (b )water

2-Tannins cause precipitation of (a) protein (b) heavy metals

3-Bitter principles composed of (a) C,H and O (b) C,H and N

4- The most acceptable and rapid drying for medicinal plants is

( a) sun dryind (b )Artificial drying

5-Cyanophore glycosides on hydrolysis give:

(a)H<sub>2</sub>S (b)HCN

Answers of question IV

1	2	3	4	5

Best wishes



**I-Give an account on (four only): (4 marks each)**

- a- Plasma cell (origin ,structure and function)
- b- cortex of lymph node
- c-Neutrophil
- d-Osteoclast
- e-Structure of proximal convoluted tubule and how it can adapt its function.

**11- Compare between (four only): (3 marks each)**

- a- Eccrine and apocrine sweat glands
- b- Type I and Type II pneumocytes
- c- Zona glomerulosa and zona fasciculata of adrenal cortex
- d~ Rods and Cones
- e- Fenestrated and continuous blood capillary

**III-Enumerate the following (four only):( 2 marks each)**

- a- Lining cells of fundic gland
- b- Components of basement membrane
- c- Types of epidermal cells
- d- Types of neurons
- e- Contents of sarcomere

**IV- Illustrate only with labeled diagram (three only) (3 marks each)**

- a- Light microscopic structure of Mature Graffian follicle
- b- Electron microscopic structure of nerve cell body (perikaryon)
- c- Electron microscopic structure of Melanocyte
- d- Electron microscopic structure of hepatocytes

**V- Choose the correct one answer: ( 2 marks each)**

**1-The characteristic cytologic structure of the interstitial cells of leydig is the presence of:**

- a. Abundant Golgi bodies
- b. Abundant rough endoplasmic reticulum.
- c. Abundant lysosomes.
- d- Abundant smooth endoplasmic reticulum

**2- Langerhans cells are**

- a- present in pancreas to secrete insulin and glucagon
- b- Ectodermal in origin
- c- both a &b
- d- having Berbeck's granules.

**3- Which of the following statements about thyroid follicles is not true?**

- a- They contain thyroglobulin.
- b- They are lined by epithelial cells that vary in appearance with the activity of the gland.
- c- They secrete thyroglobulin directly to blood
- d- They are surrounded by a fenestrated capillary network.

**4- The following is not correct for macula densa**

- a- one of the components of juxtaglomerular apparatus
- b- It is a modification in the distal convoluted tubule:
- c- Cells are tall, columnar and crowded with deeply stained nuclei
- d- Not related to juxtaglomerular cells

**5- The white pulp of the spleen contains**

- a- Central artery
- b- periarterial lymphatic sheath
- c- lymphatic nodules
- d- all of the above

**6- The paneth cells release**

- a-Insulin
- b-Lysosome
- c-Histamine
- d-Isozyme

**7- The parietal cell is acidophilic because**

- a-It has acid inside it
- b-It has acid outside it
- c-RER and ribosome
- d-abundant mitochondria and SER

**8- The cell responsible for myelination in the CNS is**

- a- Fibrous astrocyte
- b- Microglia
- c-Schwann cell
- d-Oligodendroglia

**9-Electron transport in mitochondria takes place**

- a- In the matrix
- b- On the calcium particles
- c-On the inner membrane
- d-On the outer membrane

**10- The Sertoli cells:**

- a-Divide to give primary spermatocytes.
- b-Form the blood testicular barrier.
- c-Secrete testosterone.
- d- None of the above.

Instructor: Prof. Tahani Elfaham

**1. Tick(√) for right and (x) for false statements and correct the false one:** (15 marks)

- 1- The first known chemical processes were carried out by the artisans, in Egypt, and China. ( )
- 2- pharmaceutical care comprises a shared responsibility between the patient and physician ( )
- 3- Pharmacists working in community pharmacies are not allowed to provide information about drugs sold without a prescription ( )
- 4- The safe use and distribution of drugs is not the interest of the pharmacist( )
- 5- In the medieval times there was a correlation between drugs, faith and religion ( )
- 6- The Food and Drug Administration (FDA) is responsible for creating guidelines for the approval and use of drugs. ( )
- 7- A pharmacist does not need a strong foundation in basic science; chemistry, Physics and biology. ( )
- 8- A clinical pharmacist is engaged only in the primary care activities ( )
- 9- The patient medication record is a record citing all the characteristics of a his name, age, weight, state, medications ( )
- 10- Medicine management comprises only purchasing of drugs ( )
- 11- The compliant patient, scores no progress in therapy ( )

12- Counseling by clinical pharmacist decreases noncompliance, improves patient care and decreases cost of therapy. ( )

13- "the responsible provision of drug therapy for the purpose of achieving specific outcomes that improve a patient's quality of life", is known as pharmaceutical care. ( )

14-launching of new products, is the responsibility of the R&D department( )

15-When you finish your study ,you will earn a Pharm.D degree ( )

**II. Choose the most suitable statement:** (10 marks)

1-The community pharmacist presents services to general practitioners as;

- A) Examine the patients instead of him.
- B) Gives him information about drugs.
- C) Gives him free samples of drugs.

2-A Narcotic Prescription Order is;

- A) That written for a narcotic drug.
- B) Permitted to be dispensed only once.
- C) Both (A) and (B)

3-Factors affecting noncompliance:

- A) The type of disease.
- B) The frequency of dosing.
- C) Both (A) and (B).

4- Therapeutic drug monitoring is done for drugs:

- A) With narrow therapeutic index.
- B) With wide therapeutic index.
- C) With high plasma concentration.

5- In pharmaceutical companies, Quality Control Department is engaged in;

- A) Production of dosage forms
- B) Promotion of products
- C) Quantitative analyses of drugs

6- Concordance in therapy means that, we respect the wishes of;  
A)The physician.  
B)The patient.  
C)The pharmacist.

7- Medication errors occurred from:  
A)Humans mistakes.  
B)Drugs  
C)Both (A) and (B).

8- In the prescription order, the (subscription) means directions to,  
A)The patient.  
B)The pharmacist.  
C)Both (A) and (B).

9- The record citing all the characteristics of the patient on admission to the hospital is;  
A)Patient compliance.  
B)Patient counseling.  
C)A patient medication record.

10- Total Parenteral nutrition is used when,  
A) A patient cannot eat too much  
B) Patient's gastrointestinal tract is not functional  
C) Patient needs oral nutritional support

**III. Complete:**

(15 marks)

1- A pharmacopoeia is

.....  
.....  
.....  
.....

2- The fields where the industrial pharmacist works are:

- a) .....
- b) .....
- c) .....
- d) .....

3- Medication errors are:

.....  
.....  
.....  
.....  
.....

4- Over the Counter (OTC) products are:

.....  
.....  
.....  
.....

5- Total parenteral Neutrition (TPN) is

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

IV- Calculate the following: (10 marks)

1-How much of a diluent must be added to 50 g of a 10% ointment to make it a 5% ointment?

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

2- The concentration of NaF in a community's drinking water is 2 ppm Express this concentration as a percentage.

.....  
.....  
.....  
.....

3- Lanoxin pediatric Elixir contains 0.05mg of digoxin per ml. How many micrograms ( $\mu\text{g}$ ) are there in 3 ml of elixir?

.....  
.....  
.....  
.....





C- Use one or more non-medical materials in combination with drug substance(s) in the dosage form. (1.5 marks)

.....  
.....  
.....

D- Pastilles are jelly like in consistency (1 mark)

.....  
.....  
.....

E- The oral route is the most commonly used route for drug administration (1.5 marks)

.....  
.....  
.....

4- Tick (✓) for right and (x) for wrong statement. (3 marks)

- A) The drug absorbed from the buccal cavity must be formulated as capsules. ( )
- B) The sublingual route is used only for systemic action. ( )
- C) Very fast onset of action is achieved by intravenous injection. ( )
- D) By the respiratory rout only local action is achieved ( )
- E) Capsules are semisolid dosage form ( )
- F) Ointments are easier to apply and are less greasy than creams ( )

تاريخ الصيدلة  
(٢٥ درجة)

١. أكمل العبارات الآتية: (١١ درجة)

أ- طرق تسمية البرديات هي: (٢ درجة)

..... ١-

..... ٢-

..... ٣-

..... ٤-

ب- استعمل قدماء المصريين الراتنجات Resins فى أعراض كثيرة أهمها: (٢ درجة)

..... ١-

..... ٢-

..... ٣-

ت- اشتمل كتاب "الصيدلة فى الطب" الذى ألفه البيرونى على: (٣ درجة)

.....

.....

.....

ث- أعمال ابن سينا فى طب النساء تتلخص فى الآتى: (٣ درجة)

.....

.....

.....

ج-..... هو أحد المشاهير العرب فى الصيدلة ومن أقواله " ان استطاع الحكيم أن يعالج بلاغذية دون الأدوية فقد وافق السعادة وينبغى للمريض أن يقتصر على واحد ممن يوثق به من الأطباء كى لا يقع فى خطأ كل واحد وهو أول من استخدم معى القط لخياطة الأنسجة

(١ درجة)

٢. أذكر ثلاثة أمثلة للآتى: (٦ درجات)

ا- الدساتير الطبية العربية

.....  
.....  
.....

ب- أعظم الكتب التى أثرت فى الصيدلة فى أوروبا

.....  
.....  
.....

ت- كتب العلماء اليونانيين التى قام بترجمتها الى العربية حنين بن اسحق العبادى

.....  
.....  
.....

ث- المواد المستعملة فى التحنيط

.....  
.....  
.....

٣. ضع علامة (✓) أمام العبارة الصحيحة وعلامة (x) أمام العبارة الخاطئة وقم بتصحيحها: (٨ درجات)

( ) ا- استعمل قدماء المصريين الجير الحى فى التحنيط لعمل محلول لغسيل الأحشاء

( ) ب- بذر الكتان عقار نباتى استعمله قدماء المصريين فى علاج الأمراض المعوية

( ) ت- قام البيرونى بتحضير بعض الأحماض مثل الكبريتيك وسمه الزاج الأخضر كما حضر الكحول بتقطير الموادالنشوية والسكرية المخمرة

( ) ث- قسم قدماء المصريين العقاقير الى عقاقير من مصدر نباتى ، عقاقير من أصل حجرى وعقاقير من أصل بحرى



Question 1. Acid base titrimetry (25 marks)

By Prof. Dr. Ibrahim H. Refaat

A. Choos, mark the correct answer and complete the following answer table:

(6 marks)

Ques. No.	1	2	3	4	5	6
Answer letter						
Ques. No.	7	8	9	10	11	12
Answer letter						

1- The pH of  $\text{CH}_3\text{COONa}$  aqueous solution can be calculated by the following equation:

- a-  $\text{pH} = 1/2\text{pK}_w + 1/2\text{pK}_a - 1/2\text{pC}_s$       c-  $\text{pH} = 1/2\text{pK}_w + 1/2\text{pK}_a - 1/2\text{pK}_b$   
 b-  $\text{pH} = 1/2\text{pK}_w + 1/2\text{pK}_b - 1/2\text{pC}_s$       d-  $\text{pH} = 1/2\text{pK}_w - 1/2\text{pK}_a + 1/2\text{pC}_s$

2- On the titration of mixture of  $\text{Na}_2\text{CO}_3$  &  $\text{NaHCO}_3$ , by standard HCl, using phenolphthalein indicator, the volume of HCl is equivalent to:

- a-  $\text{Na}_2\text{CO}_3$       b-  $2 \text{Na}_2\text{CO}_3$   
 c-  $1/2 \text{Na}_2\text{CO}_3 + \text{NaHCO}_3$       d-  $1/2 \text{Na}_2\text{CO}_3$ ,

3- On the titration of mixture of  $\text{Na}_2\text{CO}_3$  &  $\text{NaOH}$ , by standard HCl, using phenolphthalein indicator, the vol'ume of HCl is equivalent to:

- a-  $\text{Na}_2\text{CO}_3 + \text{NaOH}$       b-  $\text{Na}_2\text{CO}_3 + 1/2 \text{NaOH}$   
 c-  $1/2 \text{Na}_2\text{CO}_3 + \text{NaOH}$       d-  $1/2 \text{Na}_2\text{CO}_3 + 1/2 \text{NaOH}$

4- On the titration of mixture of  $\text{Na}_2\text{CO}_3$  &  $\text{NaHCO}_3$ , by standard HCl, using methyl orange indicator, the volume of HCl is equivalent to:

- a-  $\text{Na}_2\text{CO}_3 + 1/2 \text{NaHCO}_3$       b-  $\text{Na}_2\text{CO}_3 + \text{NaHCO}_3$   
 c-  $1/2 \text{Na}_2\text{CO}_3 + \text{NaHCO}_3$       d-  $2 \text{Na}_2\text{CO}_3 + \text{NaHCO}_3$ ,

5- On the determination of mixture of HCl &  $\text{CH}_3\text{COOH}$ , by titration with standard NaOH, phenolphthalein end point is corresponding to:

- a- HCl only      b-  $\text{CH}_3\text{COOH}$  only  
 c- Total HCl +  $\text{CH}_3\text{COOH}$       d-  $1/2\text{HCl} + 1/2\text{CH}_3\text{COOH}$ ,

6- Acid-base determination of  $\text{K}_2\text{S}_2\text{O}_8$  sample is based on:

- a- direct titration with standard acid  
 b- direct titration with standard base  
 c- titration with standard base after hydrolysis to  $\text{KHSO}_4$ .  
 d- titration with standard  $\text{Ag}^+$  ion after hydrolysis to  $\text{KHSO}_4$ .

7- A "screened indicator" is a mixture of an indicator and

- a- an inert dye, whose color does not change with pH.
- b- an inert dye, whose color is changed with pH.
- c- another indicator, whose color does not change with pH.
- d- another indicator, whose color is changed with pH.

8-  $\text{CH}_3\text{COOH}$  as a non-aqueous solvent is considered to be:

- a- Protophilic solvent.
- b- Protogenic solvent.
- c- Aprotic solvent.
- d- Amphiprotic solvent.

9- The following is the most acidic solution:

- a-  $[\text{H}^+] = 1 \times 10^{-5}$
- b-  $\text{pH} = 4.0$
- c-  $\text{pOH} = 9.5$
- d-  $[\text{OH}^-] = 1 \times 10^{-11}$

10- pH of  $\text{NH}_4\text{OH}$  solution can be calculated according the following equation:

- a-  $\text{pH} = \text{pK}_w - 1/2\text{pK}_b - 1/2\text{pC}_b$
- b-  $\text{pH} = 1/2\text{pK}_b + 1/2\text{pC}_b$
- c-  $\text{pH} = 1/2\text{pK}_w - 1/2\text{pK}_b + 1/2\text{pC}_s$
- d-  $\text{pH} = \text{pK}_w - \text{pK}_b - \log [\text{salt}]/[\text{base}]$

11- pH of a mixture of  $\text{CH}_3\text{COONa}$  (0.01 M) and  $\text{CH}_3\text{COOH}$  (0.1 M) solutions equals to: ...

- a- 4.76
  - b- 3.76
  - c- 5.76
  - d-  $1/2(4.76)$ .
- (note that  $\text{pK}_a = 4.76$ )*

12- on the determination of HgO by acid-base titration, sample should be pretreated with:

- a-  $\text{NH}_4\text{OH}$
- b- KI
- c- KOH
- d- HCHO.

---

**B. By equations only. show the following: \_\_\_\_\_ (7 marks)**

1- Role of glycerol on the determination of boric acid.

2- Alkaline hydrolysis of "aspirin".

**3- Role of mercuric acetate on the nonaqueous determination of aniline HCl.**

**4- Effect of potassium iodide on (a) mercuric oxide and  
(b) ammoniated mercury.**

**5- Role of formaldehyde on the determination of:  
(a) ammonium chloride and (b) glycine amino acid.**

**C.Show by drawing the titration curves of the following acids against standard NaOH:**

1- HCl

2- Acetic acid ( $K_a = 1.8 \times 10^{-5}$ )

3- An acid whose  $K_a = 1.0 \times 10^{-2}$ .

4- An acid whose  $K_a = 1.0 \times 10^{-8}$ .

**D. Write shortly on each of the following: (9 marks)**

1- Determination of  $\text{NaHCO}_3$  in the presence of  $\text{Na}_2\text{CO}_3$ .

2- Determination of  $\text{K}_2\text{S}_2\text{O}_8$  in the presence of  $\text{KHSO}_4$ .

3- Determination of boric acid in the presence of borax.

**Question (II)- Precipitometry & Gravimetry (25 Marks)**

*(by professor Dr. Horria A. Mohammed)*

A·Mark (√) for the correct statement and (X) for the wrong one: (5 Marks)

- 1- AgI is soluble in ammonia while AgCl is insoluble. ( )
  - 2- The solubility of BaSO<sub>4</sub> in water decreases with NaNO<sub>3</sub>. ( )
  - 3- KCl increases the solubility of AgCl in water. ( )
  - 4- Silver halides are non sensitive to light. ( )
  - 5- AgCl, AgBr, AgI and Ag<sub>2</sub>S are soluble in alkali cyanide solutions. ( )
  - 6- Increase of temperature mostly decreases the solubility of precipitate. ( )
  - 7- The solubility of most inorganic compounds is increased by the addition of organic solvents. ( )
  - 8- In precipitometric titration curve the larger the solubility product of the sparingly soluble salt, the larger the break at the equivalence point. ( )
  - 9- The molar solubility of silver chromate is several times greater than that of silver chloride or bromide. ( )
  - 10- Gravimetry is one of the most accurate and precise methods of macro quantitative analysis. ( )
- 
- 

**B· Write the scientific name or suitable word/s for each of the following:**

(put your answer in the table)

**(5 Marks)**

No	Name of word/s	No	Name of word/s
1		6	
2		7	
3		8	
4		9	
5		10	

1-Salts having ions different from those of the sparingly soluble salt and have more effect on precipitates with multiply charged ions.

2-A type of successive precipitation using the same precipitating agent. 1,

3-A condition in which a solution phase contains more of the dissolved precipitate than can be in equilibrium with the solid phase.





5-In Volhard's method the medium should be

- a) strongly acidic      b) strongly alkaline      c) neutral      d) acidic

6-Argentometric titrations are of limited applications for solution which contains

- a) sulfur dioxide      b) colored substances  
c) mercuric salts      d) all mentioned

7- Diphenylamine is .....indicator and used for detection of end point in titration of zinc ions with potassium ferrocyanid

- a) adsorption      b) precipitate forming  
c) redox      d) complex forming

8- Potassium thiocyanate can react with the following except

- a) NaCl      b)  $\text{Fe}^{3+}$       c)  $\text{Ag}^+$       AgCl

9- In the determination of ..... by Volhard's it is essential to add ferric alum solution after its complete precipitation by excess silver.

- a) thiocyanate      b) iodide      c) chloride      d) all mentioned

10- if 0.01 M  $\text{AgNO}_3$  solution is added to a mixture containing  $10^{-4}$  M of each of NaCl, KBr and KI then the precipitate formed will be: ( $K_{sp}$  of the produced salts are:  $1.1 \times 10^{-10}$ ,  $5.2 \times 10^{-13}$ ,  $1.7 \times 10^{-16}$ , respectively)

- a) The three salts      b) AgCl only  
c) AgBr and AgI      d) none of the mentioned

---

**D- Complete the following:** (10 marks)

- Reduction of contamination can be performed through:

- 1- .....  
2- .....  
3- .....  
.....

-Selectivity of precipitating agent can be obtained by:

- 1- .....  
2- .....

- On titrating 100 ml of 0.1 N NaCl with 0.1 N AgNO<sub>3</sub>, pCl at the equivalence point is calculated as follows: ( $K_{sp} \text{ AgCl} = 1.2 \times 10^{-10}$ )

-----  
-----  
-----

- Type of washing solutions are that:

- 1- .....
- 2- .....
- 3- .....

- The % of Mg in 0.2 g of MgCl<sub>2</sub> sample that analyzed gravimetrically as Mg<sub>2</sub>P<sub>2</sub>O<sub>7</sub> can be calculated as follow: (the weight of Mg<sub>2</sub>P<sub>2</sub>O<sub>7</sub> was found 0.3516 g, its molecular weight = 223 and atomic weight of Mg = 24)

-----  
-----  
-----  
-----

- Three examples for precipitation from homogenous solution are:

- 1- .....
- 2- .....
- 3- .....

الشفوى عقب النظرى مباشرة بالقسم

مع دعائنا بالتوفيق والتفوق

=====

**Answer all the Questions**

**PART I**

**i-Give the correct term for each of the following statements: (5 Marks)**

A- The transportation of a drug from oral dosage form into solutions.

(            ).

B-Alkaline metal salts of organic acids that used to increase the aqueous solubility of slightly soluble substance.

(            ).

C-Separation process based on unequal rates of passage of solutes and solvent through microporous membranes.

(            ).

D- The extent to which the solute dissolved in a given solvent to form saturated solution at certain temperature.

(            ).

E- The solubility characteristics of a drug can be altered via chemical modification.

(            ).

**ii-Rationalize (with example)**

**(10 Marks)**

A- The pressure of gas above the solution has an important consideration in gaseous solution (use equation).

.....  
.....  
.....  
.....  
.....  
.....

B-The structural feature of the compound is important factor in drug solubility.

.....  
.....  
.....



**iii- Mention the pharmaceutical applications of the following (given example)**

(10 marks)

A- Picric acid complexes

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

B- The use of hydrotropy to increase the solubility of water insoluble drugs.

.....  
.....  
.....  
.....  
.....  
.....  
.....

C- Ethylene-diamine tetra acetic acid.

.....  
.....  
.....  
.....  
.....  
.....

D- Scale for surfactant functions on basis of HLB.

.....

.....

.....

.....

.....

.....

.....

E- Methods used to increase the solubility of cytotoxic drugs.

.....

.....

.....

.....

.....

.....

.....

## PART II

**i-A-Select the most appropriate answer: (20 Marks)**  
**(Answers to all questions are to be recorded on the accompanying table in the format A-C)**

**1- The science and technology of small particles is known as:**

- A -micromeritics.
- B-rheology.
- C-Solubilization

**2- The Henderson-Hasselbalch equation calculates:**

- A-Viscosity of Newtonian liquid
- B- Velocity of sedimentation.
- C-pH of a buffer solution.

**3- .....is a measure of the capacity of a buffer in resisting changes in pH:**

- A-buffer action.
- B-buffer effect.
- C-buffer index.

**4- If 1 ml of a 0.1 N HCl solution is added to 100 ml of pure water, the pH :**

- A- reduces from 7 to 3.
- B- increases from 3 to 7.
- C- remains constant.

**5- Examples of weak acid buffer systems.**

- A-acetic acid/Sodium acetate.
- B-acetic acid/ Sodium chloride.
- C-acetic acid /ammonium chloride

**6-A positive dilution value for a buffer signifies that**

- A-the pH rises with the dilution.
- B-the pH rises with the temperature.
- C-the pH rises with the addition of the base.

**7- Buffers can be used to maintain the drug in its unionized form to.**

- A-increase aqueous solubility.
- B-increase drug absorption.
- C-decrease tissue irritation.

**8- Osmosis describes the following:**

- A-when the solute passes through a semi-permeable membrane from a dilute solution into a concentrated one.



B-when the solvent passes through a semi-permeable membrane from a dilute solution into a concentrated one.

C-when the solvent passes through a semi-permeable membrane from a concentrated solution into a dilute one.

**9- The solution prepared with lower osmotic pressure than specific body fluids is called:**

A-isotonic

B-hypotonic

C-hypertonic

**10-If the red blood cells are placed in water,**

A-the cells swell.

B-the cells shrink

C-the cells maintain its shape.

**11-A solution of boric acid with the same osmotic pressure as the blood cell contents is said to be:**

A .. iso-osmotic with blood not isotonic.

B- iso-osmotic with blood and isotonic.

C- isotonic with blood not iso-osmotic.

**12-0.9% w/v sodium chloride is ..... with body fluids.**

A-isotonic.

B- iso-osmotic

C- isotonic and iso-osmotic.

**13- .....is the freezing point of both human blood and lachrymal fluid.**

A- (- 0.52°)

B- (- 0.25°)

C- (- 0.85°)

**14-A solution that is iso-osmotic with blood is isotonic only when the blood cells are:**

A-impermeable to both solute molecules and the solvent, water

B-impermeable to the solute molecules and permeable to the solvent, water.

C-permeable to both the solute molecules and the solvent, water

**15- What is the ratio of base to acid when  $\text{pH} = \text{pKa} + 1$  ?**

A-the ratio of base to acid is 10:1.

B-the ratio of base to acid is 1:10.

C-the ratio of base to acid is 1: 1.

**16-Rheogram is:**

- A- a plot shearing stress against rate of shear
- B- a plot of particle size against frequency
- C- a plot of viscosity against time.

**17- The cgs unit of kinematic viscosity called the:**

- A-Stoke.
- B- Poise
- C- Pascal.sec

**18- Newtonian fluid is a fluid or dispersion:**

- A-whose rheological behaviour is described by Newton's law of gravity.
- B-considered as one for which the relationship  $F /G$  is a constant.
- C- The viscosity is variant with different shear rate.

**19- Pseudoplastic flow is :**

- A- a shear-thinning fluid.
- B-a shear-thickening fluid.
- C- Bingham Liquids

**20- The flow curve which does not pass through the origin belongs to:**

- A- plastic flow.
- B- pseudoplastic flow.
- C- dilatant flow.

**21-The yield value is present in**

- A- Newtonian flow.
- B- plastic flow.
- C- pseudoplastic flow.

**22-Plastic flow is associated with the presence of:**

- A-flocculated particles in concentrated suspensions.
- B-deflocculated particles in concentrated suspensions.
- C-polymers in solution.

**23- The slope in the flow curve of plastic flow is:**

- A-called plastic viscosity.
- B-fluidity
- C-mobility.

**24-In pseudoplastic flow:**

- A- the viscosity is constant with variant shear rate.
- B- the viscosity of the system increases with the increase in rate of shear.
- C- the viscosity of the system decreases with the increase in rate of shear.

**25- Thixotropy might be applied only to:**

- A- shear thinning fluid.
- B- shear thickening fluid.
- C- Newtonian fluid.

**26-Ostwald viscometer measures the viscosity of:**

- A- Newtonian liquid.
- B- non-Newtonian liquid.
- C- both of Newtonian and Non-Newtonian liquid.

**27-Which one measures the viscosity of both of Newtonian and Non-Newtonian liquid?**

- A - falling sphere viscometer
- B- Ostwald viscometer
- C-cone and plate Viscometer

**28- The diameter of asymmetric particle undergoing sedimentation at the same rate as the spherical one is called:**

- A - surface diameter.
- B- projected diameter.
- C- Stokes' diameter.

**29- The buffer capacity is optimal when the ratio of the salt to the acid:**

- A-1:10.
- B- 1: 1.
- C- 10: 1.

**30-The surface area of a spherical particle is:**

- A-  $\frac{4}{3} \pi r^3$
- B-  $4 \pi r^2$
- C-  $4 \pi d^2$

**31-Helium densitometer detertnines:**

- A-true density. . "
- B-granule density.
- C-bulk density.

**32-The volume of the particles together with their intraparticle spaces gives**

- A-true volume.
- B-granule volume.
- C-bulk volume.

**33- The displacement method by mercury can be used to determine:**

- A-true volume

B-granule volume.  
C-bulk volume.

**34- Which one determines the density of a liquid.**

A-pycnometer  
B-cone and plate.  
C-Andreasen pipette

**35- The better flow characteristics of powders when:**

A-the smaller will be the angle of repose.  
B-the smaller particle size.  
C-the more asymmetric particle.

**36- The ratio of the void volume to the bulk volume of the powder is called.**

A-porosity  
B-bulk density.  
C-angle of repose

**37-Millimicron (m $\mu$ .) equals to:**

A-10<sup>-3</sup> meter.  
B-10<sup>-6</sup> meter.  
C-10<sup>-9</sup> meter.

**38-Coulter counter is used to measure:**

A-particle volume.  
B-particle ,diameter.  
C-particle surface area.

**39-Smaller the size of the particle:**

A-better the physical stability of the suspension and emulsion.  
B-Iess drug solubility & dissolution.  
C-slower drug action

**40- What is the molar ratio, [salt]/[acid), required to prepare an acetate buffer of pH 5 and, pKa= 4.76?**

A- = 1.74  
B- = 4.71  
C- = 7.14

No.	Answer	No.	Answer
1		21	
2		22	
3		23	
4		24	
5		25	
6		26	
7		27	
8		28	
9		29	
10		30	
11		31	
12		32	
13		33	
14		34	
15		35	
16		36	
17		37	
18		38	
19		39	
20		40	

**ii-B- Define:**

**(Three marks)**

1- Sodium Chloride equivalent:

.....  
.....  
.....

2- Shear stress:

.....  
.....  
.....

3- Viscosity

.....  
.....  
.....

4- Angle of repose

.....  
.....  
.....

5- Buffer

.....  
.....  
.....

6- Buffer capacity

.....  
.....  
.....

.....  
.....

**iii-Draw**

**(two marks)**

a- The flow curve for pseudoplastic flow

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

b-A rheometer used for non-Newtonian flow.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

أجب عن ثلاثة اسئلة فقط مما يلي:- (٣٠ درجة لكل سؤال)

**السؤال الأول**

أكتب في مجلس حقوق الانسان من حيث (نشأته - المبادئ التي تحكم عمله - تشكيله - تعليق العضوية فيه - جلساته - نظام العمل الداخلي به)؟

**السؤال الثاني**

تتولى لجنة القضاء على التمييز ضد المرأة كل ما يتعلق بتحقيق مبادئ المساواة بين الرجل والمرأة والحفاظ على حقوقها وعدم المساس بها أو انتهاكها. اشرح تفصيلا الدور الذي تقوم به تلك اللجنة في هذا المجال مع التعرض لتشكيلها وأنواع التقارير التي تقدم منها؟

**السؤال الثالث**

اشرح تفصيلا مظاهر توسع الاسلام في مخارج الرق؟

**السؤال الرابع**

اكتب في اللجنة المعنية بمناهضة التعذيب من حيث (تشكيلها - اختصاصاتها - التقارير التي تقدم منها) ؟

مع أطيب الأمنيات بالنجاح والتفوق

د/ناصر عثمان



Dr. Salwa EI-Shabouri

Pharmaceutical Analytical Chemistry-I  
Assiut University  
Faculty of Pharmacy  
Pharm. Anal. Chem. Dept.

PC 205 (Clinical Pharmacy)  
Final Exam  
8 June, 2009  
Time: allowed: 2 Hours

---

All questions are to be attempted with balanced equations whenever Possible

---

ACID-BASE TITRATIONS

(25 Marks)

I-Give reason for

(4Marks)

1- Addition of glycerol in determination of boric acid

2-Addition of sucrose in determination of calcium oxide

3-Few drops of silver nitrate are added to potassium persulphate in the procedure of its determination

4-Acetic anhydride is added to glacial acetic acid when it is used as solvent in non aqueous titrations

**II- Put (√) in front of the correct statement and (X) in front of the incorrect one, then CORRECT it. (6 Marks)**

1-Potassium acid phthalate is used as primary standard substance ( )

2-Sulphuric acid can be titrated stepwise ( )

Dr. Salwa EI-Shabouri

- 3-Screened indicator is made by mixing 2 dye stuffs ( )
- 4-pH range of M. O .. is from 6- 8 ( )
- 5- Glacial acetic acid is an aprotic solvent ( )
- 6-The maximum buffer capacity can be verified if the concentration of acid and its salt are equal ( )
- 7-Equivalence point is the point at which an equivalent amount of titrant is added ( )
- 8-Aqueous solution of strong electrolyte show no electrical conductance ( )
- 9-Arrhenius theory defined the acid as any substance that can donate a proton ( )
- 10- Solution of pH values greater than 7 is acidic ( )
- 11-End point in non aqueous titration of aniline against perchloric acid is detected by using crystal violet indicator ( )
- 12-Blank is a separate determination in which all conditions are identical with those employed in the analysis except that the sample is omitted ( )

**III-Complete the following statements (4 Marks)**

1-Primary standard substances should fulfil these requirement

- a-
- b-

2- Back titration is used in the following cases ( 2 only)

- 
-

Dr. Salwa EI-Shabouri

3- One normal solution is defined

4-Kjeldahl method is used

IV-a- Draw in the opposite space

(3.5 Marks)

A curve for the titration of  
50 ml of weak base (0.1 N  $\text{NH}_4 \text{OH}$ )  
with strong acid (0.1 N  $\text{HCl}$ )

b-pH before titration

c-pH during the titration

d-pH at the end point

e-pH after the end point

f- The name of the salt which is formed at the end point

g-The indicator which may be used



V-A 20  $\mu\text{l}$  serum sample was analyzed for glucose and found to contain  
25  $\mu\text{g}$ . Calculate the glucose in ppm. ( 1 Mark)

Dr. Salwa EI-Shabouri

**V-How can you determine the following:**

1-Mixture of sodium carbonate and sodium bicarbonate (2.5Marks)

2-Ammonium Chloride (Formol titration)

(2 Marks)

3-Acetylsalicylic acid (Aspirin)

(2 Marks)

**11- Precipitometry****12 marks****Dr. Niveen A. Mohammed****1- Complete the following table 4 marks**

Method	Indicator	Medium	Applications
Mohr			Detn. of $\text{Cl}^-$ and $\text{Br}^-$ not $\text{I}^-$ or $\text{SCN}^-$
Volhard	Ferric alum		
Fajan's		pH 7-8	
Denige's		$\text{NH}_3$ solution	

**2· Calculate the solubility of  $\text{AgCl}$  ( $K_{\text{sp}} = 1.1 \times 10^{-10}$ ) in 0.01 M  $\text{NaCl}$  ( $\text{Ag} = 108, \text{Cl} = 35.5$ ).**

**3 marks**

**3· Tick ( $\checkmark$ ) or (x) for the following Statements and correct the uncorrect statement. 3 marks**

- a- The inflection of titration curve increase by increase the  $k_{\text{sp}}$  of the ppt. ( )
- b- When  $\text{Zn}^{2+}$  is determined precipitometrically, the titrant is  $\text{K}_3[\text{Fe}(\text{CN})_6]$ . ( )
- c- The  $K_{\text{sp}}$  of  $\text{AgCl}$  is more than  $\text{Ag}_2\text{CrO}_4$ . ( )
- d- Rose Bengal indicator used in determination of both  $\text{I}^-$  and  $\text{Br}^-$ . ( )
- e- All the silver halide salts are soluble in cyanide except silver sulphide. ( )

f- In determination of sulphate using sodium rhodizonate as indicator the end point is the formation of red colour. ( )

**4-Determine the following mixture: 2 marks**

Chloride and cyanide.

**III - Gravimetry**

**1-In the following answer sheet, select one letter only indicating the most correct answer for each of the following statement: 3½ marks**

Statement No.							
Answer letter							

1- In gravimetric analysis, the weighed form:

- a) Must be of known definite chemical formula.
- b) Must not be of known definite chemical formula.
- c) Both (a) and (b)

2- The best washing liquid for  $\text{Fe}_2\text{O}_3 \cdot x\text{H}_2\text{O}$  is :

- a)  $\text{NH}_4\text{NO}_3$
- b)  $\text{HNO}_3$
- c)  $\text{KNO}_3$
- d) None of these, it is .....

3- Elimination of contamination by post- precipitation can be better obtained by:

- a) Recrystallization
- b) Washing
- c) Digestion
- d) None of these, it is better obtained by .....

4- The best washing liquid for  $\text{MgNH}_4\text{PO}_4$  is:

- a)  $\text{NH}_4\text{OH}$
- b)  $\text{H}_2\text{O}$
- c) Ethanol
- d) Mixture of  $\text{H}_2\text{O}$  and ethanol.

5- Flocculation process is the process of:

- a) Peptization
- b) Reprecipitation
- c) Coagulation of colloidal particles
- d) None of these, it is .....

6- Digestion of precipitate causes:

- a) Increase in particle size, decrease surface area and decrease contamination.
- b) Dissolution of large particles.

- c)Improvement of filtration
- d) Both (a) and (c)

7- According to Von Wiemarn equation, optimum conditions for precipitate formation are:

- a)The use of concentrated solutions on precipitation.
- b)Rapid addition of the reactants.
- c)Precipitation on cold
- d)Precipitation on hot with constant stirring.

**II-Complete the following (write the chemical structure) : 3 ½ marks**

1- In the gravimetric determination of chloride nitric acid must be added to ..... and .....Some cations such as ..... and ..... interfere because those form .....

2-In the gravimetric determination of  $Ca^{2+}$  ..... can be used as a reagent for its homogenous precipitation.

3- ..... used as a reagent for organic precipitation of sulphate and ..... used as organic precipitant for potassium.

**111- Determine mixture of Iron (ferrous) and chromium. 3 marks**

**IV- Treatment of a 0.4000-g sample of impure potassium chloride with an excess of  $AgNO_3$  resulted in the formation of 0.7332 g of  $AgCl$ . Calculate the percentage of  $KCl$  in the sample.( ( atomic weights of  $Ag = 107.9$ ,  $N = 14$ ,  $O = 16$ ,  $Cl = 35.5$ ). 3 marks**





**Allowed time: 2 hours**  
**Answer all the questions of exam.**

Part I (25 points)	Part II (25 points)	Total points(50 points)

Part I

Q1 (5 points)	Q2 (10 points)	Q3 (10 points)	Total (25 points)

**Answer the following questions:**

**Q1: Complete the following statements: (5 points)**

A. The incompatibilities of certain polyethers such as \_\_\_\_\_ and \_\_\_\_\_ can be attributed to the formation of polymer complexes.

B. Chemical bonds are not involved in clathrate complexes and only the \_\_\_\_\_ of the encaged component is of importance.

C. Vitamin A has been protected from \_\_\_\_\_ an thus stabilized by its inclusion in \_\_\_\_\_.

D. Penicillamine, used as \_\_\_\_\_ and as antidote in \_\_\_\_\_ poisoning, acts through its strong in vivo \_\_\_\_\_

**Q2: Rationalize with example**

A. The solubility of the substance depends on its structural feature

---

---

---

---

---

---

---

B. The pressure of gas above the solution has an important consideration in gaseous solution (write equation)

---

---

---

---

---

---

C. Salts of organic compounds are used to increase the solubility of their parent acidic or basic drugs (give one example for each)

---

---

---

---

---

---

D. Preservation of emulsions and creams is influenced by partition coefficient

---

---

---

---

---

E. Viscosity affects dissolution rate of the drug

---

---

---

---

**Q3: Compare between the following pairs of scientific terms (10 points)**

A. Dialysis and osmosis

---

---

---

---

---

---

B. Ultrafiltration and diffusion

---

---

---

---

---

---

C. Saturated solution and supersaturated solution

---

---

---

---

---

---

D. Dissolution and solubility

---

---

---

---

---

---

E. Surfactant and hydrotrophy

---

---

---

---

---

---

**Part II**

<b>Q1 (10 points)</b>	<b>Q2 (15 points)</b>	<b>Total (25 points)</b>

**Q1: Give the correct term for each of the following statements (10 points)**

- A.** ( ) Great adsorption of moisture by the drug leads to liquefaction of the drug in the adsorbed water.
- B.** ( ) The adsorption of moisture by the drug from surrounded atmosphere.
- C.** ( ) The substance loss of water on exposure to air and liquefies in its water of hydration.
- D.** ( ) Lowering in the melting point of substances (drug or excipients) which are present in mixtures containing the drug mixed with certain excipients or impurities.
- E.**( ) The magnitude of the resistance of a buffer to pH changes
- F.**( ) A curve represents the rate of shear versus shear stress.
- G.**( ) The resistance of a fluid to flow.
- H.**( ) The reciprocal of viscosity.
- I.** ( ) The recovering of viscosity of the material to its original value after the shearing force is removed, and the material allowed to "rest" for a specified period of time.
- J.**( ) A system giving a constant viscosity by shearing.

**Q 2: Complete the following:**

**(15 points)**

**A.** The buffer equation is important in the preparation of buffered pharmaceutical solutions; it is satisfactory for calculations within the pH range of \_\_\_\_\_ to \_\_\_\_\_ .

**B.** The pH of the acidic solution is calculated by use of the following equation:

**pH** = \_\_\_\_\_ .

**C.** The addition of neutral salts to buffers changes the pH of the solution by altering the \_\_\_\_\_ .

**D.** \_\_\_\_\_ dilution value signifies that the pH rises with dilution.

**E.** The pH of acetate buffers was found to \_\_\_\_\_ with temperature.

**F.** True solutions are called \_\_\_\_\_ and have a \_\_\_\_\_ at any one temperature and pressure.

**G.** The buffer capacity is affected by:

1. \_\_\_\_\_

2. \_\_\_\_\_

**H.** The non-Newtonian flow curves may be divided into three systems:

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

**J.** The apparent viscosity of the \_\_\_\_\_ systems increases with increasing rate of shear.

- K.** One potential disadvantage of the cup and bob viscometer is \_\_\_\_\_ .
- L.** Hemolytic method is used to determine the \_\_\_\_\_ of solution.
- M.** The temperature of freezing point of blood and tears corresponds to the freezing point of \_\_\_\_\_ solution equals - 0.52 °C.
- N.** Minute particle size has been attained experimentally by various applications of \_\_\_\_\_ and \_\_\_\_\_ .
- O.** 0.2 % NaCl solution when instilled in the eye causes \_\_\_\_\_ and \_\_\_\_\_ .
- P.** \_\_\_\_\_ viscometer is used for measuring small amounts of sample.

\*\*\* GOOD LUCK\*\*\*\*

Prof. Dr. Suzan Shawky and Prof. Dr. M.G. Shafah

**I.Choose the most suitable statement: (10 marks)**

- 1.The community pharmacist presents services to general practitioners as;
  - A) Examine the patients instead of him.
  - B) Gives him information about drugs.
  - C) Gives him free samples of drugs.
2. A Narcotic Prescription Order is;
  - A)That written for a narcotic drug.
  - B)Permitted to be dispensed only once.
  - C)Both (a) and (b)
3. Factors affecting noncompliance:
  - A) The type of disease.
  - B} The frequency of dosing.
  - C) Both (A) and (B).
4. Therapeutic drug monitoring is done for drugs:
  - A)With narrow therapeutic index.
  - B)With, wide therapeutic index.
  - C).With high plasma concentration.
6. In pharmaceutical companies, Quality Control Department engaged with;
  - A)Production of dosage.forms
  - B)Promotion of products
  - C)Quantitative analyses of drugs
- 7.Concordance in therapy means that, we respect the wishes of;
  - A)The physician.
  - B)The patient.
  - C)The pharmacist.
8. Medication errors occurred from:
  - A) Humans mistakes.
  - B)Drugs
  - C) Both (A) and (B).
- 9.In the prescription order, the (subscription) means directions to,
  - A)The patient.
  - B)The pharmacist.
  - Both (A) and (B).

10. The record citing all the characteristics of the patient on admission to the hospital is;
- A) Patient compliance.
  - B) Patient counseling.
  - C) A patient medication record.

**II. Give the reason behind each of the following: (12 marks)**

1. FDA approval for a new drug usually takes several years to attain. (3 marks)

.....  
.....  
.....  
.....  
.....

2. Industrialization had an impact on every aspect of the activity of the pharmacist; (3marks)

.....  
.....  
.....  
.....  
.....  
.....  
.....

3. The patient medication record contributes to better health care, (3marks)

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....



4. The community pharmacist has a role in health promotion. (3marks)

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

**5. III Complete the following: (18 marks)**

1. Percentage w/v indicates, (3marks)

.....  
.....  
.....

2. Total parenteral nutrition(TPN) is given to a patient, (5 marks)

.....  
.....  
.....

The parenteral nutrition TPN solutions composed of,

.....  
.....  
.....

and must be ..... because given intravenously.

3. A pharmacopoeia: in the modern sense of the word is, (2marks)

.....  
.....  
.....

4. Pharmaceutical care was first defined by Hepler and Strand in 1990 as, (3 marks)

.....  
.....  
.....  
.....

5. Drug Information includes, (5 marks)

.....  
.....  
.....  
.....  
.....  
.....

IV. Tick (✓) for right and (X) for false statements: (10 marks)

1. Pharmacy is derived from the French word pharmakon, meaning medicine drug ( )
2. In the medieval times there was a correlation between drugs ,faith and religion ( )
3. A pharmacist does need a strong foundation in basic science; chemistry, physics, and biology ( )
4. The first code of ethics for medicine was credited to Hippocrates in the 4<sup>th</sup> century BC. ( )
5. When you finish your study, you will earn a B. Pharm. degree ( )
6. The term medication order is usually used when referring to drug orders for persons who are patients in hospitals ( )
7. 1 in 500 by parts w/v equals 0.2% ( )
8. The community pharmacist has over-the-counter products advisory role ( )
9. Launching of new products, is the responsibility of the R & D department ( )
10. Medication errors are due to human mistakes or system flaws ( )

Best of luck

Answer the following questions:

1. Define: (25 marks)

A. Implants:

.....  
.....  
.....

B. Oxymels:

.....  
.....  
.....

2. Fill in the spaces:

A-A variety of factors are affecting on the choice of route of drug administration, such as:

i.....

ii.....

B- Various dosage forms are available for different administration routes such as ..... and ..... can be applied topically while ..... and ..... are administered by vaginal route

C- The injected volumes by parenteral administered are:

----- in case of intravenous route and

----- in case of intradermal route

D- The composition of lozenges characterized by;

.....  
.....  
.....

3. Indicate whether each of the following statements is true (✓) or false (X) and justify your answer:

( 4 marks)

A- Sucrose is being replaced by sorbitol as the sweetening agent in syrups

( )

.....  
.....

B- Buccal route is highly effective route characterizes by a relatively slow onset of action

( )

.....  
.....  
.....  
.....

4. Differentiate between: (8 marks)

A- Bulk powders                      and                      Divided powders

B- Creams                                      and                                      Ointments

تاريخ الصيدلة (١٥ درجة)

أجب عن الأسئلة الآتية:

١. أكمل: من بين فوائد دراسة تاريخ الصيدلة:  
أ-

ب-  
٢. عرف البرديات الطبية المصرية القديمة؟ (١ درجة)

٣. كيف استعمل قدماء المصريين الآتى؟  
أ- شمع العسل فى التحنيط (٢ درجة)

ب- العرعر كأحد العقاقير النباتية التى استخدمها قدماء المصريين فى علاج المرضى

٤. اذكر مثال من كل من الآتى:  
أ- الدساتير الطبية العربية (٢ درجة)

ب- أعظم الكتب العربية التى أثرت فى الصيدلة فى أوربا

٥- أكتب نبذة مختصرة عن:  
أ- التخصص فى المهن الطبية أيام الفراعنة (٢ درجة)  
(٥ درجة)

.....  
.....  
.....

ب- داود الانطاكى كأحد مشاهير العرب الذين كان لهم أثر كبير فى تقدم الصيدلة أيام  
الإمبراطورية الإسلامية ( ٣ درجة )

هز اختر الإجابة الصحيحة من ما بين الأقواس: ( ٦ درجة )

إبردية تعتبر أقدم بردية طبية اذ يرجع تاريخها الى عصر الدولة المتوسطة بين الأسرتين ١٢ و  
١٣ وهى بردية خاصة بأمراض النساء وفيها الكثير من الوصفات الطبية السحرية  
( ايبيرس - هيرست - ادون سميث - لندن - برلين - كاهون )

ب- بردية تحتوى على كثير من التذاكر الطبية وبعض التعاويذ السحرية - يبلغ طولها حوالى ٢٠  
مترا والنصوص التى بها موزعة على ١٠٨ عمود وتحتوى على مجموعة كبيرة من الوصفات  
لكثير من الامراض

( المشايخ - شاسيناه القبطية - ايبيرس - كاهون )

ت- من العقاقير المعدنية الطبية التى استخدمها قدماء المصريين فى علاج الامراض الجلدية  
والجروح الناشئة من الحروق

( الشبت - النحاس - الحديد - الجبس )

\*\*\*\*\*

أجب عن أحد السؤالين التاليين:-

السؤال الأول:-

تضمنت نصوص الدستور المصرى العديد من المبادئ التى تتعلق بحقوق الانسان. اشرح ذلك تفصيلا؟

السؤال الثانى:-

اكتب بالتفصيل فى المفوض السامى لحقوق الانسان باعتباره أحد الأجهزة العضوية بالأمم المتحدة والمعنية بحقوق الإنسان؟

مع أطيب الأمنيات بالتوفيق والنجاح

أجب عن ثلاثة أسئلة فقط مما يلي:- (٣٠ درجة لكل سؤال)

السؤال الأول:

أكتب فى لجنة القضاء على التمييز العنصرى من حيث ( تشكيلها - اجتماعاتها - اختصاصاتها وصلاحياتها)؟

السؤال الثانى:

اشرح تفصيلا ضمانات حق الفرد فى محاكمة عادلة؟

السؤال الثالث:

اكتب فى مجلس حقوق الانسان من حيث (نشأته - المبادئ التى تحكم عمله - تشكيله - تعليق العضوية فيه - نظام العمل الداخلى به)؟

السؤال الرابع:

توسع الإسلام فى الحالات التى تؤدى الى الخروج من حالة الرق. اشرح بالتفصيل مظاهر هذا التوسع؟

مع أطيب الأمنيات بالتوفيق والنجاح  
لجنة الممتحنين  
د./ ناصر عثمان  
د./ الهيثم عمر سليم





- 5- Aspirin can be determined by  
 a- Direct method  
 c- Displacement method  
 b- indirect method  
 d- biphasic method.
- 6- For determination of mixture of HCl & HClO<sub>4</sub>, the most suitable solvent is  
 a- Water  
 c- CH<sub>3</sub>COOH  
 b- NH<sub>3</sub>  
 d- methyl isobutyl ketone.
- 7 - Non aqueous solvents used for  
 a- Water insoluble substance  
 c- Both a and b.  
 b- very weak acids and bases.  
 d- weak acids and bases.
- 8- For calculation of pH of solution of NH<sub>4</sub>OH  
 a-  $\text{pH} = \frac{1}{2}\text{pK}_w + \frac{1}{2}\text{pK}_a - \frac{1}{2}\text{pC}_s$   
 b-  $\text{pH} = \frac{1}{2}\text{pK}_w + \frac{1}{2}\text{pK}_a - \frac{1}{2}\text{pK}_b$   
 c-  $\text{pH} = \frac{1}{2}\text{pK}_w - \frac{1}{2}\text{pK}_b + \frac{1}{2}\text{pC}_s$   
 d-  $\text{pH} = \frac{1}{2}\text{pK}_w + \frac{1}{2}\text{pK}_b - \frac{1}{2}\text{pC}_s$
- 9- The scientist who put the equations for calculation the pH of buffer solutions  
 a- Henferson  
 c- Bronsted  
 b- Lewis  
 d- Arrhenius.
- 10- Mixture of thymol blue and crystal violet can be used as  
 a- screened indicator  
 b- universal indicator  
 b- mixed indicator  
 d- simple indicator.
- 11- In the determination of CaO by using ~rose solution and standard HCl as titrant, alcohol is added to  
 a- Prevent lumps  
 b- solvent  
 b- catalyst  
 d- indicator.
- 12- Maximum buffer capacity is obtained when the ratio [salt]/[acid] or [salt]/[base] equals to  
 a- 10  
 c- 1  
 b- 0.1  
 d- 100

13- In the titration of weak acid with strong base the shape of the curve, the pH at the equivalence point and the suitable indicator depend on  
a- concentration of weak acid    b- concentration of strong base  
c-  $pK_a$  of weak acid                      d- all of the above.

14- Benzoic acid can be determined in  
a- water                                      b- glacial acetic acid  
c-  $NH_3$                                       d- mixture of MeOH & dimethylformamide

15- Urea in glacial acetic acid is considered as  
a- weak base                                      b- strong base  
c- very weak base                              d- Strong acid.

16- In the titration of mixture  $Na_2CO_3$  &  $NaHCO_3$  by titration with standard HCl using ph. ph. indicator, the volume of standard HCl equivalence to  
a-  $\frac{1}{2} Na_2CO_3$                                       b- all  $Na_2CO_3 + NaHCO_3$   
c-  $Na_2CO_3$                                       d- %  $Na_2CO_3 + NaHCO_3$ .

C- Define the following: (5 Marks)

1- Accuracy.

2- Middle tint of the indicator.

3- Screened indicator.

4- Titer.

5- Ionization.

D- By chemical balanced equations, illustrate how can you analyze the following ( mention the method, standard(s), indicator(s), solvent and conditions): ( 6 Marks)

1- Aniline

2-  $\text{BaCl}_2 \cdot$

3-  $\text{K}_2\text{S}_2\text{O}_8$

F- Calculate the pH of solutions obtained by adding the following volumes of 0.2N HCl (0, 2.5, 5, 10 and 15 mL) to 20 mL of 0.1N  $\text{NH}_4\text{OH}$  ( $K_b \text{ NH}_4\text{OH} = 1.75 \times 10^{-5}$ ). ( 3 Marks)

**Question(II)- Precipitometry & Gravimetry (25 Marks)**

(by Dr. niveen A. Mohammed)

A-Mark (✓) for the correct statement and (X) for the wrong one: (5 Marks)

- 1- Solubility of AgBr increase in presence of NaBr. ( )
- 2- The solubility of BaSO<sub>4</sub> in wa~er decre\_ases with NaNO<sub>3</sub>. ( )
- 3· KCl increases the solubility of AgCl in water. ( )
- 4· AgBr has to be separated before titration using Volhard' s method. ( )
- 5- Agel, AgBr, AgI and Ag<sub>2</sub>S are soluble in alkali cyanide solutions. ( )
- 6- Increase of temperature mostly decreases the solubility of precipitate. ( )
- 7· The solubility of most inorganic compounds is increased by the addition of organic solvents. ( )
- 8· In precipitometric titration curve the larger the solubility product of the sparingly soluble salt, the larger the break at the equivalence point. ( )
- 9· The molar solubility of silver chromate is several times greater than that of silver chloride or bromide. ( )
- 10- Gravimetry is one of the most accurate and precise methods of micro quantitative analysis. ( )

B- Write the scientific name or suitable word/s for each of the following:

(Put your answer in the table)

(5 Marks)

No	Name of word/s	No	Name of word/s
1		6	
2		7	
3		8	
4		9	
5		10	

1- Contamination of BaSO<sub>4</sub> precipitate with of K<sub>2</sub>SO<sub>4</sub>.

2- A type of successive precipitation using the same precipitating agent.

- 3- A condition in which a solution phase contains more of the dissolved precipitate than can be in equilibrium with the solid phase.
  - 4- A type of colloid that has a strong affinity for water.
  - 5- The particle size of precipitates is inversely proportional to the relative supersaturation of the solution during the precipitation process.
  - 6- A technique in which the precipitating agent is generated in-situ by a chemical reaction which occurs uniformly throughout the solution.
  - 7 - A process in which a precipitate is allowed to stand in the presence of the mother liquor usually at elevated temperature or at room temperature. It improves the filterability and the purity of the precipitate.
  - 8- A process in which the precipitate is lost as colloid.
  - 9- The slow generation of the ion for the precipitation of the desired anion.
  - 10- A technique in which a change in the weight of a substance is recorded as a function of temperature or time.
- 

C- Encircle the correct answer (write the letters in the table): (5 Marks)

NO	1	2	3	4	5	6	7	8	9	10
Letter										

- 1- The change of color at end point when using adsorption indicator is due to
  - a) formation of silver-indicator precipitate
  - b) formation of silver-indicator complex
  - c) adsorption of indicator by the precipitate
  - d) none of the mentioned
- 2- The solubility product of  $Pb_3(PO_4)_2$  equals:
  - a)  $[3Pb^{2+}][2PO_4^{3-}]$
  - b)  $[3Pb^{2+}][PO_4^{3-}]^2$
  - c)  $[Pb^{2+}]^3[PO_4^{3-}]^2$
  - d)  $[3Pb^{2+}]^3[2PO_4^{3-}]^2$
- 3- In determination of  $NH_4Cl$  by Mohr's method the pH of the solution must be
  - a) less than 6
  - b) more than 7.5 but less than 8
  - c) more than 8.2
  - d) more than 8.2 but less than 9



- Reduction of contamination by co-precipitation can be performed through:

- 1- .....
- 2- .....
- 3- .....

- Selectivity of precipitating agent can be obtained by:

- 1- .....
- 2- .....

- On titrating 100 ml of 0.1 N NaCl with 0.1 N AgNO<sub>3</sub> , pCl at the equivalence point is calculated as follows: ( $K_{sp} \text{ AgCl} = 1.2 \times 10^{-10}$ )

.....  
.....  
.....

- Types of washing solutions are that:

- 1- .....
- 2- .....
- 3- .....

- 2.248 grams of a powdered sample containing NiSO<sub>4</sub>.7H<sub>2</sub>O (50% w/w) were dissolved in dil HCl, quantitatively precipitated as nickel dimethylglyoximate (Ni(C<sub>4</sub>H<sub>7</sub>O<sub>3</sub>N<sub>2</sub>)<sub>2</sub>), washed, dried and weighed.

What was the weight of the ppt.?

(NiSO<sub>4</sub>.7H<sub>2</sub>O= 281.0, Ni(C<sub>4</sub>H<sub>7</sub>O<sub>3</sub>N<sub>2</sub>)<sub>2</sub>= 321.0).



.....  
.....  
.....  
.....  
.....

- Two example for precipitation from homogenous solution are:

- 1- .....
- 2- .....

- Benzidine structure and use

.....

الشفوى عقب النظرى مباشرة بالفسم  
مع دعائنا بالتوفيق والتفوق

Faculty of Pharmacy

Pharm. Organic Chem.-1

Dept. Pharm. Organic Chem.

June., 11 ,2011

الامتحان مكون من ٧ صفحات

Time allowed 2 h

Illustrate your answers with chemical equations whenever possible

الامتحانات الشفهية عقب الامتحان النظرى مباشرة لجميع الطلاب

Answers should be in the specified places

المشاركون فى الامتحان النظرى

Prof. Dr. Abdel Alim M. Abdel Alim

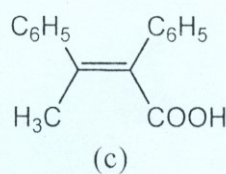
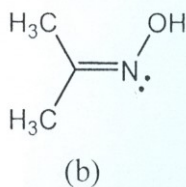
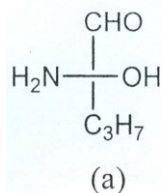
Prof. Dr. Abdel Hamid N. Kafafy

Section A (60 min, 25 points)

1- Mark the following statements by (✓) or (X) or complete the following (5 Points):

- 1) Isopropanol and n-propanol have the same connectivity ( ).
- 2) Diastereomes are isomers having identical physical properties ( ).
- 3) Molecules with two identical chiral carbons, number of isomers = 4 ( ).
- 4) 1,3-Dichloroallene is optically inactive ( ).
- 5) Essential amino acids are synthesized inside the human body ( ).
- 6) S<sub>N</sub>1 reactions of chiral substrates proceed by retention of configuration ( ).
- 7) Amino acids give a purple colour with .....
- 8) S<sub>N</sub>2 reactions of chiral substrates proceed by inversion of configuration ( ).
- 9) Meso compounds are optically .....
- 10) Process of separation of a racemic mixture is called .....

11- Assign the following structures as (R), (S), (E) or (Z) (3 Points):



III- Draw the possible conformers of *cis-1-isopropyl-2-methylcyclohexane*. apply ring flip and comment on their stability (2 Points).

*See next page*

IV- By equations and short reasoning give an example for each of the following

reactions (5 Points).  
a) Stereospecific

b) Regioselective

V- Complete the following table giving the structure or assign either +Ve or -Ve for the following tests with the given sugars:

Point	$\alpha$ -D-Glucose	$\beta$ - D-Glucose	D-Fructose	Sucrose
Structure				
- Tollene's - Osazone test -Mutarotation -Br <sub>2</sub> /H <sub>2</sub> O - Products of oxidatiojn with HNO <sub>3</sub> - Products of oxidation with HIO <sub>4</sub>				

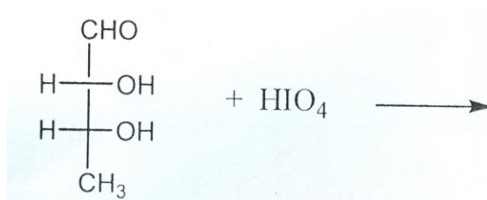
*See next page*

VI-Answer the following reaction (3Points)

a) Strecker synthesis of alanine amino acid

b) Convert D-arabinose to meso tartaric acid

c) Give the oxidation products for the following reaction:



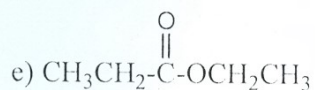
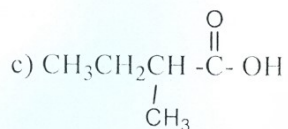
*See next page*

**Section B (60 min, 25 points)**

**I- Choose the correct answer for the following: (10 Points)**

- 1) The greater frequency of EMR is:
  - a) The higher wavelength
  - b) The lower energy
  - c) The shorter wavelength
  - d) All of the above
- 2) The frequency of IR depends on
  - a) Relative mass No. of atoms
  - b) Force constant between atoms
  - c) Both a and b
  - d) none of the above.
- 3) The physical phenomenon responsible for absorption of IR is:
  - b) Nuclear spin
  - c) Electronic transition
  - d) Molecular vibration
  - e) All of the above
- 4) In the IR stretching vibration causes
  - a) Change in electronic excitation
  - b) Change in the dipole moment
  - c) All of the above
- 5) Stretching vibrations of certain group are of:
  - a) Lower frequency than its bending mode
  - b) Higher frequency than its bending mode
  - c) Double frequency of its bending mode
  - d) No relation with its bending mode
- 6) For nuclei have no spin, the NMR:
  - a) Active give spectrum
  - b) Inactive give spectrum
  - c) Inactive giving no spectrum

- 7) A signal at higher field than another in NMR is said to be:
- Upfield (shielded)
  - Downfield (deshielded)
  - Both a and b
- 8) The protons of TMS are shielded so the signal of TMS occurs:
- At 0 on the scale
  - At 1 on the scale
  - At 2 on the scale
- 9) p-Xylene (1,4-dimethylbenzene) the number of signals appears in the <sup>1</sup>H NMR are:
- two signals appear
  - three signals appear
  - four signals appear
  - no signals appear
- 10) The solvents used in <sup>1</sup>H NMR measurements are:
- Deuterated solvents
  - Non deuterated solvents
  - Both a and b
- 11- Give the IUPAC chemical nomenclature of the following (5 Points):



*See next page*

III- Write on THREE of the following using reaction mechanism (15 points):

a. Baeyer-Villiger oxidation of aldehydes and ketones:

b. Utility of cyanohydrins formation for synthesis of mandelic acid

c. Adol condensation using acetaldehyde and 30% NaOH

d. Keto-enol tautomerization reaction

**Good Luck**



Assiut University  
Faculty of Pharmacy  
Dept. Pharm. Organic Chem.

مقرر مطروح

Clinical Pharmacy  
Pharm. Organic Chem.-1  
June., 20, 2011

الامتحان مكون من ٦ صفحات

Time allowed 2 h

Illustrate your answers with chemical equations whenever possible

الامتحانات الشفهية عقب الامتحان النظرى مباشرة لجميع الطلاب

Answers should be in the specified places

المشاركون فى الامتحان النظرى

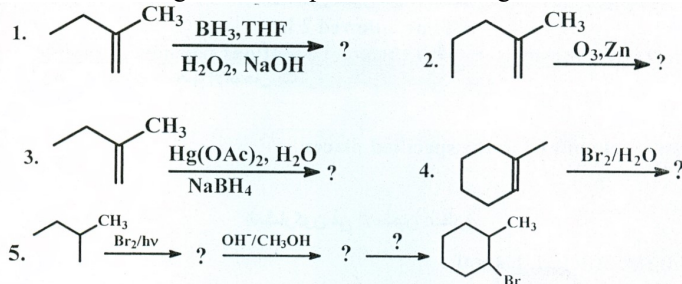
Prof. Dr. Adel M. Kamal

Dr. Mostafa A. Hussien

## Section A (60 min, 25 points)

1- Answer the following:

I. Provide the structures and reagents to complete the following reaction schemes... (10 marks)



II. Choose the correct answer:.....(10 marks)

**i. Which organic compound is ester?**

- a.  $\text{CH}_3\text{OH}$ ;      b.  $\text{CH}_3\text{COCH}_3$ ;      c.  $\text{CH}_3\text{COOH}$ ;      d.  $\text{CH}_3\text{COOCH}_3$

**ii. Which normal alkane has the highest boiling point at 1 atmosphere?**

- a.  $\text{C}_7\text{H}_{16}$ ;      b.  $\text{C}_4\text{H}_{10}$ ;      c.  $\text{C}_5\text{H}_{12}$ ;      d.  $\text{C}_3\text{H}_8$

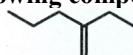
**iii. Which is an isomer of 2-methylpropane?**

- a. butane;      b. propane;      c. pentane;      d. 2-methylbutane.

**iv. Which molecule contains a triple covalent bond?**

- a.  $\text{C}_3\text{H}_4$ ;      b.  $\text{C}_2\text{H}_4$ ;      c.  $\text{C}_3\text{H}_6$ ;      d.  $\text{C}_3\text{H}_8$

**v. What is the IUPAC name of the following compound?**



- a. 3-methylene hexane      b. 2-ethyl-1-pentene      c. 3-methyl hexane

**vi. Which of the following molecules will not have a dipole moment?**

- a.  $\text{CH}_3\text{Cl}$       b.  $\text{H}_2\text{O}$       c.  $\text{CHCl}_3$       d.  $\text{CCl}_4$

**vii. Which compound is most likely to react by addition?**

- a.  $\text{C}_3\text{H}_4$ ;      b.  $\text{C}_3\text{H}_8$ ;      c.  $\text{C}_4\text{H}_{10}$ ;      d.  $\text{C}_5\text{H}_{12}$

**viii. I-Propyne reacts with excess HBr in the presence of ROOR to give**

- a. 1, 1-dibromopropane      b. 1,2-dibromopropane;      c. 2,2- dibromopropane

**ix. I-Propyne reacts with excess  $\text{BH}_3$  in THF in the presence of  $\text{H}_2\text{O}_2$  to give**

- a. Aldehyde      b. ketone      c. propanol

**x. I-Propyne reacts with ozone in the presence of Zn to give:**

- a. two mole of acetaldehyde      b. acetaldehyde and formaldehyde      c. two mole of formaldehyde

**Which of the following statements is not true?.....(5 marks)**

1.  $\sigma$  Carbon-carbon bond in ethene was created by overlapping of  $\text{SP}^3\text{-SP}^3$  orbitals
2. Carbocation carbon is  $\text{SP}^2$  hybridization
3.  $\text{CH}_3\text{CH}_2\text{COOCH}_3$  was considered an isomer to  $\text{CH}_3\text{CH}(\text{OH})\text{COCH}_3$
4. Ethyl alcohol was considered as Lewis base
5. Electrophiles seek centers of high electron density (*e.g.*, a negative charge).
6. The most typical reaction of simple alkenes is nucleophilic addition reaction
7. A tertiary carbocation is less stable than either a secondary or primary carbocation.
8.  $\text{CH}_3\text{CONHCH}_3$  was considered as secondary amine
9.  $\text{CH}_3\text{OH}$  was miscible with  $\text{H}_2\text{O}$ .
10. alkenes are considered as electrophiles

Good Luck  
Adel M. Kamal El-Dean

See next page

**Section B (60 min, 25 points)**

**I- Answer the following: (8 Points)**

- 1) Alcohols have lower boiling points than alkanes (true or false).
- 2) Ethers are highly reactive compounds during chemical reactions (true or false).
- 3) Alcohols have higher boiling points than the corresponding alkanes (true or false).
- 4) Aliphatic amines have lower hydrogen bonding than the corresponding alcohols (true or false).
- 5) Arrange in a descending order the reactivity of simple alkyl halides (primary, secondary, and tertiary) in SN2 reactions.

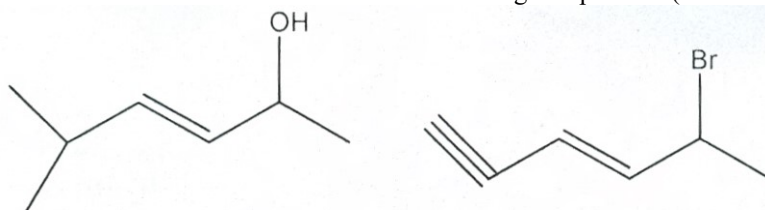
6) Give the different types of alcohols and arrange them in an ascending order of acidity.

7) Factors affecting the rates of SN1 and SN2 reactions are:

8) The structure of 18-crown-6 ether is:

.....  
.....  
.....

11- Give the IUPAC nomenclature of the following compounds: (2 Points)



*See next page*

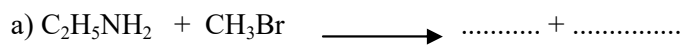
III- Answer the following:

a) Given a mixture of aliphatic primary and tertiary amine give an example for each one and outline by chemical equations one method for their separation (3 points)

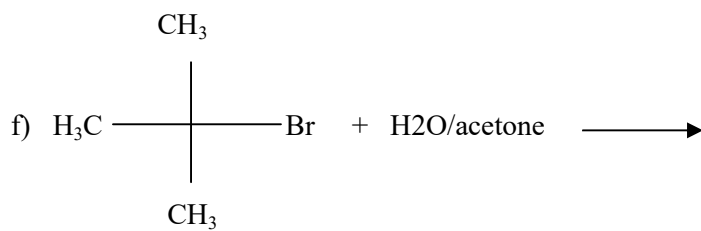
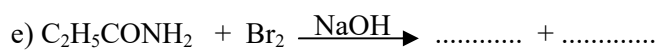
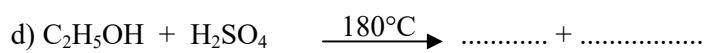
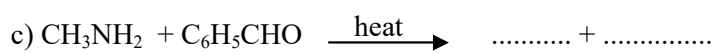
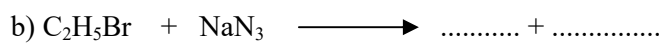
b) Given three types of alcohols (primary, secondary, and tertiary) using Lucas reagent ( $\text{ZnCl}_2$  and  $\text{HCl}$ ), and by chemical equations, how could you differentiate between these alcohols (3 points).

*See next page*

III- Complete the following equations: (9 points)



Mechanism:



Mechanism:

*Good Luck*

I- Mark (T) for the true and (F) for the false statement in the following: (30 Marks)

- 1- Drug absorption expresses the amount of active drug ingredient that migrates out from its dosage form into the surrounding fluid medium.
- 2- Dosage regimen is the systematized dosage schedule.
- 3- Drug bioavailability is the study of the relationship between dosage form and therapeutic response.
- 4- Drug release is the act of movement of the drug from its route of administration into the blood stream.
- 5- Drugs absorbed sublingually give a very fast onset of action.
- 6- The inhalation route of drug administration delivers medicines to the gastro-intestinal tract.
- 7- Drugs absorbed from the vagina are subjected to first pass effect.
- 8- The oral route of drug administration can be used to produce either a systemic or local effect.
- 9- The oral route of drug administration can be used only when a systemic drug effect is required.
- 10- The oral route is a suitable route of drug administration to unconscious or vomiting patients and for immediate pre- or postoperative use.
- 11- Gastric emptying could affect the onset of drug action.
- 12- Some drugs are destroyed by enzymes and other secretions found in the GIT upon oral administration.
- 13- A drug dose is the amount or quantity of the drug that is required to yield the therapeutic concentration which result in clinical effect.
- 14- The oral route can be used for rapid onset of drug action (within few minutes) and for delayed action (extended to several hours).
- 15- Vaginal drug administration can be used only for local drug action.
- 16- Drugs absorbed from the vagina gives systemic bioavailability better than the oral route.
- 17- Drug solubility can not be affected by the presence of other substances in the GIT.
- 18- The parenteral routes of drug administration can be used to deliver drugs to unconscious patients.
- 19- Drug absorption upon rectal administration can be irregular and unpredictable thus giving rise to a

- variable effect
- 20- - Drugs 'that are effective in very low doses can not be taken by buccal routes of drug administration.
- 21- The drug absorbed via skin avoid the first pass effects and can produce a zero-order kinetics over a prolonged time intervals.
- 22- The parenteral route of drug administration can not be used to produce a localized effect.
- 23- Syrups are clear, sweetened, hydroalcoholic solutions of one or more drugs intended for oral use, and are usually flavored to enhance their palatability.
24. Emulsions having an oleaginous internal phase and an aqueous external phase are referred to as water in-oil (w/o) emulsions.
- 25- Oral emulsions( emulsions for internal use) are stabilized water-in-oil (w/o) dispersions that may contain one ,or more active ingredients.

٢٦-تنبيب بردية ابرس الى اسم مؤلفها او كاتبها من الكهنة.

٢٧- كان المصريين القدماء يحصلون على العقاقير من النباتات البرية فقط.

٢٨- من علماء اليونان (الاغريق) الذين نبغوا في الطب والصيدلة أبو قراط (أبو الطب) ، وديستوريدس (أبو المستحضرات الصيدلانية)، وجالينوس (أبو العقاقير) وغيرهم.

٢٩- وفي عهد الخليفة العباسي المعتصم اجرى اول امتحان للصيدلة.

٣٠- جابر بن حيان من اشهر العلماء العرب في الطب والصيدلة ، حيث ابتكر خيوط الجراحة المصنوعة من جلد الحيوان المعروفة بالقصاب وكان أول من صنع مرهم الزئبق.

II- Give the suitable title or heading or term that is described or defined by each one of the following statements: (15 Marks)

1- It is the act of using, taking, giving, applying or putting the drug or its dosage form into/onto the body to perform the expected biological response.

.....

2- It is a manufactured dosage form containing one or more active therapeutic ingredient along with other substances included during the manufacturing process.

.....

3- It is the act of getting out, moving out, leaving out or migration out of the drug from its dosage form (delivery system) and going into solution in the surrounding fluid medium .

.....

4- It is the removal of the drug from the body

.....

5. Are mixtures, suspensions, syrups, elixirs, linctuses, emulsions, applications, collodions, ear drops, eye drops, enemas, gargles, irrigation, Liniments, lotions, mouth washes, paints .

.....

- 6- -Are injections, implants, eye drops, eye ointments, solutions for peritoneal dialysis, preparations to applied for wounds and extensive burns, surgical dressings, etc,  
 .....
- 7- Are water containing ointments (semisolid emulsions for external use).  
 .....
- 8- Are finely-divided powders with or without medicament for external use.  
 .....
- 9- Consists of two immiscible liquids, one of which is uniformly dispersed throughout the other as a fine , droplets normally of 0.1-100µm.  
 .....
- 10- Are agents that help the production of a stable emulsion by reducing interfacial tension and then maintaining the separation of the droplets by forming a barrier at the interface.  
 .....
- 11- Are sterile liquid preparations used to administer drugs to the eye.  
 .....
- 12- Are aqueous' solutions used to treat infections of throat.  
 .....
- 13- Are sterile solutions most commonly used in the treatment of infected bladders.  
 .....
- 14- Are large tablets designed to be Sucked and remain in the mouth for up to 15 minutes.  
 .....
- 15- These are solid dosage forms for insertion into the rectum.  
 .....

GOOD LUCK  
 Prof. Elsayed A. Ibrahim



Part 2 (Time 1 hr. Marks 45, pages 4-7)  
 Instructor: Prof. Tahani Elfaham

I. Tick (✓) for right and (X) for false statements and correct the false one, utilizing the table: (20 marks)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	

- 1 - The safe use and distribution of drugs is not the interest of the pharmacist ( )
- 2- With the growth of pharmaceutical manufacturing, pharmacists compounded fewer drugs. ( )
- 3- pharmaceutical care means a shared responsibility between the patient and physician ( )
- 4 - The first known chemical processes in the world were carried out by the artisans in Egypt and China. ( )
- 5- The term medication order is usually used when referring to drug orders for persons who are patients in hospitals ( )
- 6- A pharmacist does not need a strong foundation in basic science; chemistry, physics and biology. ( )
- 7- 1 in 500 part by parts w/v equals 0.2% ( )
- 8-The patient medication record is a record citing all the characteristics of a patient his name, age, weight, state, medications ... etc ( )
- 9- A pharmacopoeia is a pharmaceutical standard intended to secure uniformity in the kind, quality, composition, and strength of remedies ( )
- 10- The community pharmacist has over-the-counter products advisory role ( )
- 11- The compliant patient, scores no progress in therapy ( )
- 12- OTC drugs are drugs sold without prescription. ( )

- 13- launching of new products, is the responsibility of the R & D department. ( )
- 14- A school of pharmacy is that which requires 1 or 2 years of colligate studies before admission ( )
- 15- When you finish your study, you will earn a B.Pharm. degree ( )
- 16- A clinical pharmacist is engaged only in the primary care activities ( )
- 17- Least compliance found with children and teenagers as well as with elderly. ( )
- 18- If the gastrointestinal tract is not functional, parenteral nutrition is indicated ( )
- 19- It is not important to have a record of patient's previously administered drugs which have not been effective. ( )
- 20- A potent drug gives effective pharmaeologic effect in a very small dose. ( )

II. Choose the most suitable statement, utilizing the table: (10 marks)

1	2	3	4	5	6	7	8	9	10

1- 5% NaCl solution prepared by:

- A) Dissolving 5gm NaCl in 1000 ml solvent
- B) Dissolving 50gm NaCl in 100 mg solvent
- C) Dissolving 5gm NaCl in 100 ml solvent

2- A Narcotic Prescription Order is;

- A) That written for a narcotic drug.
- B) Permitted to be dispensed only once.
- C) Both (A) and (B)

3- Pharmacists work characterized with;

- A) Changeable
- U) Accurate
- C) Not precise

- 4- Therapeutic drug monitoring is done for drugs:
- A) With narrow therapeutic index.
  - B) With wide therapeutic index.
  - C) With high plasma concentration.
- 5- In pharmaceutical companies, manufacture department is engaged in;
- A) Production of dosage forms
  - B) Promotion of products
  - C) Quantitative analyses of drugs
- 6- Concordance in therapy means that, we respect the wishes of;
- A) The physician.
  - B) The patient.
  - C) The pharmacist.
- 7 - From narcotic drugs;
- A) Morphine
  - B) Aspirin
  - C) Cortisone
- 8- Total parenteral Nutrition is applied to;
- A) Small babies to grow
  - B) Patients requiring long term nutrition support
  - C) Patients with functional stomach
- 9- The oldest and most popular of the various fields of pharmacy in general practice is,
- A) Clinical pharmacy
  - B) Community pharmacy
  - C) Industrial pharmacy
- 10- House bound patients;
- A) Visit the pharmacist for advice
  - B) Stay in the hospital for treatment
  - C) Could not move, the pharmacist follows up the patient case & supply him with advice & drugs at home.

III. Complete: (15 marks)

1- List some tasks, that are common to the pharmacy occupation.

-----  
 -----  
 -----

2- Community pharmacist deals with many types of drugs as:

- a) -----
- b) -----
- c) -----

3- Ingredients of master formula            %W/W                            scaled formula

Coal tar solution	12 %	.....
Hydrous Wool fat	12%	.....
Yellow soft Paraffin to	100%	10 gm

4- Parts of the prescription are:

.....  
.....  
.....  
.....  
.....

5- Narcotic prescription order is;

.....  
.....  
.....  
.....  
.....

أجب عن ثلاثة أسئلة فقط مما يلي:- (٣٠ درجة لكل سؤال)

السؤال الأول:-

يعتبر الإعلان العالمي لحقوق الانسان من أهم الوثائق الدولية التي تعنى بفكرة حقوق الانسان. اشرح ذلك بالتفصيل من خلال التعرض لشكل ومضمون هذا الاعلان والحقوق المدنية والسياسية الواردة فيه وكذلك الحقوق الاجتماعية والاقتصادية والثقافية ، إضافة الى توضيح القيمة القانونية لهذا الاعلان؟

السؤال الثانى:-

اكتب فى مجلس حقوق الانسان من حيث (نشأته – المبادئ التى تحكم عمله – تشكيله – جلساته – نظام العمل الداخلى به)؟

السؤال الثالث:-

اكتب فى الأجهزة التعاهدية التابعة للأمم المتحدة والمعنية بحقوق الانسان من خلال التعرض للجنة حقوق الطفل ولجنة القضاء على التمييز ضد المرأة؟

السؤال الرابع:-

اشرح بالتفصيل ضمانات حق الفرد فى محاكمة عادلة؟

مع أطيب الأمنيات بالتوفيق والنجاح  
د/ ناصر عثمان  
د/ دويب حسين صابر

**Answer all the Questions**

**PART I**

**i- Tick true (T) or false (F): (10 Marks)**

[        ] I-In concentrated solution, the mass of a gas which dissolves in a given volume of a liquid at a constant temperature is directly proportional to the partial pressure of gas.

[        ] 2-In phenol-water system, there is an upper critical solution temperature as well as lower critical solution temperature.

[        ] S-Osmosis refers to an action in which the solvent and solute pass through the semipermeable membrane to dilute the solution.

[        ] 4-Cyclodextrins were used to increase drug solubility.

[        ] 5-Cosolutes (hydrotrophy) are used to decrease the aqueous solubility of insoluble substances.

**ii-Rationalize (with example): (10 marks)**

a-Preservation of emulsion and creams depends on the distribution coefficient of preservative selected.

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

b- Use of complex as antibacterial agents.



compounds.

.....  
.....  
.....  
.....  
.....  
.....  
.....

iii- Compare between the following pairs of scientific terms. (5 marks)

a- Equilibrium solubility and dissolution rate

.....  
.....  
.....  
.....  
.....  
.....  
.....

b- Chelation and salt formation

.....  
.....  
.....  
.....  
.....  
.....

**PART I**

**I-Give the correct term for each of the following statements:(10 marks)**



<b>The statement</b>	<b>Term</b>
1-The science deals with the flow of matter.	
2- The science deals with particle size and size distribution.	
3- The quantity that describes a fluid's resistance to flow.	
4-A plot of shearing stress vs rate of shear.	
5- The inverse of plastic viscosity.	
6- The cgs unit of kinematic viscosity.	
7- The flow for which the relationship $F'/G$ is a constant.	
8- The flow where shear stress is directly proportional to shear rate.	
9- The resistance to a change in pH.	
10- Flow requires that a minimum value of shear stress must be applied to the liquid before flow will commence.	
11- The Flow that is exhibited by polymers in solution.	
12- The Flow that is exhibited by suspensions containing a high concentration of small, deflocculated particles.	
13- The Flow is that exhibited by suspensions containing a high concentration of small, flocculated particles.	
14- Viscometer measures the viscosity of a Newtonian fluid.	
15- Viscometer measures the viscosity of a Non-Newtonian fluid.	
16-The flow that called "shear-thinning." flow	
17- The flow that called "Shear-thickening" flow	
18- An instrument used to determine the density of a liquid.	
19- The ratio of the void volume to the bulk volume of the powder.	
20- An instrument is used to measure the particle volume.	

page 4 of 8

- 2- Solve the following problems: (5 Marks)  
A- How many grams of Boric acid should be used in compounding the

following prescription?

R/

Phenacaine Hydrichloride	1%
Chlorobutanol	0.5%
Boric acid	Q.S.
Purified Water	ad. 60 ml

Make isotonic solution

Sig: One drop in each eye

Sodium Chloride equivalent:

- Phenacaine Hydrochloride is 0.2 g
- Chlorobutanol is 0.24 g
- Boric acid is 0.52 g

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

2- What is the pH of 0.1 M acetic acid solution, pKa = 4.76? what is the pH after enough sodium acetate has been added to make the solution 0.1 M with





.....  
.....  
.....  
.....  
.....  
.....  
.....

امتحان  
طلاب برنامج الصيدلة الاكلينيكية طبقا انظام  
الساعات المعتمدة  
مقرر: حقوق الانسان  
الفصل الدراسى الثانى فصل رقم (٢)  
العام الجامعى ٢٠١١/٢٠١٢

جامعة اسيوط  
كلية الصيدلة

الزمن: ٢ ساعتان

**أجب عن سؤاليين فقط (لكل سؤال ٤٥ درجة)**

السؤال الأول: ساوى الاسلام بين الناس جميعا ، تكلم فى هذا الحق مدعما قولك بالدليل.

السؤال الثانى: من حقوق الانسان فى النظام القانونى المصرى " الحق فى الأمن " اشرح هذا الحق مبينا الضمانات القانونية لتحقيق هذا الحق.

السؤال الثالث: اذكر بالتفصيل الشروط التى ينبغى توافرها لمشروعية استقطاع الأعضاء البشرية لأغراض علاجية.

انتهت الأسئلة

لجنة الامتحان  
أ.د./ جابر مهران  
د./ الحسن سباق

I-Complete the following with suitable words in the table below (7Marks):

- 1- Senna leaf is ....1.... ,family ....2.....,it is used as a ....3..... drug because it Contains ...4....
- 2- Styloid is .....5.... present in .....6.....while .... 7... present in squill
- 3- Water pore is ....8..... present in .....9.....
- 4- Paracytic stomata present in ....10..... while .....11..... present in Solanaceaus leaves.
- 5- The main constituents of Quillaia bark is .....12..... and it is used As .....13..... and tested by ..... 14.....

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	

II-Mention the name and botanical origin of drug used in Treatment of the following: ..... (10 Marks).

- 1- Drug used as cardiogenic.
- 2-Drug used as astringent and haemostatic.
- 3-Drug used as diuretic and urinary antiseptic.
- 4-Drug used to antagonize the mydriatic action of atropine.
- 5-How you can test for the active constituents in drugs No.(1) And (3).

The Answer:-

1-

2-

3-

4-

5-

III-Draw with labelings the diagnostic elements of the Following powdered drugs ..... (10 Marks).



- 1-Egyptian hyoscyamus
- 2-Buchu leaf
- 3-Cascara bark
- 4-Cinchona bark.

1-

---

2-

---

3-

---

4-

IV:Mark (✓) for the correct statement and (X) for false one (10Marks).

1- Coricitin is only present in fresh saffron.

- 2- Calendula is a hypoglycemic drug.
- 3- All the pollen grains in family Astraceae are spiny, spherical pollens.
- 4- Tetradelphous stamens means two short and two long stamens.
- 5- Santonica is only effective on tapeworms.
- 6- Pyrethrum consists of dried expanded flower heads of chrysanthemum  
Cineraria folium
- 7- Flowers are very important in the identification of the unknown plants
- 8- Corolla (petals) always bright green in colour and attracts the insects which carry pollen grains.
- 9- Heart wood is also known as Duramen.
- 10- Sap wood contains colouring matter, resin and tannins.
- 11- Santonin has been used as anthelmintic.
- 12- Staminode means the stamens do not produce pollen grains.
- 13- Inflorescence with elongated axis and sessile flowers is spike.
- 14- Corolla situated over the ovary is epigynous.
- 15- Inflorescence similar to raceme but with shorter axis and pedicels of different length is corymb.
- 16- Androecium with four stamens is tetradelphous.
- 17- Zygomorphic flowers are often regular.
- 18- Blue galls are formed on the twigs of Adleria gallaetectoria.
- 19- The taste of the galls is very astringent due to the presence of alkaloid
- 20- Quassia wood is used as insecticide and bitter tonic.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

V- Choose the correct answer and put it in the table below: .. (8 Marks).

1- Balanced hair is only present in:

a- chamomile

b- Pyrethrum

c- lavender

d- clove

- 2-Syngenesious stamens means fusion of:  
 a-stamens b-styles with stamens c-anther d-filament
- 3-Double capitulum is:  
 a-present in German chamomile b-present in roman chamomile  
 c-modification of disc florets d-non of the previous answers
- 4-Mother clove is detected in clove powder by the presence of:  
 a-prisms of ca. oxalate b-sclerieds c-starch d-non of them
- 5-Clove oil cure:  
 a-Mouth infection b-dental pain c-gum inflammation  
 d-non of the above
- 6-Elongated cells with sharply pointed ends are:  
 a-tracheids b-wood fibers c-wood parenchyma  
 d-medullary rays
- 7-Concerning quassia woo d:  
 a-can be used as insecticide b-contain coumarin copoletin  
 c-contaion quassin bitter principle d-all of the above
- 8-Santalol is volatile oil present in:  
 a-sassafras varifolium b-Santalum album  
 c-haematoxylen campechianum d- pertocarpus Santalinus

1	2	3	4	5	6	7	8

VI-Draw the key elements of clove (2.5marks)

Draw the key elements of chamomile (2.5marks)

**I- Mark (T) for the true and (F) for the false statement in the following: (30 Marks)**

- 1- The inhalation route of drug administration delivers medicines to the gastro-intestinal tract.
- 2- Drug absorption expresses the amount of active drug ingredient that migrates out from its dosage form into the surrounding fluid medium.
- 3- Gastric emptying could affect the onset of drug action.
- 4- Drugs absorbed from the vagina gives systemic bioavailability better than the oral route.
- 5- The drug absorbed via skin avoid the first pass effects and can produce a zero-order kinetics over a prolonged time intervals.
- 6- Dosage regimen is the systematized dosage schedule.
- 7- Drugs absorbed from the vagina are subjected to first pass effect.
- 8- Some drugs are destroyed by enzymes and other secretions found in the GIT upon oral administration.
- 9- Drug solubility can not be affected by the presence of other substances in the GIT.
- 10- The parenteral route of drug administration can not be used to produce a localized effect.
- 11- Syrups are clear, sweetened, hydroalcoholic solutions of one or more drugs intended for oral use, and are usually flavored to enhance their palatability.
- 12- The parenteral routes of drug administration can not be used to deliver drugs to unconscious patients.
- 13- A drug dose is the amount or quantity of the drug that is required to yield the therapeutic concentration which result in clinical effect.
- 14- The oral route of drug administration can be used to produce either a systemic or local effect.
- 15- Drug bioavailability is the study of the relationship between dosage form and therapeutic response.
- 16- Drug release is the act of movement of the drug from its route of administration into the blood stream.
- 17- The oral route of drug administration can be used only when a systemic drug effect is required.

- 18- The oral route can be used for rapid onset of drug action (within few minutes) and for delayed action (extended to several hours).
- 19- Drug absorption upon rectal administration can be irregular and unpredictable thus giving rise to a variable effect
- 20- Emulsions having an oleaginous internal phase and an aqueous external phase are referred to as water in-oil (w/o) emulsions.
- 21- Oral emulsions( emulsions for internal use) are stabilized water-in-oil (w/o) dispersions that may contain one or more active ingredients.
- 22- Drugs that are effective in very low doses can not be taken by buccal routes of drug administration.
- 23- Vaginal drug administration can be used only for local drug action.
- 24- The oral route is a suitable route of drug administration to unconscious or vomiting patients and for immediate pre- or postoperative use.
- 25- Drugs absorbed sublingually give a very fast onset of action.

٢٦- تتسبب بردية ابرس الى اسم المتحف الذى توجد به فى المانيا

٢٧- كان المصريين القدماء يحصلون على العقاقير من النباتات البرية فقط

٢٨- من علماء اليونان (الاغريق) الذين نبغوا فى الطب والصيدلة أبو قراط (أبو الطب)، وديستوريدس (أبو المستحضرات الصيدلية)، وجالينوس (أبو العقاقير) وغيرهم.

٢٩- وفى عهد الخليفة العباسى المعتصم أجرى أول امتحان للصيدلة.

٣٠- جابر بن حيان من أشهر العلماء فى الطب والصيدلة ، حيث ابتكر خيوط الجراحة المصنوعة من جلد الحيوان المعروفة بالقصاب وكان أول من صنع مرهم الزئبق.

**II- Give the suitable title or heading or term that can be described or defined by each one of the following statements: (15 Marks)**

1- It is the act of getting out, moving out, leaving out or migration out of the drug from its dosage form (delivery system) and going into solution in the surrounding fluid medium.

.....

2- It is the removal of the drug from the body

.....

3- Are finely divided powders with or without medicament for external use.

.....

4- Consists of two immiscible liquids, one of which is uniformly dispersed throughout the

other as a fine droplets normally of 0.1-100µm.  
.....

5- Are sterile solutions most commonly used in the treatment of infected bladders.  
.....

6- Are large tablets designed to be sucked and remain in the mouth for up to 15 minutes  
.....

7 - Are agents that help the production of a stable emulsion by reducing interfacial tension and then maintaining the separation of the droplets by forming a barrier at the interface .  
.....

8. Are mixtures, suspensions, syrups, elixirs, linctuses, emulsions, applications, collodions, ear drops, eye drops, enemas, gargles, irrigation, Liniments, lotions, mouth washes, paints .  
.....

9 -Are injections, implants, eye drops, eye ointments, solutions for peritoneal dialysis, preparations to applied for wounds and extensive burns, surgical dressings, etc.  
.....

10- Are sterile liquid preparations used to administer drugs to the eye .  
.....

11- Are aqueous solutions used to treat infections of throat.  
.....

12- These are solid dosage forms for insertion into the rectum.  
.....

13- Are water containing ointments (semisolid emulsions for external use) .  
.....

14- It is a manufactured dosage form containing one or more active therapeutic ingredient along with other substances included during the manufacturing process .  
.....

15- It is the act of using, taking, giving, applying or putting the drug or its dosage form into/onto the body to perform the expected biological response.  
.....

PART II









.....and.....  
.....

5- 1 part to 800 part equals to .....%

3- Denote (T) for true or (F) for false sentences (10 marks)

1- Subscription is directions to the patient on how to use the medication in the prescription.	
2- 1 gram equals to $1 \times 10^6$ ng.	
3- Therapeutic incompatibility occurs when the drugs give different action than that intended by the physician.	
4- In simple prescription, the inscription consists only of the active ingredients.	
5- The pharmacist respects personal and cultural differences among patients.	
6- Martindale. The Extra Pharmacopoeia: It is not a true pharmacopoeia	
7- The U.S.P. contains monographs on excipients while NF contains monographs on drugs.	
8- Aspirin is an example of natural drugs.	
9- Complementary studies in pharmacy include mathematics, management and pharmacy law.	
10- Clinical pharmacy is an example of patient related indirect activities.	

End of questions

Good luck, Dr Hany Saleh

Assiut University

Faculty of Pharmacy

Dept. of Pharmaceutics

**All Questions Should be Attempted:**

**PART I**

**i- Donate (T) for true statement or (F) for false one; justify your answer: (10 Marks)**

- [ ] 1- The incompatibilities of certain polyethers with salicylic acid can be attributed to the formation of polymer complex.  
.....
- [ ] 2- Chemical bonds are involved in clathrates complexes.  
.....
- [ ] 3- The stability of the substance depends on its structural feature.  
.....
- [ ] 4- There is no relation between viscosity of the medium and dissolution rate of the drug.  
.....
- [ ] 5- The use of alkaline metal salts of organic compounds to decrease the solubility of the drug is defined as hydrotropy.  
.....
- [ ] 6- Preservation of emulsions and creams is influenced by partition coefficient.  
.....
- [ ] 7- Viscosity affects the dissolution rate of the drug.  
.....
- [ ] 8- Osmosis is defined as the action in which solute passes through the semipermeable membrane.  
.....
- [ ] 9- Dialysis is a process based on unequal rates of passage of solutes and solvent through microporous membrane.  
.....
- [ ] 10- Ultrafiltration is used to separate suspended particles by the use of filter



.....  
.....  
.....  
.....  
.....

3- Salt formation is one of the techniques that are used for increasing drug solubility.

.....  
.....  
.....  
.....  
.....  
.....

4- The pressure of gas above the solution has an important consideration in gaseous solution.

PART 11

Select the most appropriate answer:

(25 Marks)

(Answers to all questions are to be recorded on the accompanying table in the format A-E)

**1-Acidic buffer solution is an aqueous solution consisting of:**

- A-A mixture of a weak acid and its conjugate base.
- B-A mixture of a strong acid and its conjugate base.
- C- A mixture of a weak base and its conjugate acid.

**2-The resistance to a change in pH is known as:**

- A-buffer action.
- B-buffer capacity.
- C-buffer efficiency.

**3- Examples of weak acid buffer systems.**

- A-Acetic acid and sodium chloride.
- B-Boric acid and sodium borate.
- C-Boric acid and sodium phosphate.

**4- pH is equal to:**

- A-  $-\log 1/[H^+]$
- B-  $\log [H^+]$
- C-  $\log 1/[H^+]$

**5- What is the molar ratio, [salt]/[acid], required to prepare an acetate buffer of pH 5 and  $pK_a = 4.76$ ?**

- A- 1/1.74
- B- 1.74/1
- C- 1.74/1.74

**6- Buffer solutions are not ordinarily prepared from weak bases and their salts because of:**

- A-The volatility of the bases
- B-Because of the dependence of their pH on  $pK_w$ , which is often affected by temperature changes.
- C-A and B.
- D-Non of the above.

**7- What is the pH of a solution containing 0.10 mole of ephedrine and 0.01 mole of ephedrine hydrochloride per liter of solution? The  $pK_b$  of ephedrine is 4.64.**

- A- 9.36
- B-10.36
- C-11.36

**8- The addition of water to a buffer solution in moderate amounts, may cause a small positive or negative deviation because:**

- A-It alters activity coefficients.
- B-Water itself can act as a weak acid or base.
- C-It changes the ionic strength.
- D-All of the above.

9- The pH of acetate buffers was found to \_\_\_\_\_ with temperature:

- A-increase.
- B-decrease.
- C-not affected.

**10- The maximum buffer capacity occurs:**

- A-When the ratio of the salt to the acid or base is 1:1.
- B-When higher concentration of salts and acids.
- C-Both A and B
- D-Non of the above

**11- Blood is maintained at a pH of about:**

- A-6.4
- B-7.4
- C-8.4

**12-Buffer is important because it influence:**

- A-Solubility.
- B-Stability.
- C-Absorption.
- D-All the above.
- E-Non of the above.

**13- If the sodium chloride equivalent of boric acid is 0.52, How many grams of boric acid should be used in preparing 100 ml of an isotonic solution of boric acid.**

- A-1.037
- B-1.73
- C-13.7

**14- Solution has osmotic pressure lower than body fluid:**

- A-hypotonic
- B-isotonic
- C-hypertonic

**15- A solution of boric acid iso-osmotic with blood is considered:**

- A-Isotonic with respect to blood.
- B-Hypotonic with respect to the blood.
- (-Hypertonic with respect to the blood.

**16- A quantity of drug calculated to be iso-osmotic with blood is isotonic only when:**

- A-The blood cells are impermeable to the solute.
- B- The blood cells are permeable to the solute molecules.
- C-The blood cells are permeable to both the solute molecules and solvent.

**17- Amount of sodium chloride required for isotonic solution is:**

- A-0.9 gram in 1000 ml water.
- B-9 gram in 1000 ml water.
- C-9 gram in 100 ml water.

**18-Shear stress is:**

- A-The relative velocity of the fluid layers divided by their normal separation distance.
- B-The force required to overcome a fluid's resistance to flow, divided by the area that force is acting upon
- C-The quantity that describes a fluid's resistance to flow.

**19-In the cgs system, the unit of viscosity is**

- A-mPa S
- B-poise
- C-stoke

**20- The dynamic viscosity divided by the density of the fluid is**

- A- kinematic viscosity
- B- Absolute viscosity
- C-Relative viscosity.

**21-Non-Newtonian flow is generally exhibited by heterogeneous dispersions as colloidal solution, emulsions, suspensions and ointments.**

- A-False.
- B-True.

**22- A Newtonian fluid is broadly defined as one for which the relationship  $\tau/\dot{\gamma}$  is not a constant.**

- A-False.
- B-True.

**23- In which rheogram, the straight line passing through the origin.**

- A-Newtonian flow

Page 6 of. 11

- B-Plastic flow.

C-Pseudoplastic flow.  
D-Dilatant flow.

**24- In which rheogram, the slope of the line is the mobility.**

A-Newtonian flow  
B-Plastic flow.  
C-Pseudoplastic flow.  
D-Dilatant flow.

**25-Which flow is called shear thickening:**

A-Newtonian flow  
B-Plastic flow.  
C-Pseudoplastic flow.  
D-Dilatant flow.

**26-The flow which is associated with the presence of flocculated particles in concentrated suspensions.**

A-Newtonian flow  
B-Plastic flow.  
C-Pseudoplastic flow.  
D-Dilatant flow.

**27- The flow which has yield value:**

A-Newtonian flow. B-Plastic flow.  
C-Pseudoplastic flow.  
D-Dilatant flow.

**28- Thixotropy can be applied to:**

A-Newtonian flow  
B-Pseudoplastic flow.  
C-Dilatant flow.

**29- The capillary-tube viscometer is usually restricted to:**

A-Low-viscosity Newtonian fluids.  
B-High-viscosity Newtonian fluids.  
C-A and B.

**30-The viscosity of a Newtonian liquid measured in the cone-plate viscometer is calculated by using of the equation:**

A- $\eta = C (T/ v)$   
B- $\eta = C (T-T_f/ v)$ .



$$C - \eta = C(T_f - T/v)$$

**31-Micromeritics deals with:**

- A- Flow of fluids and deformation of solids.
- B- Particle size and size distribution.
- C- Tonicity of solutions.

**32-Stokes diameter,  $d_{st}$ , describes:**

- A-An equivalent sphere undergoing sedimentation at the same rate.
- B-The diameter of a sphere having the same observed area.
- C-The diameter of a sphere having the same volume.

**33- The mesh number system is a measure of how many openings there are per:**

- A-linear inch in a screen
- B- Area in a screen
- D-One cm in a screen.

**34- True volume of the material is determined by:**

- A-Helium densitometer.
- B-Mercury densitometer.
- C-Specific gravity bottle

**35-Granule density can be determined by:**

- A-Helium densitometer.
- B-Mercury densitometer.
- C-Specific gravity bottle.

**36- \_\_\_\_\_ is a device used to determine the density of a liquid.**

- A-Pycnometer.
- B-Cone and plate.
- C-Andreasan pippete

**37- To calculate pH of a buffer solution, we can use the following:**

- A-Stokes law.
- B-Henderson-Hasselbalch.
- C-Newton's law.

**38-liquids are often called "Bingham Liquids or Bingham bodies".**

- A-Newtonian flow
- B-Plastic flow.
- C-Pseudoplastic flow.
- D-Dilatant flow.

**39-  $-0.52^{\circ}$  is the freezing point of:**

- A-Lachrymal fluid.
- B-Human blood
- C-Both human blood and lachrymal fluid.
- D-Non of the above

**40- Regarding thixotropic systems:**

- A- A Thixotropic fluid's viscosity decreases at a constant shear rate over time.
- B- This process is not instantaneous.
- C-The material undergoes a *gel-to-sol* transformation.
- D-All of the above.
- E-Non of the above

**41-The reciprocal of the slope in the flow curve of Newtonian flow is called:**

- A-Viscosity.
- B-Fluidity.
- C-Mobility.

**42- Falling sphere viscometer measures the viscosity of:**

- A- Newtonian liquids.
- B- Non-Newtonian liquids.
- C-Aand B.

**43- Cone and plate viscometer measures the viscosity of:**

- A- Newtonian liquids.
- B- Non-Newtonian liquids.
- C- A and B.

**44-Sodium chloride equivalent for pilocarpine nitrate is 0.23 g, that means:**

- A-0.23 g of sodium chloride is osmotically equivalent to one gram of pilocarpine nitrate.
- B- One gram of sodium chloride gives same freezing point depression as 0.23 g of pilocarpine nitrate.
- C-A and B.

**45-The rougher and more irregular the surface of the particles:**

- A-The higher will be the angle of repose.
- B- The worst flow of powder.
- C-Both A and B

**46-The volume of the particles together with their intraparticle spaces gives:**

- A-The granule volume.
- B-The True volume.
- C-Bulk volume.

D-Non of the above is true.

**47-Regarding pseudoplastic flow:**

A-The curve begins at the origin.

B-No part of the curve is linear.

C-One can not express the viscosity of a pseudoplastic material by any single value.

D-All of above is true.

E-Non of the above is true.

**48- In general, pseudoplastic flow is exhibited by:**

A-Polymers in solution.

B-Suspensions with a high percentage of small, deflocculated particles.

C-Suspensions with a high percentage of small, flocculated particles.

**49- \_\_\_\_\_ is used to measure particle volume:**

A-Coulter counter

B-Andreasen pipette

C-Light microscope.

**50-If the red blood cells are placed in 5%w/v NaCl,**

A-The cells swell.

B-The cells shrink.

C-The cells maintain its shape.

<b>Q. No</b>	<b>Answer</b>	<b>Q. No.</b>	<b>Answer</b>
1		26	
2		27	
3		28	
4		29	
5		30	
6		31	
7		32	
8		33	
9		34	
10		35	
11		36	
12		37	
13		38	
14		39	
15		40	
16		41	
17		42	
18		43	
19		44	
20		45	
21		46	
22		47	
23		48	
24		49	
25		50	

**First Year Clinical pharmacy  
Histology Exam**

I Describe the structure of: -----2 Marks each

- 1- Golgi bodies.
- 2- Monocyte.
- 3-osteocyte
- 4- Types of neurons.
- 5- continuous blood capillaries.

II Give the definition of: -----2 Mark Each

- 1- Cell inclusions.
- 2- Sarcomere.
- 3- Synapse.
- 4- intercalated disc
- 5- perichondrium

III- Write short notes on structure of each of the following: -

2 Marks each

- |                              |                 |
|------------------------------|-----------------|
| a)Juxta glomerular apparatus | b)Corpus luteum |
| c)Hepatocytes                | d)Melanocytes   |

IV-In a table form make a comparison between:-----5marks each

- a) Proximal and distal convoluted tubules of the kidney.
- b)Thick and thin skin.
- c)Extra- and Intra- pulmonary bronch.

V-Enumerate the followings: ----- 2marks each

- a) Epidermal cells.
- b) Components of blood-renal barrier.
- c) Cells lining the fundic glands
- d) Cells covering the intestinal villi.
- e) Components of the middle vascular coat of the eye ball.
- f) Layers of the retina.

VI- MCQ: Choose One Correct Answer:

- 1-The cell organelle which contains hydrolytic enzymes is:  
a- Golgi body      b- lysosome      c- mitochondria      d- smooth ER
- 2- When the urinary bladder is relaxed, the superficial cells of transitional epithelium are:  
a- squamous. b- rounded.      c- columnar. d-cuboidal.
- 3- The granulocytes which are multilobed are:  
a- eosinophils      b- basophils      c- neutrophils d- lymphocytes
- 4- Connective tissue fibers which are arranged in wavy bundles are:  
a-elastic fibers      b-reticular fibers      c-collagen fibers      d-muscle fibers
- 5- The cell which contains numerous RER and clock face nucleus is:  
a-mast cell      b-fibroblast      c-macrophage      c-fat cell      d-plasma cell
- 6- The large multinucleated bone cell found on bone surface is:  
a- osteoblast      b-osteocyte      c- osteoclast      d- osteogenic cell
- 7- Smooth muscle fibers have:  
a- peripheral nuclei      b- cross striations  
c- spindle shape      d-multiple nuclei
- 8- Nissle granules are formed of:  
a-rough endoplasmic reticulum (RER) and free ribosomes  
b-numerous mitochondria      c- well developed Golgi bodies      d-SER
- 9- The basement membrane is a characteristic feature in structure of:  
a-connective tissue      b-muscular tissue      c-nervous tissue      d-epithelium
- 10-Pericytes are found in the wall of:  
a- blood capillaries      b- arterioles      c- venules      d- large arteies

انتهت الأسئلة

تنبيه هام: على جميع الطلاب اجابة الأسئلة متعددة الاختيارات فى كراسة الإجابة فى جدول يرسم بداخلها.



ASSIUT UNIVERSITY  
FACULTY OF PHARMACY  
PHARM. ANAL. CHEM. DEPT.

CLINICAL PHARMACY  
THE 2<sup>nd</sup> LEVEL-SECOND TERM  
PHARM. ANAL. CHEM. 1  
FINAL EXAM  
JUNE 28,2012  
TIME ALLOWED: TWO HOURS  
50 MARKS

لاحظ أن: الامتحان يقع في ٨ صفحات (٤) ورقات مطبوعة في الوجه والظهر)

**Question I: Acid-base Titrimetry: (25 Marks)**

**A-Choose the correct answer: (9 Marks)**

**1-The following compound is a secondary standard**

- a- Na<sub>2</sub>CO<sub>3</sub>    b- KH phthalate    c- iodine    d- CaCl<sub>2</sub>

**2-The solvent which has a leveling effect for bases is**

- a- Aprotic    b- protiohillic    c- protogenic    d- amphiprotic.

**3-The scientist who put the expression of pH is:**

- a- Arrhenius    b- Sorenson    c- Lewis    d- Hemderson.

**4-The nitrogen of the protein can be determined by**

- a- Back titration    b- formol titration  
c- Kjeldhal's method    d- direct titration.

**5- Aniline in glacial acetic acid is**

- a- Weak base    b- strong base    c- weak acid    d- strong acid.

**6-The following is a mixed indicator**

- a-Mixture of methyl orange& indigocarmin  
b-Mixture of crystal violet& thymol blue.  
c-Mixture of cresol red & thymol blue,  
d-Mixture of methyl orange & phenolphthalein.

**7- The pH of solution of NH<sub>4</sub>Cl equals to:**

- a-  $\text{pH} = 1/2 \text{pK}_w + 1/2 \text{pK}_a - 1/2 \text{pC}_s$ .  
a-  $\text{pH} = 1/2 \text{pK}_w + 1/2 \text{pK}_b - 1/2 \text{pC}_s$ .  
a-  $\text{pH} = 1/2 \text{pK}_w + 1/2 \text{pK}_a - 1/2 \text{pK}_b$ .  
a-  $\text{pH} = 1/2 \text{pK}_w + 1/2 \text{pK}_b - \log [\text{salt}]/[\text{base}]$

**8-NH<sub>3</sub> is a base according to:**

- a- Arrhenius    b- Bronsted & Lowry    c- Lewis    d- both b & c.

**9- The following compound can be determined by biphasic method:**

- a- BaCl<sub>2</sub>    b- sodium salicylate    c- aspirin    d- NH<sub>4</sub>Cl.

**10-Non aqueous method can be used for:**

- a- very weak acids and bases.    b- insoluble substances.  
c- substances which make problem when determined in H<sub>2</sub>O.  
d- all the above.

**11-Phenolphthalein is a suitable indicator for the determination of the following Compounds except:**

- a- CH<sub>3</sub>COOH    b- BaCl<sub>2</sub>    c- naproxen    d- NH<sub>2</sub>HgCl.

**12-For direct titration of boric acid in water, the following compound must be added:**

- a- alcohol    b- ether    c- glycerol    d- H<sub>2</sub>O<sub>2</sub>.

**13-Displacement titration used for determination of:**

- a- Salts of organic acids, which is soluble in water while the acids of which is insoluble.  
b- Salts of very weak acids & strong bases and salts of very weak bases & strong acids.  
c- Very weak acids and very weak bases.  
d- Insoluble substances.

**14- Among the sources for errors in titration:**

- a- error in reading of burette    b- contamination or dilution  
c- use of wrong indicator    d- all the above.

**15-Maximum buffer capacity can be obtained when:**

- a- [salt]/[acid] = 10    b- [salt]/[acid] = 0.1  
c- [salt]/[acid] = 1    d- [salt]/[acid] = 100.

**16-The following mixture is a buffer system:**

- a- Mixture of citric acid & sodium citrate    b- mixture of NaOH & NaCl.  
c- mixture of H<sub>2</sub>SO<sub>4</sub> & K<sub>2</sub>SO<sub>4</sub>.    d- mixture of Ba(OH)<sub>2</sub> & BaCl<sub>2</sub>.





5- HCl is a strong electrolyte.

6- Addition of Ag<sup>+</sup> for determination of K<sub>2</sub>S<sub>2</sub>O<sub>8</sub>.

7- Use of phenolphthalein, not methyl orange for determination of NH<sub>4</sub>Cl by formol method.

8- Phenolphthalein renders colorless above pH 11.

9- AlCl<sub>3</sub> is an acid according to Lewis theory.

10- CaCO<sub>3</sub> is determined by indirect method.

**D- By chemical balanced equations, illustrate how can you analyze the following ( mention the method, standard(s), indicator(s), solvent, conditions: (6 Marks)**

1- Aniline.

2- HCHO.

**F- Calculate the pH of solutions obtained by ,mixing 10 rnl of 0.15N HCl with 30 ml of 0.05 N NH<sub>4</sub>OH (K<sub>b</sub> NH<sub>4</sub>OH =1.75 X 10<sup>-5</sup>). (2 Marks)**

**Question II: PRECIPITIMETRY and GRAVIMETRY (25 Marks)**

Note that: solubility product constant  $K_{sp \text{ AgCl}}=1.1 \times 10^{-10}$   $K_{sp \text{ AgBr}}=3.5 \times 10^{-13}$   $K_{sp \text{ AgI}}= 10^{-16}$

**A. Illustrate by drawing each of the following: (6 marks)**

<p>1- The weight and the form of the precipitate is dependent on the temperature of drying or ignition.</p>	<p>2- The magnitude of inflection (the peak at the end point) in argentometric titration curve is dependent on the solubility product constant (<math>K_{sp}</math>) of the silver halide (<math>\text{AgX}</math>) formed.</p>
---	---

3-  $\text{BaSO}_4$  crystals (ppt.) may be attacked by  $\text{BaCl}_2$ ,  $\text{PbSO}_4$ ,  $\text{K}_2\text{SO}_4$  or  $\text{BaNO}_3$  as impurities; name the type and represent by drawing.

**B. Shortly answer the following: (12 marks)**

1-  $\text{NiCl}_2$  and  $\text{Na}_2\text{SO}_4$  may be gravimetrically determined by "organic precipitants"; draw the chemical structure of reagent used for each.

- 2-  $\text{AlCl}_3$  and  $\text{Sr}(\text{NO}_3)_2$  may be gravimetrically determined by "homogenous precipitation"; write the chemical equation used for each.
- 3- What is the product formed at the end point and what is its colour in Mohr's Volhard's, and Denigé's methods.
- 4- Mohr's method is limited to pH 6-9; illustrate by equations.
- 5- Cations, anions and organic compounds may interfere on the gravimetric determination of  $\text{Fe}^{3+}$  as  $\text{Fe}(\text{OH})_3$ , mention examples.
- 6- In precipitometry, the end point may be detected by the appearance or the disappearance of turbidity; show by equations.

C. For (14) of the following statements, select (and mark) the most proper one answer (A, B, C, or D) then complete the following ANSWER

TABLE:

(7 marks)

Statement No.	1	2	3	4	5	6	7	8
Answer letter								
Statement No.	9	10	11	12	13	14	15	16
Answer letter								

**1- On the determination of  $\text{Ag}^+$  by the titration with  $\text{Br}^-$  (in Fajan's method); the indicator that may be used is:**

(A)- Fluorescein. (B)- Eosin. (C)- Rhodamine 6-G. (D)- Rose Bengal.

**2- In Denige's method, the end point is the appearance of a turbidity of:**

(A)  $\text{AgCl}$ . (B)  $\text{AgI}$  (C)  $\text{AgCN}$  (D)  $\text{Ag}[\text{Ag}(\text{CN})_2]$

**3-  $K_{sp}$  of  $\text{Pb}_3(\text{PO}_4)_2$  salt =**

(A).  $[\text{Pb}^{2+}]^2 \times [\text{PO}_4^{3-}]^3$  (B).  $[\text{Pb}^{2+}]^3 \times [\text{PO}_4^{3-}]^2$   
 (C).  $[\text{Pb}^{3+}]^3 \times [\text{PO}_4^{2-}]^2$  (D).  $[3 \text{Pb}^{2+}]^3 \times [2 \text{PO}_4^{3-}]^2$

**4-  $\text{AgCl}$  solubility is increased by the presence of the following salt in solution:**

(A).  $\text{NaNO}_3$ . (B).  $\text{AgNO}_3$ .  
 (C)  $\text{NaCl}$ . (D). (A)&(B) are correct by common ion effect.

**5- When  $\text{AgNO}_3$  solution is added dropwise to a mixture of  $\text{Cl}^-$ ,  $\text{Br}^-$  and  $\text{I}^-$ , the order (ترتيب) of precipitation is:**

(A).  $\text{Cl}^-$ ,  $\text{Br}^-$ ,  $\text{I}^-$  (B).  $\text{Br}^-$ ,  $\text{I}^-$ ,  $\text{Cl}^-$  (C).  $\text{I}^-$ ,  $\text{Cl}^-$ ,  $\text{Br}^-$ . (D).  $\text{I}^-$ ,  $\text{Br}^-$ ,  $\text{Cl}^-$ .

**6- When  $\text{AgNO}_3$  (0.1 M) solution is added dropwise to a mixture of  $\text{Cl}^-$  and  $\text{I}^-$  solution,  $\text{Cl}^-$  ion will be precipitated with  $\text{I}^-$  ion if:**

(A).  $[\text{Cl}^-] = [\text{I}^-]$  (B).  $[\text{Cl}^-] = 1000$  times as  $[\text{I}^-]$   
 (C).  $[\text{Cl}^-] = 1000,000$  times as  $[\text{I}^-]$  (D).  $[\text{Cl}^-] = 0.000001$  times as  $[\text{I}^-]$

**7- On the procedure of Volhard's method, the following precipitate should be filtered off (removed) before the back titration with  $\text{SCN}^-$ :**

(A)  $\text{AgCl}$  (B)  $\text{AgBr}$  (C)  $\text{AgI}$  (D) Non of them.

**8- Gravimetry as an analytical method is considered to be highly:**

(A) Accurate (B) Precise (C) Sensitive (D) A&B are correct.

**9- For optimal precipitation process, requirements are:**

- (A) High degree of supersaturation.
- (B) High rate of nucleation
- (C) Formation of large number of fine crystals.
- (D) Formation of small number of large crystals.

**10- According to Von Wiemarn equation, optimum conditions for precipitate formation are:**

- (A) The use of concentrated solutions on precipitation.
- (B) Rapid addition of the reactants.
- (C) Precipitation on cold.
- (D) Precipitation while hot with constant stirring.

**11. On precipitation of  $\text{Ag}^+$  by  $\text{NaCl}$ , a slight excess of  $\text{NaCl}$  is added to:**

- (A) Increase precipitation by common ion effect.
- (B) Increase solubility of  $\text{AgCl}$  by common ion effect.
- (C) Increase precipitation by diverse ion effect.
- (D) Increase precipitation by complex formation.

**12. If  $\text{AgCl}$  colloidal particles are present in an excess of  $\text{AgNO}_3$ :**

- (A) The primary adsorption layer will be  $\text{NO}_3^-$ .
- (B) The primary adsorption layer will be  $\text{Ag}^+$ .
- (C) The secondary adsorption layer will be  $\text{Ag}^+$ .
- (D) The secondary adsorption layer will carry a +ve charge.

**13- "Digestion" of the precipitate will insure:**

- (A) Minimum trapping of impurities. (B) Imperfection (نشوه) of the crystals.
- (C) Formation of many crystals with high surface area. (D) All are incorrect.

**14- The formation of  $\text{MgKPO}_4$  during the precipitation of  $\text{MgNH}_4\text{PO}_4$  is considered to be:**

- (A) Occlusion. (B) Surface adsorption
- (C) Isomorphic inclusion. (D) Post precipitation

**15- A reagent which is used for "homogenous precipitation" of  $\text{Fe}(\text{OH})_3$  is:**

- (A) Thioacetamide. (B) Urea. (C)  $\text{NH}_4\text{OH}$ . (D) 8-Hydroxyquinoline.

**16- The "organic precipitant" used for precipitation of  $\text{SO}_4^{2-}$  is:**

- (A)  $\text{BaCl}_2$  (B) Ba-EDTA (C) Benzidine. (D) Na-Rhodizonate.

الامتحان الختومي معقب التحريرى مباحرة بالقسو

مع دماننا بالتوفيق والتفوق أ.د. ابراهيم حسن رفعت أ.د. هناء محمد عبد الودود

Student Name:-----  
Serial number:-----  
Sample (A) No. -----  
(B) No.-----

Faculty of Pharmacy  
Pharm. Anal. Chem. Dept.  
1<sup>st</sup> year Clinical Pharmacy  
Practical Exam. (2hrs)  
**6/4/2008**

**I- Determine the concentration of Sodium carbonate in sample (A):-**

Into a conical flask transfer 10.0 ml of sample (A), add 2 drops methyl orange indicator and titrate with 0.1N HCl.

Exp. No.	Volume	Mean
1-		
2-		
3-		

Each 1ml of 0.1N HCl = 0.0053 g Na<sub>2</sub>CO<sub>3</sub>

% of sodium carbonate = \_\_\_\_\_

**II- Determine the concentration of Boric acid in sample (B):-**

Into a conical flask, transfer 10.0 ml of sample (B), add 10 ml glycerol, add 1 drop ph.ph. indicator and titrate with 0.1N NaOH.

Exp. No.	Volume	Mean
1-		
2-		
3-		

Each 1 ml of 0.1N NaOH = 0.0062 g H<sub>3</sub>BO<sub>3</sub>

% of boric acid = \_\_\_\_\_

***Best wishes***

**Periodic Exam. (10 Marks)**  
**Complete the Following:**

- 1) Buffer solutions can be defined as  
.....
- 2) pH of Weak base can be calculated by the  
equation .....
- 3) One type of buffer solutions .....
- 4) M/1 NaOH .....
- 5) .....and .....is an example of  
mixed indicators.
- 6) A blank determination is defined as .....
- 7)  $\text{NH}_4\text{Cl} + \text{H.CHO} = \dots\dots\dots$
- 8)  $\text{NaOH} + \text{H}_3\text{BO}_3$  (glycerol) = .....
- 9)  $\text{C}_6\text{H}_4(\text{OH})\text{COONa} + \text{HCl} = \dots\dots\dots$



**Periodic Exam.**

**(10 Marks)**

**Complete the Following:**

- 1) pH of Weak acid can be calculated by the equation .....
- 2) Henderson equation can be used for the determination of .....
- 3) .....and .....is an example of screened indicators.
- 4)  $N/1 \text{ HCl} = \dots\dots\dots$   
.....
- 5) One type of buffer solutions .....
- 6)  $\text{Na}_2 \text{B}_4 \text{O}_7 + \text{H}_2\text{O} = \dots\dots\dots$   
.....
- 7)  $\text{NaHCO}_3 + \text{HCl} = \dots\dots\dots$
- 8)  $\text{K}_2\text{S}_2\text{O}_8 + \text{H}_2\text{O} = \dots\dots\dots$
- 9)  $\text{CaO} + \text{HCl} = \dots\dots\dots$



Examiner Name	Prof.Dr.Kamla Emara	Prof.Dr. Nawal El Rabbat	Total
Question	I	II & III	
Point			

### Neutralisation Reactions

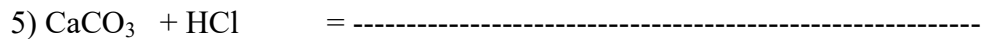
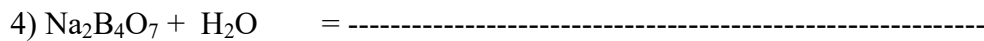
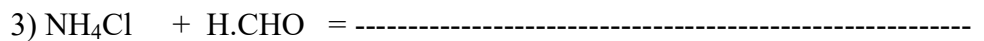
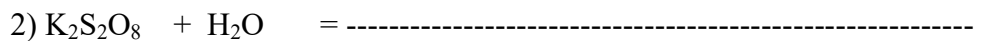
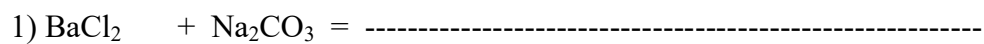
#### I- Acid- Base Titrations (25 Points)

**Complete the following:**

- 1) Henderson equations can be used for the determination of -----  
-----
- 2) Basic buffer solution contains -----  
-----
- 3) ----- and ----- can be  
used as screened indicators.
- 4) Four groups of solvents are used in non-aqueous titrations are:  
1- ----- 2- -----  
3- ----- 4- -----
- 5) Sodium salicylate can be determined by -----  
or -----titrations.
- 6) Aniline is determined directly in glacial acetic acid using -----  
----- as titrant and ----- as indicator.

7) Calcium oxide is determined directly after addition of -----  
solution, using ----- as titrant.

2- Complete and balance the following equations: (10 Points)



PRECIPITOMETRY AND GRAVIMETRY: (Pr. Dr.Nawal El-Rabbat)

PRECIPITOMETRY

I- Mark (✓) for the correct statement and (X) for the wrong

one and give the reason for your answer: (10 points)

- ( ) Mohr's method is used for determination of  $\text{SCN}^-$  and  $\text{I}^-$  -----
- ( ) Volthard's method is carried out in  $\text{HNO}_3$  medium. ---- ----
- ( ) The medium should be acidic in Mohr's method -----
- ( ) In argentometric titration of chloride ions, ammonium ions must be absent. ---- ----
- ( )  $\text{Cl}^-$  can be determined in presence of  $\text{I}^-$  using eosine indicator --- ---
- ( ) Fluorescein can not be used for detection of end point titration of  $\text{Ag}^+$  using standard  $\text{Cl}^-$  as titrant. ---- ---- ----
- ( ) Sodium salt of rhodizonic acid is used for detection of end point of titration of  $\text{Ba}^{2+}$  using standard  $\text{SO}_4^{2-}$  as titrant but not the reverse  
--- ----
- ( ) Silver halides must not be precipitated away from sun light. --- ----
- ( ) Diverse ions increase the solubility of the precipitate -----



2- Mixture of Chromium and Aluminium ions is analyzed gravimetrically as follows .....  
(use mainly equation)

3- The selectivity of the precipitating agent can be obtained by .....  
..... (give three examples) .....

الامتحان يتكون من ثمانية صفحات مطبوعة

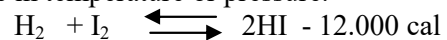
**I. INTRODUCTION TO QUALITATIVE ANALYSIS:** (10 Marks)

1. (a) Differentiate between peptization and coagulation of a precipitate. (1 Mark)

- (b) Calculate the normality of a 15.0% w/w aqueous solution of aluminium sulphate (specific gravity = 1.12).  
Al = 26.98, S = 32.06, O = 16.00 (2 Marks)

2. (a) State the law of concentration effect. (1 Mark)

- (b) For the reactions represented by the following equations, show the effect of increase in temperature or pressure: (2Marks)



3. (a) Give the three equations representing the stepwise ionization of phosphoric acid and the mathematical expression of the ionization constant of each stage. (3 Marks)

(b) Calculate pH of 0.01 N acetic acid ( $K_a = 1.8 \times 10^{-5}$ ). (1 Mark)



**II. THEORY AND APPLICATIONS OF ACID-BASE TITRATIONS:**

(15 Marks)

(a) What are the requirements of a primary standard?

(3 Marks)

- 1.-----
- 2.-----
- 3.-----
- 4.-----
- 5.-----
- 6.-----

(b) Give reason(s) by balanced equations: (2x2 Marks)

1. Mixed aqueous solutions of acetic acid and sodium acetate resist change of pH upon addition of small amounts of HCl or NaOH.

2. Methyl orange indicator is yellow in alkaline medium and red in acid medium.

(c) How can you analyse (Give equations, titrants, indicators & calculations):  
(2x4 Marks)

1. Mixture of borax and boric acid.

2. Potassium persulphate.

**III. SYSTEMATIC QUALITATIVE ANALYSIS & NON-AQUEOUS TITRATIONS:** (25 Marks)

1. In a tabular form mention the distinctive tests for identification and differentiation of ferrous and ferric salts. (10 x ½ Marks)

Reagent	Ferrous	Ferric
1.		
2.		
3.		
4.		
5.		

2. Write on the advantages of using thioacetamide in cation separation. (2 Marks)

(i)-----  
-----

(ii)-----  
-----

3. Draw the flow chart for the separation of:  
(a) Cations of group III.

(2x3 Marks)

(b) Anion mixture of sulphide, sulphate and thiosulphate.

4. What is the difficulty caused by the presence of oxidizing agent on the precipitation of group II and IV cations. (2 Marks)
- (i)
- (ii)
5. Compare between protogenic and protophilic non-aqueous solvents giving examples. (2 Marks)
6. Why cannot lime water test differentiate between  $\text{CO}_2$  and  $\text{SO}_2$  gases. (2 Marks)

7. Mention the role of mercuric acetate in non-aqueous titration of aniline hydrochloride. (2 Marks)

8. Complete the following statements: (4x1 Mark)

(a) ----- is the name of a specific test for chloride.

(b) Levelling effect of a solvent means -----  
-----

(c) ----- have a differentiating effect on a mixture of HCl and HClO<sub>4</sub>.

(d) Autoprotolysis is a process of -----  
-----



Assiut University  
Faculty of Pharmacy  
Pharm. Anal. Chem. Dept

Clinical Pharmacy Semester(2)  
Pharm. Anal. Chemistry-1  
Final Exam. : August 2008  
Time Allowed: 2 hours

Examiner Name	Prof.Dr.Kamla Emara	Prof.Dr. Nawal El Rabbat	Total
Question	I	II & III	
Point			

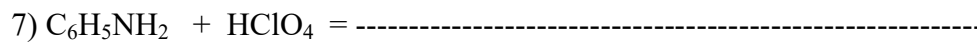
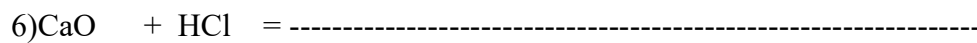
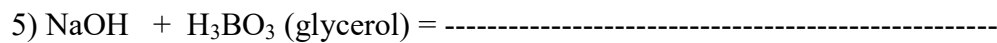
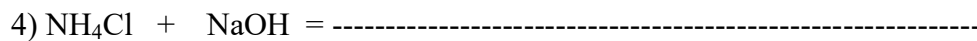
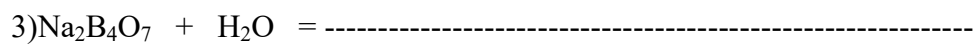
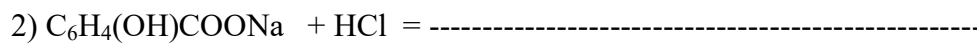
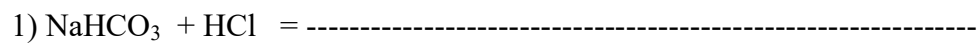
### Neutralisation Reactions

#### I- Acid- Base Titrations (25 Points)

**Complete the following: (11 points)**

- 1) Types of buffer solutions (give examples) -----  
-----
- 2) The electronic theory of acids and bases was introduced by -----
- 3) ----- can be used for the determination of approximate pH value
- 4) Screened indicator consists of -----  
and -----
- 5) ----- method can be used for the determination of organic nitrogenous compounds
- 6) Two types of non-aqueous solvents are:  
1. ----- 2. -----
- 7) Blank determination is defined as -----  
-----  
-----

**II- Complete and balance the following equations: (14 points)**





**N.B. Illustrate your answer with equations whenever possible.**

**II. Precipitometry & Gravimetry (25 points)**

**A- Precipitometry**

1- How can you analyse the following mixture:

NaCl + KI , mention the name of method, pH of the medium and indicator(s).

(2 points)

2- Discuss briefly the factors affecting the solubility of precipitates. (4 points)

3- Explain the problem caused by: (4 points)

a- Chloride by Volhard method,

b- High acidity or alkalinity in Mohr's method

4- The solubility product of  $\text{Ag}_2\text{S}$  is  $1 \times 10^{-50}$ ,  
calculate the solubility of silver sulfide in grams per litre.  
(at wt of Ag = 108, S = 32). (3 points)

### **B-Gravimetry**

**1- Complete the following: (5 points)**

a- In the gravimetric determination of Ferric ions, ..... can be used for its homogenous precipitation as .....

b- Sulfate ions can be gravimetrically determined by ..... as a precipitating agent, and ..... reagent for its homogenous precipitation in the form of .....

The ..... reagent can be used as organic precipitant for precipitation of ..... ions.

**2- Give the principle steps for determination of Ca or Ni ions gravimetrically (as was done in your laboratory). (5 points)**

**3- If the weight of AgCl precipitate is 0.291g, find Cl<sup>-</sup> (atomic wt. for Ag = 108, Cl = 35.5). (2 points)**

**With best wishes,  
Dr. Nawal El-Rabbat**

N.B.: Illustrate your answer with drawings whenever possible:

**1- Complete The Following: (10 Marks)**

- 1- Senna leaf is ....., family ....., it is used as a .....drug because it contains .....
- 2- Styloid is ..... present in ..... while ..... present in .....and frangula.
- 3- Water pore is ..... present in .....
- 4- Paracytic stomata present in .....while .....
- 5- The main constituents of Quillaia bark is ..... and it is used as .....

**II- Mention the name and botanical origin of drug used in treatment of the following:. (10 Marks)**

- 1- Drug used as cardiogenic.
- 2- Drug used as astringent and haemostatic.
- 3- Drug used as diuretic and urinary antiseptic.
- 4- Drug used to antagonise the mydriatic action of atropine.
- 5- How you can test for the active constituents in drugs no (1) and (3).

**III- Draw with labelings the diagnostic elements of the following powdered drugs (10 Marks)**

- 1- Egyptian hyoscyamus
- 2- Buchu leaf
- 3- Cascara bark
- 4- Cinchona bark

**IV-A-You have supplied with a data concerning a flower whose colour varying from blue violet to red and have the following floral diagram:- (15 Marks)**

$K_5, C_5, A_{5+5}, G_5$

**Evaluate the given data by putting the mark ( $\checkmark$ ) or (X) for the following items (in table)**

- |                           |                                  |
|---------------------------|----------------------------------|
| 1- Actinomorphic          | 2- Regular                       |
| 3- Pentamerous            | 4-Tetralalphous                  |
| 5- Have a gynostemum      | 6- Synpetalous                   |
| 7- polypetalous           | 8- The contents are pH-dependant |
| 9- Never obdiplostemonous | 10- It's a part of capitulum     |

**B- Give the missed parts (in a table) according to their numbers: (5 Marks)**

- 1- The water –conducting elements in woods are ..(1) ..and ..(2)...., the main difference between them is ...(3)....
- 2- The wood containing santalol is .....(4) .... which is used mainly in .....(5)....., but the wood having sanialin is .....(6).....which is used as ...(7)...
- 3- The key-elements for identification of pyrethrum are ....(8)....and for clove are ...(9).... whose active constituent is ....(10)...

***Good Luck***

---

**All questions to be answered and whenever possible, illustrate your answer with drawing**

لاحظ أن أسئلة الامتحان في صفتين

**I-A- For each of the following characteristic elements give only one drug:**

**(7 marks)**

- 1- Crystal sheath and paracytic stomata
- 2- Diosmin crystals in its epidermal cells
- 3- Isobilateral leaf containing branched hair
- 4- Bicellular head, unicellular stalk glandular hair
- 5- Raphides of calcium oxalate embedded in mucilage
- 6- Crystal layer
- 7- Idioplast of calcium oxalate

**B- Write the botanical origin, active constituents and uses of**

**drugs no.: 1,2,5 and 7**

**(12 marks)**

**II-A-Complete the following:**

**(6 marks)**

- 1- Galls are the .....produced by the deposition of eggs of ..... on the young ..... of ..... family ..... and its main constituents is ..... which give .....with  $FeCl_3$
- 2- Cinchona bark has bitter astringent taste because it contain ..... and .....
- 3- Anthraquinone glycosides are present in ..... and ..... while the cardiac glycosides are present in .....

**B- Define the following scientific terms, illustrate your answers with**

**drawing:**

**(10 marks)**

Bark, Crystal sheath, Quill, Inner bark and laticiferous secretory structures

من فضلك اقلب الصفحة

**III- A) Write (✓) or (x) for the following and correct the false: (4 marks)**

- 1- Clove flower has antiseptic properties ..... ( )
- 2- When the female organ only is present, the flower is called staminate.... ( )
- 3- Quassia wood has insecticidal activity ..... ( )
- 4- In Syncarpous Gynaecium the carpels are free..... ( )

**B) For each of the following write the *name, origin* and *active constituents*:**

- 1- Anti inflammatory flower (draw the key elements also)
- 2- Emollient flower
- 3- A flower used as non-carcinogenic natural colouring agent

**(7 marks)**

**C) Write on the following:**

**(4 marks)**

- 1- Actinomorphic flower
- 2- Tyloses

**N.B.: ILLUSTRATE YOUR ANSWER WITH DRAWINGS WHENEVER POSSIBLE:**

**1- Complete The Following:** (10 Marks)

- a) – Cinchona bark is ..... family..... It is used as ..... because it contains.....
- b) – Cascara bark must be stored for .....because .....
- c) – Cinnamon bark differs from Cassia bark in .....which is used as a starting material in the manufacture of .....
- d) – Calcium Oxalate of Quillaia bark present in the form of .....

**II- Mention the NAME &ORIGIN of a crude drug used in the treatment of the following:** (10 Marks)

- a) – Glaucoma.
- b) – Smooth muscle contraction.
- c) - Habitual constipation
- d) – Urinary tract infections.
- e) –Nasal & Rectal bleeding.

**III- DRAW WITH LABELING the diagnostic elements of the following powdered drugs:** (10 Marks)

- a) – Datura stramonium leaf.
- b) – Senna leaf.
- c) – Cascara bark.
- d) – Cinchona bark.
- e) – Hyoscyamus muticus leaf.

بقية الأسئلة في ظهر الورقة



**IV- If you are provided with a red flower having the diagram  $K_5, C_5, A_{5+5}, G_5$  Evaluate the given data by putting the mark ( $\checkmark$ ) or (X) for each item IN A TABLE: (10 Marks)**

- a) – Pentamerous.
- b) – Regular.
- c) – Actinomorphic.
- d) – Have a gynostemum.
- e) – Tetradelphous.
- f) – Synpetalous.
- g) – Polypetalous.
- h) – The content is pH dependent.
- i) –It is a capitulum.
- j) – Never obdiplostemonous.

**V- IN A TABULAR FORM, give the missing parts according to the given sequence: (10 Marks)**

- a) - ..... (1)..... and .....(2) .....are the water-conducting elements in wood which can be differentiated by .....(3).....
- b) – The wood containing santalol not santalin is .....(4).....which is used in .....(5) .....while the wood –having santalin not santalol is .....(6)..... which is used as .....(7).....
- c) – The diagnostic elements of pyrethrum are .....(8).....and for clove are .....(9).....whose active ingredient is .....(10).....

**Good Luck**

**First Year Clinical Pharmacy Student**

**Histology**

Answer **ten questions** only of the following:-

Write an account of the following:-

6.5 marks each

- 1- Different types of simple epithelium, give an example.
- 2- Skeletal muscle fibers
- 3- Fixed connective cells
- 4- Structure of compact bone
- 5- Structure of the nerve cell body
- 6- Types of granular leukocytes
- 7- Types of capillaries
- 8- Structure and function of lymphatic nodules
- 9- Fundic glands of the stomach
- 10- Structure of the adrenal cortex
- 11- Types of the growing follicles
- 12- Structure of the bronchial tree.















**Part II**

<b>Q1 (4 points)</b>	<b>Q2 (15 points)</b>	<b>Q3 (3 points)</b>	<b>Q4 (3 points)</b>	<b>Total (25 points)</b>

**Q1: Define each of the following:**

**(4 points)**

A. Deliquescent

---

---

---

---

B. Hygroscopicity

---

---

---

---

C. Efflorescence

---

---

---

---

D. Eutaxia

---

---

---

---

---

Q2: Complete the following:

(15 points)

A. The buffer equation is important in the preparation of buffered pharmaceutical solutions; it is satisfactory for calculations within the pH range of \_\_\_\_\_.

B. The pH of the acidic solution is calculated by use of the following equation:

pH= \_\_\_\_\_

C. The addition of neutral salts to buffers changes the pH of the solution by altering the \_\_\_\_\_.

D. \_\_\_\_\_ dilution value signifies that the pH **rises** with dilution.

E. The pH of acetate buffers was found to \_\_\_\_\_ with temperature.

F. The magnitude of the resistance of a buffer to pH changes is termed \_\_\_\_\_.

G. True solutions are called \_\_\_\_\_, and have a \_\_\_\_\_ at any one **temperature** and **pressure**.

H. The flow curve represents the \_\_\_\_\_ versus \_\_\_\_\_.

I. The buffer capacity is affected by:

1. \_\_\_\_\_

2. \_\_\_\_\_

J. These non-Newtonian flow curves may be divided into three systems:

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

K. The apparent viscosity of the dilatant systems \_\_\_\_\_ with increasing rate of shear.

L. One potential disadvantage of the cup and bob viscometer is \_\_\_\_\_.

M. Hemolytic method is used to determine the \_\_\_\_\_ of solution.

N. The temperature of freezing point of blood and tears corresponds to the freezing point of isotonic solution equals \_\_\_\_\_.

O. Minute particle size has been attained experimentally by various applications of \_\_\_\_\_ and \_\_\_\_\_.

**Q3: Give the correct term for each of the following statements (3 points)**

( ) The resistance of a fluid to flow.

( ) The reciprocal of viscosity.

( ) The recovering of viscosity of the material to its original value after the shearing force is removed, and the material allowed to "rest" for a specified period of time.

**Q4. Mention the effect of: (3 points)**

A. 0.6% NaCl solution on red blood cell

---

---

---

---

**B. 0.2% NaCl solution when instilled in the eye.**

---

---

---

---

**C. isotonic buffered solution having pH 7.4 on the blood.**

---

---

---

---

\*\*\*GOOD LUCK\*\*\*

Examinaires

Prof. Sauzan Shawky and Prof. Mohammad Gamal

# Assiut University

Faculty of Pharmacy

Pharmaceutics' Dept.

Final Exam of Physical Pharmacy of Clinical Pharmacy Program (Summer Course)

Date: Monday 1 September, 2008

Time allowed: 3 hours

---

Part I (25 points)	Part II (25 points)	Total (points)

## اد سوزان شوقى PART 1

Q1 (points)	Q2 (4 points)	Q3 (10 points)	Q4 (10 points)	Total (25 points)

Q1: Complete the following sentences: (6 points)

- a) ----- and -----  
two extremely important compounds, are naturally occurring chelates.
- b) ----- is widely used to sequester and remove -----  
----- from hard water.
- c) Sandwich compounds are class of compound belonging to -----  
for example -----
- d) Metal binding agents showing chemotherapeutic activity can be divided into  
two classes:  
i) ----- e.g. -----  
ii) ----- e.g. -----
- e) Hydrophobic bonding is not formation but -----  
-----  
e.g. in water, protein molecules associated into -----

Q2:" The theory and application of phenomenon of solubility is important to the  
Pharmacist". Discuss this statement in four points. (4 points)

- i) -----  
-----  
-----
- ii) -----  
-----  
-----
- iii) -----  
-----  
-----

iv) -----  
-----  
-----

Q3: Discuss the following items with example (10 points)

i) The solubility of the substance depends on the structural feature of the compound.

-----  
-----  
-----  
-----  
-----  
-----  
-----  
-----

ii) The solubility characteristics of a drug can be altered via chemical modification.

-----  
-----  
-----  
-----  
-----  
-----  
-----  
-----  
-----  
-----  
-----  
-----  
-----  
-----  
-----  
-----

iii) Cosolvents (Hydrotropy) are used to increase aqueous solubility of insoluble substances.

-----  
-----  
-----  
-----  
-----  
-----  
-----  
-----



Q4. Mention the effect of the following on dissolution rate. (5 points)

i) Manufacture processes.

-----  
-----  
-----  
-----  
-----  
-----

ii) Disintegration and deaggregation.

-----  
-----  
-----  
-----  
-----  
-----

iii) Solubility of the drug.

-----  
-----  
-----  
-----  
-----  
-----

vi) Viscosity of the dissolution media

-----  
-----  
-----  
-----  
-----

iv) Surface area of drug

-----  
-----  
-----  
-----  
-----  
-----



Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Total
(2)	(2)	(2)	(2)	(1)	(2)	(1)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(25)

**اد محمد جمال PART II**

**Q1:** Draw and Describe the rheogram of dilatant system?

(2 points)

**Q2:** Define each of the following:

(2 points)

A. Deliquescence

---



---



---

B. Viscosity

---



---



---

C. Buffer capacity:

---



---



---

D. Dilution value:

---

---

---

**Q3:** List 3 applications of rheology in Pharmaceutics? (2 points)

- A. \_\_\_\_\_
- B. \_\_\_\_\_
- C. \_\_\_\_\_

**Q4:** Write the relation between each of the following: (2 points)

- A. Viscosity and fluidity: \_\_\_\_\_
- B. Viscosity and kinematic viscosity: \_\_\_\_\_

**Q5:** Why dilatant material is not used for preparing suspension? (1 points)

---

---

**Q6:** Write the effect of each of the following on the red blood cells: (2 points)

- A. Isotonic solution: \_\_\_\_\_
- B. Hypotonic solution: \_\_\_\_\_
- C. Hypertonic solution: \_\_\_\_\_

**Q7:** Mention the concentration of each of the following material, which give isotonic solution. (1 points)

- A. Dextrose: \_\_\_\_\_
- B. Saline (NaCl): \_\_\_\_\_

**Q8:** Mention the surface properties affecting the flowability and mixing of particles. (2 points)

- A. \_\_\_\_\_
- B. \_\_\_\_\_
- C. \_\_\_\_\_

**Q9:** Complete each of the following equations: (2 points)

- A. pH of a weak acid: \_\_\_\_\_

B. pH of buffer formed of a weak acid and its salt: \_\_\_\_\_

**Q10.** List 3 method used for evaluation particle size range. (2 points)

- A. \_\_\_\_\_
- B. \_\_\_\_\_
- C. \_\_\_\_\_

**Q11.** Mention 3 applications of micromeretic science in pharmaceuticals. (2 points)

- A. \_\_\_\_\_  
\_\_\_\_\_
- B. \_\_\_\_\_  
\_\_\_\_\_
- C. \_\_\_\_\_  
\_\_\_\_\_

**Q12.** What are the factors affecting buffer capacity. (2 points)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Q13.** List two methods used for size reduction. (2 points)

- A. \_\_\_\_\_  
\_\_\_\_\_
- B. \_\_\_\_\_  
\_\_\_\_\_

**Q14.** Draw and describe the histogram of particle size distribution. (2 points)

---

Time (2 hrs)

Total Marks (90)

Total Pages 10

---

**All Questions Should be Attempted**

**Part I (time: 1 hr, Marks: 45)**

I- Mark (T) for the true and (F) for the false statement in the following: (20 marks).

1- A medicine or drug preparation is the gross physical form in which the drug is administered or used by the patient.

2- A drug dose is the amount or quantity of the drug that is required to yield the therapeutic concentration which result in clinical effect.

3-Drug release is the act of movement of the drug from its route of administration into the blood stream.

4- Drug elimination is the removal of the drug from the body via metabolism and/r excretion into urine, faces, sweat, etc.....

5- Drug absorption expresses the amount of active drug ingredient that migrates out from its dosage form into the surrounding fluid medium.

6- Drug bioavailability is the study of the relationship between dosage form and therapeutic response.

7- Dosage regimen is the systematized dosage schedule.

8- The oral rout of drug administration can be used only when a systemic drug effect is required.

9- The oral rout of drug administration is the most commonly used route of drug administration.

- 10- Absorbed drug after oral administration reach systemic circulation directly thereby avoiding first-pass effect.
- 11- Drugs that are effective in very low doses may be preferentially taken by the oral route of administration.
- 12- Drugs absorbed sublingually give a very fast onset of action.
- 13- The inhalation route of drug administration delivers medicines to the gastrointestinal tract.
- 14- Drugs absorbed from the vagina are subjected to first pass effect.
- 15- The parenteral routes of administration can be used to deliver drugs to the unconscious patients.
- 16- The parenteral routes of drug administration can be used to give a very fast onset of drug action.
- 17- The parenteral routes of drug administration can not be used to give a prolonged drug effect.
- 18- The parenteral routes of drug administration are suitable only for administering drugs in sterile aqueous solution forms.
- 19- The parenteral routes of drug administration can not be used to give a localized drug action.
- 20- Drug absorption after rectal administration is consistent and predictable.

**II- Write a short note on each of the following:**

**(10 Marks)**

a- Gels:

b- Effervescent granules (salt):

c- Pessaries:

d- Diffusible (dispersible) solids:

e-Syrups:.

III- اكمل الجمل الأتية بالكلمة / الكلمات / أو العبارة المناسبة

- ١- بردية ابيرس يرجع تسميتها بهذا الاسم الى \_\_\_\_\_  
وذكر فيها \_\_\_\_\_ (١ درجة)
- ٢- من العقاقير ذات الأصل النباتى التى استعملها المصريون القدماء عقار \_\_\_\_\_  
ومن العقاقير ذات الأصل الحيوانى عقار \_\_\_\_\_ (١ درجة)
- ٣- نبغ كثير من علماء اليونان (الاغريق) وصاروا المعلمين لأجيال العصور التالية منهم \_\_\_\_\_  
الذى لقب بـ أبو الطب، و \_\_\_\_\_ الذى لقب بـ أبو المستحضرات الصيدلانية  
(١ درجة)
- ٤- أنشئت جامعة الاسكندرية فى عهد \_\_\_\_\_ أثناء حكم الاغريق لمصر وتخرج فيها  
الطبيب الصيدلى \_\_\_\_\_ الذى نقل العلم الى روما ومنها انتشر الى أنحاء العالم.  
(١ درجة)
- ٥- فى كتاب "الحشائش" المكتوب باليونانية جمع فيه مؤلفه العالم اليونانى \_\_\_\_\_  
كل ما ورد فى مؤلفات من سبقه من الأطباء فى المادة الطبية  
(½ درجة)
- ٦- كانت معظم كتب جالينوس فى الطب أما كتبه فى الأدوية فيذكر منها \_\_\_\_\_  
(½ درجة)
- ٧- من أمهات الكتب والمراجع التى تركها علماء العرب فى الصيدلة والدواء كتاب " القانون فى الطب" لمؤلفه  
\_\_\_\_\_ وكتاب "تذكرة أولى الألباب والجامع للعجب العجاب" لمؤلفه \_\_\_\_\_  
(١ درجة)
- ٨- من المأثور عن العلماء العرب فى اسلوبهم فى التداوى انهم "لايرون التداوى بالادوية ما يمكن مداواته  
بـ \_\_\_\_\_ واذا ماأضطروا الى المداواة بالادوية فلا يرون التداوى بـ \_\_\_\_\_  
ما وجدوا سبيلا الى المفردة" (١ درجة)
- ٩- مع بداية القرن التاسع عشر الميلادى بدأ الاهتمام بفصل المواد الفعالة من العقاقير النباتية وأدى ذلك الى  
\_\_\_\_\_ -  
\_\_\_\_\_ و-  
(١ درجة)
- ١٠- كانت بداية عهد التحضير الكيماوى للأدوية التى لا توفرها العقاقير النباتية بتحضير مركب  
\_\_\_\_\_ (½ درجة)

وكانت بداية حقبة العلاج الكيماوى للأمراض Chemotherapy هى ابتكار دواء \_\_\_\_\_  
(½ درجة)

١١- كانت بداية حقبة التداوى بالمضادات الحيوية هى اكتشاف \_\_\_\_\_  
واتاحتة للاستعمال على المستوى التجارى عام ١٩٤٤م.  
(½ درجة)

١٢- شهدت الحرب العالمية الثانية نشاطا دوائيا واسعا لمجابهة الأمراض ووقاية الانسان من الاصابة بها وكان  
من أهم الانجازات فى هذا الشأن ابتكار \_\_\_\_\_  
(½ درجة)

١٣- مع بداية خمسينات القرن العشرين وما بعدها بدأ ابتكار وسائل جديدة لايصال الأدوية للحصول على فائدتها  
العلاجية علنالوجه الأمثل وذلك مثل:

أ- \_\_\_\_\_  
ب- \_\_\_\_\_  
(١ درجة)

١٤- من الأسباب التى كانت تجعل العلماء العرب يلجأون الى تأليف الأدوية المركبة الآتى:

أ- \_\_\_\_\_  
ب- \_\_\_\_\_  
ج- \_\_\_\_\_  
د- \_\_\_\_\_  
(١ درجة)

مع تمنياتى بالتوفيق



**Part II (1 hour, 45 marks)**

1- Choose the ONE best answer in the following: (10 marks)

1- Modern sense of the word pharmacopoeia is:

- a) A pharmaceutical standard
- b) Intended to secure uniformity in the quality of remedies
- c) Determines strength of drugs
- d) All of the above

2- Narcotic prescription order is:

- a) A prescription order not dispensed by pharmacist
- b) It make the pharmacis sleepy
- c) An order containing drugs having an addiction- forming ability
- d) The patient has the right to take it as he wishes

3- Courses found in all pharmacy curriculums:

- a) English as a foreign language
- b) Basic sciences, nonscientific courses and professional courses
- c) Nonprofessional courses
- d) All of the above

4-From the patient factors affecting noncompliance:

- a) Type of disease
- b) Length of therapy
- c) Age of the patient
- d) All of the above

5- Medication errors are due to:

- a) Side effects of the drugs
- b) Mistakes from physician, pharmacist, nurse or patient
- c) Toxicity of the drug
- d) All of the above

II- Answer the following questions. (20 marks)

1- What are the services presented by the community pharmacist? Show how he cooperates with physicians.

2- What are the main parts of the prescription order. Showing the parts which could be placed by the pharmacist.

3- The industrial revolution affects the pharmacy profession.  
Explain, showing its advantages and disadvantages.

4- The drugs which needs therapeutic drug monitoring (TDM) have the following features

III- What is meant by: (15 marks)

a-Pharmacy

b- Pharmaceutical care

c- Patient medication record

d- Patient own drugs (POD):

e- Total parenteral nutrition (TPN)



Assiut University  
Faculty of Medicine  
Histology department

Date: 18/6/2013

Time: 2 hours

**Final Histological Examination  
For First Year Clinical Pharmacy Students**

**I- Choose the correct answer: (One mark each)**

**1- Sertoli cells:**

- a. Are characterized by numerous lipid granules.
- b. Are attached with each other by gap junctions.
- c. Undergo a complex process called spermiogenesis.
- d. Support the developing germ cells.

**2- Cells lining crypts of lieberkuhn include the following, EXCEPT:**

- a. Paneth cells.
- b. Goblet cells.
- c. Microfold cells.
- d. regenerative cells.

**3- Basophil cells of pituitary gland:**

- a. Are smaller than acidophil cells.
- b. Have non granular cytoplasm.
- c. Are less numerous than acidophil cells.
- d. Include somatotrophs.

**4-The exocrine pancreas:**

- a. Its acinar cells contain apical acidophilic granules.
- b. Is formed of mucous acini.
- c. Is known as islets of Langerhans.
- d. The interlobar ducts are absent.

**5- The cornea has the following, EXCEPT:**

- a. Stratified squamous non keratinized epithelium.
- b. Many free nerve endings.
- c. Pigmented epithelium.
- d. Parallel collagen bundles in substantia propria.

**6- The following are skin appendages, EXCEPT:**

- a. Arrector pili muscle.
- b. Hair follicle.
- c. Eccrine sweat gland.
- d. Sebaceous gland.

**باقي الأسئلة في الخلف**

**7 – The lining epithelium of large bronchioles:**

- a. Is respiratory epithelium.
- b. Is pseudostratified columnar epithelium with goblet cells.
- c. Contains clara cells.
- d. Contains few goblet cells.

**8 – The Visceral layer of Bowman's capsule is lined by:**

- a. Simple cuboidal epithelium.
- b. Podocytes.
- c. Continuous endothelium.
- d. Mesangeal cells.

**9- Functional layer of the endometrium:**

- a. Is a thick superficial layer.
- b. Is a narrow deep layer.
- c. Is not sloughed at menstruation.
- d. Contains primordial follicles.

**10- The adrenal cortex includes the following zones, EXCEPT:**

- a. Zona distalis.
- b. Zona reticularis.
- c. Zona glomerulosa.
- d. Zona fasciculata.

**II- Enumerate only:**

- 1- Types of cells in fundic glands. (3 marks)
- 2- Types of connective tissue fibers. (3 marks)
- 3- Cells of epidermis of skin. (3 marks)
- 4- Types of blood capillaries. (3 marks)
- 5- Types of white blood cells. (3 marks)
- 6- Sex cells lining seminiferous tubules. (3 marks)

**III- In a table form compare between:**

- 1- Axon and dendrite. (4 marks)
- 2- Rod and Cone cells. (4 marks)

**IV- Give an account on each of the following (without diagram):**

- 1- Corpus luteum. (4 marks)
- 2- Filtration barrier. (4 marks)
- 3- Type I alveolar cell. (4 marks)
- 4- LM of hepatocyte. (4 marks)
- 5- White pulp of spleen. (4 marks)
- 6- Thyroid follicular cells. (4 marks)

**(Good Luck)**

I-In the table below fill with a suitable words (10 Marks).

- \*Uva-ursi leaf contains.....1....which gives....2.....with FeCl<sub>3</sub>
- \*Digitalis leaf contains.....3....which used as...4.....
- \*Belladonna leaf used as.....5....due its content of.....6.....
- \*Schizolysigenous gland present in the mesophyll of....7.....while  
 Diosmin crystals present in....8.....
- \*Jaborandi leaf contains.....9.....which used as.....10.....

Answers of question No.I

1	6
2	7
3	8
4	9
5	10

II-Choose the correct answer and put it in the table below:...(10 Marks)

1-A typical bark consists of:

- a-cork,cortex,pericycle,phloem and xylem
- b-pericycle and phloem
- c-cork,cortex,pericycle and phloem
- d-phloem,cambium,xylem and pith.



2-Styloid crystals present in:

- a-cascara                      b-cinchona                      c-quillaia                      d-cinnamon

3-Eugenol gives needle crystals with:

- a-KOH                      b-HCl                      c-Picric acid                      d-FeCl<sub>3</sub>

4-The oil of cinnamon is secreted by:

- a-oil gland                      b-oil cell                      c-glandula hair                      d-laticiferous vessels

5-Quinine alkaloid used as:

- a-antimalarial                      b-antispasmodic                      c-haemostatic                      d-laxative

6-Mucilage gives red colour with:

- a-Iodin T.S                      b-KOH T.S                      c-Sudan III                      d-Ruthenium red

7-The scleroids of cinnamon contains:

- a-starch granules                      b-oil droplets                      c-prisms of calcium oxalate  
d-non of them.

8-Lenticels present on the surface of:

- a-stem bark                      b-root bark                      c-sepals                      d-petals

9-Cascara bark should be used after one year of collection to:

- a-increase the % of v.oil                      b-decrease the % of anthranol  
c-increase the % of alkaloids                      c-decrease the % of tannins

10-Senna powder characterized by:

- a-crystal sheath                      b-cork cells  
c-crystal layer of caox.                      D-triangular pollen grain

Answers of question No.II

1	2	3	4	5	6	7	8	9	10

IV-Draw the characteristic elements of the following powdered drugs  
....( 5X2 /2= 5).

Senna leaf

Quillaia

Cinchona bark

Buchu leaf

Cascara bark

Part II

1-Give the scientific term that indicate the following statements:  
( 5 X 1 )Mark

1-When the flower could be divided into two equal halves by any axis i.e each whorl is symmetrically arranged.  
.....

2- When the sepals are united.  
.....

3- When the anther is attached to the filament by the middle of the back in such away that it can turn freely in any direction.  
.....

4- When the corolla inserted on the receptacle below the superior ovary.  
.....

5- When both male and female organs are present in the same flower.  
.....

II- Mark (✓) or ( X ) for the following and correct the false one ( Don't change the underline words):  
( 5 X 1 )Mark

1- Chamazulene is a bitter principle in Roman *Chamomile* flowers.  
( )

2- Saffron consists of the dry calyx and epicalyx flowers and used as coloring agent .  
( )

3- Clove oil is used as a dental analgesic due to the presence of Tannins.  
( )

4- Lavander Oil is used for the treatment of rheumatic pains.  
( )

5- Santonica is the dried expanded flowerheads of *Anthemis nobilis*,  
Family Compositae.  
( )

III- Complete the following :

( 15 Marks )

1- A flower used as a powerful germicide.

Name :.....

Origin :.....

.....

Family,.....

Active Const.:.....

.....

2- A flower used as ectoparasiticide.

Name :.....

Origin :.....

.....

Family,.....

Active Const.:.....

.....

3- A flower used as a blood alkaliniser.

Name :.....

Origin :.....

.....

Family,.....

Active Const.:.....

.....

4- A wood used as anthelmintic for thread worms.

Name :.....

Origin :.....

.....

Family,.....

Active Const.:.....

.....

5- Drug flower used for treatment of sprains and bruises.

Name :.....

Origin :.....

.....

Family,.....

Active Const.:.....

.....

( 5 X 2 )Marks

Draw the diagnostic elements for the drugs mentioned in ( 1 )and ( 2 )

Diagnostic elements for drug ( 1 )

( 1.5 Mark )

Element 1	Element 2	Element 3

Diagnostic elements for drug ( 2 )

( 1.5 Mark )

Element 1	Element 2	Element 3

a) A chemical test for drug ( 1 )

( 1 Mark )

b) A chemical test for drug ( 2 )

( 1 Mark )

Good Luck

Clinical Pharmacy Program  
Physical Pharmacy ( PT 201 )  
Second Semester Students

Time Allowed : Three Hours

Date : June 13, 2013

All Questions Should be Attempted :

Total Marks : 50 marks

Part I

A. Write the scientific term for each of the following statements : ( 7 Marks )

1. A solution in which mixing of 100 ml methanol with 100 ml ethanol, with no heat is evolved or absorbed ( ).
2. A solution in which 100 ml sulfuric acid is combined with 100 ml water produce 180 ml at room temperature with evolution of heat . ( ).
3. Polar substance soluble in polar solvent , while non-polar substance soluble in non-polar solvent ( ).
4. The maximum amount of solute that dissolve in a solvent ( ).
5. A phenomenon in which a substance pass directly from solid state to gaseous State ( ).
6. The transfer of heat from the hotter to the colder one until both bodies are in thermal equilibrium ( ).
7. It states that in ideal solution the partial vapor pressure of each volatile constituent is equal to the vapor pressure of the pure substance multiplied by its mole fraction ( ).
8. The magnitude of the resistance of a buffer to pH changes on the addition of small acid or alkali ( ).
9. The out word passage of water from the RBCs to 2% sodium chloride solution cause the cell to ( ).
- 10 . A solution cause no swelling to the tissues with which they come in contact is called ( ).

11. Drugs that are weak organic acids or bases and are soluble in lipids and absorbed through cellular membranes must be in ( ).
12. A solution that cause blood cells to swell and burst is called ( ).
13. Solution of boric acid ( 2% ) has the same osmotic pressure as blood cell contents is said to be ( ).
14. The relation between the amount of gas physically adsorbed on a solid, and equilibrium pressure at constant temperature ( ).

B. Encirculate ( T ) for the right answer sentence & ( F ) for the wrong answer sentence of each of the following : ( 10 Marks , one mark / point )

T	F	Addition of neutral salts influence the pH of the buffer solution by altering the ionic strength .
T	F	There is no danger when the pH of the blood goes below 7.0 or above 7.8 .
T	F	If the buffer capacity is low, the pH of the solution to be applied into the eye may vary from 4.5 – 11.5 without marked pain .
T	F	Parenteral solutions for intravenous injection are usually not buffered .
T	F	Completely ionized drugs are easily absorbed from G.I.T. due to its weak lipid solubility .
T	F	Boric acid solution (2%) is iso-osmotic with blood because it has the same osmotic pressure as blood cell contents .
T	F	Increasing the surface area of adsorbent decrease the amount adsorbed .
T	F	In physical adsorption increasing the temperature decreases the amount adsorbed .
T	F	Adsorption is not always a desired process .
T	F	The antimicrobial activity of preservatives ( Benzalkonium chloride ) increases in the presence of magnesium silicate .

C. Choose the correct answer for each of the following statements ( 4 Marks )

1. Which is true for thixotropic suspension .

- a. Their rheogram shows hysteresis loop .
- b. Give uniform dose on shaking .
- c. Both a and b .

2. The type of flow of a liquid in which its rheogram is straight line passing through the origin is :

- a. Newtonian flow
- b. Plastic flow
- c. Pseudoplastic flow

3. For measuring the viscosity of water or ethyl alcohol ,the most suitable viscometer used is :

- a. Ostwald viscometer .
- b. Falling sphere viscometer
- c. Both a & b .

4. The damage of the machine mixers is a common problem during mixing of the following system :

- a. Newtonian system
- b. Plastic system .
- c. Pseudoplastic system .
- d. Dilatant system .

D. Draw the rheograms representing the effect of rate of shear( $G$ ) on viscosity ( $\dot{\eta}$ ) of all types of flow systems . ( 4 Marks )

- a. Newtonian system
- b. Plastic system

c. Pseudoplastic system

d. Dilatant system



Part II ا.د. سوزان شوقي

Q 1 (10 points)	Q 2 (10 points)	Q 3 (5 points)	Total (25 points)

Answer the following questions:

**Q1: Tick true ( T ) or false ( F ) for each of the following: (10 points )**

- 1- ( ) Saturated solution : in which the solute in solution is in equilibrium with solid state at certain temperature.
- 2- ( ) Salts of organic compounds are used to decrease the solubility of their parent acidic or basic drugs.
- 3- ( ) Preservation of emulsion and creams is influenced by partition coefficient.
- 4- ( ) Viscosity affects the dissolution rate of the drug.
- 5- ( ) There is no relation between the structural feature of the compound and its solubility .
- 6- ( ) Chemical bonds are involved in clathrates complexes .
- 7- ( ) The incompatibilities of certain polyethers such as carbowaxes with tannic acid can be attributed to polymer complexes.
- 8- ( ) Penicillamine , used as antidote in lead poisoning acts through its strong invivo metal chelation.
- 9- ( ) Hydrotropy : Defined as alkaline metal salts of organic acid , used to decrease the solubility of organic substances, normally soluble or slightly soluble in water.
- 10- ( ) The solubility characteristics of a drug can be altered via chemical modification.

**Q 2 : Define each of the following terms : ( 10 degree )**

- 1- Dielectric requirment for drug to show maximum solubility.

2-H.L.B. Scale .

3-Hemodialysis .

