

**3. Write short notes on the following (30 Marks)**

- a. Lethal alleles (genes).
- b. Molecular explanation for complementary gene action in case of flower color phenotype of sweet pea.

**4. Solve the following genetic problem (40 Marks)**

In fruit flies, curved wings are recessive to straight wings, and ebony body is recessive to gray body. A cross was made between true-breeding flies with curved wings and gray bodies to flies with straight wings and ebony bodies. The F1 offspring were then mated to flies with curved wings and ebony bodies to produce an F2 generation.



- a. Diagram the genotypes of this cross, starting with the parental generation and ending with the F2 generation.
- b. What are the predicted phenotypic ratios of the F2 generation?
- c. Let's suppose the following data were obtained for the F2 generation:
  - i. 114 curved wings, ebony body
  - ii. 105 curved wings, gray body
  - iii. 111 straight wings, gray body
  - iv. 114 straight wings, ebony body

Conduct a chi square analysis to determine if the experimental data are consistent with the expected outcome based on Mendel's laws.

**Good Luck**

**Dr. Reda Gaafar**

لينا ح  
لينا ح

	BOTANY DEPARTMENT - TANTA UNIVERSITY - FACULTY OF SCIENCE			
Examination / Second level / Chem.-Botany & Chem.-Biochemistry Students				
Course Title:	General Genetics	Course Code: BO2105		
2 January 2014	Term: First	Total assessment marks: 150	Time Allowed: 2 hours	

ANSWER THE FOLLOWING QUESTIONS

1. Mark the right statements with the sign (✓) and the wrong answers with the sign (×) of the following statements (28 Marks)

- a) Crossing over shuffles alleles on the same chromosome into new combinations.
- b) Using probability is much slower than using the Punnett square for crosses that include multiple loci.
- c) Incomplete dominance indicates phenotype blending.
- d) Pigmentation phenotype of wheat grains is controlled by four genes.
- e) The principle of independent assortment is not really an extension of the principle of segregation.
- f) Transmission Genetics deals with basic principles of heredity.
- g) The number of linkage groups is the number of types of chromosomes of the species.
- h) Any quantitative trait is independent on the interaction between multiple genes and the environment.

2. Complete the following sentences (52 Marks)

- a- Dominance involves ..... suppression while epistasis requires .....suppression.
- b- A dihybrid testercross produces a .....
- c- The term linkage has two related meanings..... and.....
- d- Pea seed shape gene encodes an enzyme known as ..... which catalyzes the conversion of ..... into .....
- e- In eukaryotic, each chromosome consists of ..... which is highly folded and condensed.
- f- X and Y chromosomes are called ..... while all other chromosomes in the genome are called .....
- g- Albinism is an example of ..... that influencing a number possibly unrelated .....
- h- Heritability is a measure of ..... among individuals.
- i- A recombination map unit is called ..... and a map unit is equal to ..... between 2 genes in 1% of the gametes.
- j- Gene interaction is of two types..... and ..... gene interaction.

أنظر الخلف



Tanta University , Faculty of Science, Department of Chemistry  
Final Examination of (Organic Chemistry 1) for 2<sup>nd</sup> year students of Chem.(Micro.,  
Bio., Bot.) and special Microbiology.

Jan. 2014 Total Assessment :100 Course Code: CH2143 Time Allowed: 2hrs

Answer the following questions

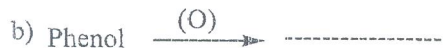
1] Put (✓) or (x) and correct the wrong answer (Explain your answer) . (30 marks)

- 1) T.N.B can be prepared by direct nitration of benzene. ( )
- 2) In benzene, all carbons are SP<sup>3</sup> hybridized and all C-C bonds are equal in length. ( )
- 3) Aniline is more basicity than Benzyl amine. ( )
- 4) Oxidation of *p*-nitro- *tert*-butyl benzene by (KMnO<sub>4</sub>) gives *p*-nitro-benzoic acid. ( )
- 5) Sulphonation of phenol at 25 °C gives *o*-phenol sulphonic acid. ( )
- 6) Reaction of benzene with 2-methyl propene in acid medium gives 2-methyl-1-phenyl propane as a major product. ( )
- 7) OH is *meta*-directing group in benzene & halogen has (+I,-M) effect on benzene. ( )
- 8) *p*- Amino phenol is more acidic than *p*-Cyano phenol. ( )
- 9) Nitration of 4-nitro- anisol gives 3,4-di-nitro- anisol. ( )
- 10) Cyclopentadienyl anion is not aromatic compound. ( )

2] Carry out of the following conversions: (25 marks)

- 1- Acetylene to Sulphanilamide.
- 2- Bromo benzene to *m*-Nitro benzoic acid.
- 3- Aniline to 100% *o*-bromophenol.
- 4- Toluene to Aspirine
- 5- Benzene to Mandelic acid.

3] Complete the following equations and name the final product. (22 marks)



Tanta University  
Faculty of Science  
Department of Chemistry

0/1



**Principles of Analytical Chemistry (CH2105)**  
(First Semester Test - Level two)

كيمياء / كيمياء حيوي - كيمياء / نبات - كيمياء / ميكروبيولوجي - نبات - ميكروبيولوجي

(First Semester Test - Level three)

كيمياء / جيولوجيا

December 31, 2013

Total Assessment Marks: 100

Time Allowed: 2 h

**(I)- Write (✓) for the true and (×) for false statements, (Give the reasons):**

**(65 Marks)**

- 1) Acid media must be avoided in determination of  $Cl^-$  by titration with  $AgNO_3$  ( )
- 2) ph.ph is dibasic acid while M.O is Monoacidic base ( )
- 3) For determination of  $CNS^-$  by titration with  $Hg^{+2}$  ions white precipitate of mercury nitroprosside is formed at the end point. ( )
- 4) Weak acid of  $pK_a \leq 10^{-7}$  give sharp end point. ( )
- 5) For saturated solution of  $AgCl$  ( $K_{sp}(AgCl) = 1.2 \times 10^{-10}$ ), white precipitate can be observed. ( )
- 6) The useful pH range of ph.ph is 8-10. ( )
- 7) For titration with EDTA, metal-EDTA complex must be less stable than metal-indicator complex. ( )
- 8) Detection of end point in "Mohr method" is the formation of a soluble color compound. ( )
- 9) 2.5 gm of  $Na_2CO_3$  dissolved in 500 ml of water. Normality of this solution is 0.05 gm.eq/L (Atomic weight : Na = 23, C = 12, and O = 16 gm/mol). ( )
- 10) Upon addition of  $S^{2-}$  as precipitant agent to mixture of ( $Ag^+$  and  $Hg^{+2}$ ),  $Ag_2S$  is precipitated first then  $HgS$  ( $K_{sp}(Ag_2S) = 2 \times 10^{-29}$  &  $K_{sp}(HgS) = 4 \times 10^{-53}$ ) ( )
- 11) Cu metals can not dissolve in HCl but it can dissolve in  $HNO_3$  ( $E^{\circ}_{Cu/Cu^{2+}} = +0.34$  V &  $E^{\circ}_{NO_3^-/NO} = +0.96$  V vs. NHE and  $E^{\circ}_{H_2/H^+} = 0.0$ ) ( )
- 12)  $H_3PO_4$  can not be titrated stepwise with NaOH ( $K_{a1} = 7.5 \times 10^{-3}$ ,  $K_{a2} = 6.2 \times 10^{-8}$  and  $K_{a3} = 1 \times 10^{-12}$ ) ( )
- 13)  $Cu^{+2}$  can almost completely complexed with EDTA at pH 3.5 ( )

باقى الأسئلة في الصفحة الخلفية