I) Write about each of the following: (10 Ms):

1. The metabolism of DDT

2. Merits and demerits of organophosphorus pesticides

3. The metabolism of Carbofuran

II) Complete with chemical equations the following scheme and name all products: (10 Ms)

Diethyl chloro phosphate (1) $\xrightarrow{P_2S_5}$ (2)

(2) — Sodium-4-nitrophenolate (3) → (4) :
- $\xrightarrow{Heat}$ (5)
- $\xrightarrow{c.\ HNO_3}$ (6)
- $\xrightarrow{Hydrolysis}$ (7) + (8)

(2) — Pyridine, $NaOCH_2CH_2OCH_2CH_3$ → (9) $\xrightarrow{Heat}$ (10)
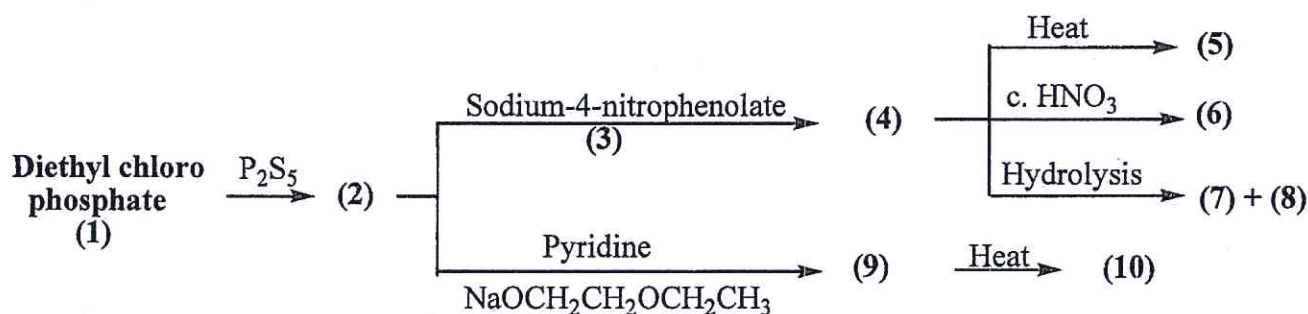
III) Write one method for preparation of the following pesticides: (10 Ms)

1. Nicotine
2. Ehyl chloro benzilate
3. Trialkyl tin hydroxide
4. Bis(4-chlorophenyl) sulphonate
5- Sodium fluosilicate

IV) Mark (√) or (×) for the following statements (10 Ms):

1. The complete breakdown of Pesticides forms carbon dioxide, water and minerals ( )

2. Nicotine is les toxic than its salts ( )

3. Pesticides applied indoors usually breakdown at faster rate due to the lack of sunlight ( )

4. γ-Isomer of gammexane is the most toxic isomer to the insect ( )

5. Thiolo isomer of parathione is more effective as insecticides than the thiono isomer ( )

6. Carbamates are the newest group of synthetic compounds with high insecticidal activity ( )

7. Acute toxic effect arises from long term exposure to small quantities of pesticides ( )

8. Contact poison depends on the action of stomach and consumed through mouth parts ( )

9. Methyl parathion is hydrolyzed 4.3 times slower in alkali than parathion ( )

10. Bordeaux mixture is a mixture of calcium sulfate and copper oxide ( )

See the second page

V) Choose the correct answer (10 Ms):

1. **Reaction of *p*-chlorobenzaldehyde with nitroethane followed by chlorobenzene/H_2SO_4 gives:**

   a) DDD   b) Perthane   c) Prulan   d) Bulan

2. **Chlorination of cyclohexene followed by Effect of heat gives:**

   a) 1,2,3-trichloro benzene   b) 1,2,4-trichloro benzene

   c) 1,2,5-trichloro benzene   d) 1,3,5-trichloro benzene

3. **Action of sulphoryl chloride/benzoyl peroxide on chlordene follwed by oxidation gives:**

   a) Heptachlor epoxide   b) Chlordane   c) Endrin   d) Aldrin

4. **Reaction of cyclopentadiene with acetylene followed by HCCP gives:**

   a) Endrin   b) Heptachlor   c) Aldrin   d) Chlordane

5. **Epoxidation of carbaryl followed by hydrolysis gives:**

   a) Carbaryl epoxide   b) Cis-diol of cabaryl   c) Gem-diol of cabaryl   d) Trans-diol of cabaryl

6. **Treatment of 4,4-dichlorobenzophenone with Grignard reagent followed by conc. H_2SO_4 gives:**

   a) 1,1-bis(4-chlorophenyl)ethane   b) 1,1-bis(4-chlorophenyl)ethanol

   c) 1,1-bis(4-chlorophenyl)ethene   d) 1,1-bis(4-chlorophenyl)ethenol

7. **Hydrolysis of malathion gives:**

   a) Dimethyl thiophosphoric acid + diethyl thiolo succinate   b) Diethyl thiophosphoric acid + dimethyl thiolo succinate

   c) Dimethyl thiophosphoric acid + dimethyl thiolo succinate   d) Diethyl thiophosphoric acid + diethyl thiolo succinate

8. **Reduction of DDT with Zn-dust followed by treatment with alc. KOH gives:**

   a) 1,1-bis(4-chlorophenyl)-2-chloro propane   b) 1,1-bis(4-chlorophenyl)-2-chloro ethane

   c) 1,1-bis(4-chlorophenyl)-2-chloro propene   d) 1,1-bis(4-chlorophenyl)-2-chloro ethene

9. **Treatment of diethyl chlorophosphate with triethyl phosphate followed by hydrolysis gives:**

   a) Dimethyl phosphoric acid   b) Diethyl phosphoric acid

   c) Triethyl phosphoric acid   d) Phosphorous acid

10. **Dehydrochlorination of DDT followed by CrO_3 oxidation gives:**

    a) *p,p*-Dichlorobenzophenone   b) *p*-chlorobenzophenone

    c) Bis(4-chlorophenyl)-1-chloroethane   d) Bis(4-chlorophenyl)ethanoic acid

,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, *With Best Wishes*,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,

Prof. Dr. Mohamed Azaam   *Dr. Atif El-Gharably*

Model 2

	Tanta University, Faculty of Science, Department of Chemistry		
1989	Final Exam for 4th year Chemistry Section		**(Model 2)**
	Course Title	**Water treatment**	**Code: CH4127**
21/01/2023	**1st Semester**	**Total Assessment Marks: 50**	**Time: 2h**

Q1) Choose the correct answer: (20 marks, 1 for each one)

1. Plants used phosphorus as a nutrient in the form of
   a. Orthophosphate   b. hydrophosphate   c. phosphorus oxide

2. As the concentration of CO_2 in soil air increases, the pH of the groundwater
   a. increases   b. decreases   c. doesn't change

3. For softening water,……………. is added as chelating agent.
   a. polyphosphate salts   b. lime-soda   c. soda ash

4. The chemical species in water can determine by using…………technique.
   a. XRD   b. FT-IR   c. Ion chromatography

5. Carbon dioxide is present as a gas in each of the following except………..
   a. atmosphere   b. soil pore space   c. rainwater

6. When lowest levels of phosphorus are needed in treated water, addition of ……….. with lime is necessary.
   a. sodium chloride   b. sodium fluoride   c. calcium fluoride

7. Plants take up ammonia and nitrogen oxides from
   a. air   b. soil pore water   c. irrigation water

8. Evaluation of water quality depends on all of the following except……….
   a. It's used   b. its chemical composition   c. its taste

9. Rain has virtually …………………….content until it reach the surface of the earth
   a. with bacterial   b. no bacterial   c. with fungal

10. Wetlands were provided with water from all of the following except………
    a. rivers   b. groundwater   c. wastewater

11. All of these salts cause water less affected by acid rain except………..
    a. carbonate   b. bicarbonate   c. sulfate

12. Removing of Manganese from water is carried out by……………

a. reduction   b. precipitation   c. oxidation

13. The cost-effective method of removing inorganic materials from wastewater is…………………...

  a. distillation   b. membrane   c. freezing

14. TDS can be removed by

  a. flocculation   b. ion-exchange   c. filtration

15. Removal of dissolve organics from water must be ………………….. chlorination.

  a. after   b. during   c. before

16. …………………..is a natural ion exchanger.

  a. aluminum silicate minerals   b. poly styrene   c. Amberlite XAD-4

17. Extremely pure water is desirable in…….

  a. laboratories   b. houses   c. factories

18. Alum is …………….

  a. hydrated aluminum sulfate   b. aluminum sulfate   c. hydrated sodium sulfate

19. Agriculture surface water is suitable for all of the following uses except……

  a. irrigation   b. livestock   c. domestic

20. An example of organic carbon in water is………………

  a. carbonate ions   b. bicarbonate ions   c. cellulose

Q2) Give a reason for each of the following: (15 marks)
  a) Truly pure water generally is not desirable?
  b) Using finely divided iron in groundwater treatment barriers?
  c) Treatment of water for industrial use?
  d) Removal of dissolved organics to very low levels must be done before chlorination?
  e) Measurement of the pH of water should be made in the field or very shortly after sampling?

Q3) Answer the following questions:
  a) What are the sources of H_2S in the environment? **(2 marks)**
  b) How the removal of nitrogen from wastewater is carried out? (Show the equations)**(8 marks)**
  c) Mention terms by them water quality standards are defined? **(5 marks)**

Best wishes

Dr. Abeer S. Elsherbiny

Model 1

	Tanta University, Faculty of Science, Department of Chemistry		
	Final Exam for 4th year Chemistry Section		**(Model 1)**
	Course Title	**Water treatment**	**Code: CH4127**
21/01/2023	**1st Semester**	**Total Assessment Marks: 50**	**Time: 2h**

Q1) Choose the correct answer: **(20 marks, 1 for each one)**

1. Evaluation of water quality depends on all of the following except..........
   - a. It's used
   - b. its chemical composition
   - c. its taste

2. All of these salts cause water less affected by acid rain except...........
   - a. carbonate
   - b. bicarbonate
   - c. sulfate

3. Extremely pure water is desirable in.......
   - a. laboratories
   - b. houses
   - c. factories

4. Agriculture surface water is suitable for all of the following uses except......
   - a. irrigation
   - b. livestock
   - c. domestic

5. Wetlands were provided with water from all of the following except.......
   - a. rivers
   - b. groundwater
   - c. wastewater

6. Rain has virtually ....content until it reach the surface of the earth
   - a. with bacterial
   - b. no bacterial
   - c. with fungal

7. The chemical species in water can determine by using the............technique.
   - a. XRD
   - b. FT-IR
   - c. Ion chromatography

8. An example of organic carbon in water is...................
   - a. carbonate ions
   - b. bicarbonate ions
   - c. cellulose

9. Carbon dioxide is present as a gas in each of the following except...........
   - a. atmosphere
   - b. soil pore space
   - c. rainwater

10. As the concentration of CO_2 in soil air increases, the pH of the groundwater
    - a. increases
    - b. decreases
    - c. doesn't change

11. Plants take up ammonia and nitrogen oxides from
    - a. air
    - b. soil pore water
    - c. irrigation water

12. TDS can be removed by

    a. flocculation   b. ion-exchange   c. filtration

13. Plants used phosphorus as a nutrient in the form of

    a. orthophosphate   b. hydrophosphate   c. phosphorus oxide

14. Alum is ....

    a. hydrated aluminum   b. aluminum sulfate   c. hydrated sodium sulfate
       sulfate

15. Removing of Manganese from water is carried out by...............

    a. reduction   b. precipitation   c. oxidation

16. For softening water,................... is added as a chelating agent.

    a. polyphosphate salts   b. lime-soda   c. soda ash

17. The cost-effective method of removing inorganic materials from wastewater is....................

    a. distillation   b. membrane   c. Freezing

18. Removal of dissolve organics from the water must be .... chlorination.

    a. after   b. during   c. before

19. ....is a natural ion exchanger.

    a. aluminum silicate   b. poly styrene   c. Amberlite XAD-4
       minerals

20. When the lowest levels of phosphorus are needed in treated water, the addition of .... with lime is necessary.

    a. sodium chloride   b. sodium fluoride   c. calcium fluoride

Q2) Give a reason for each of the following: (15 marks)
    a) Truly pure water generally is not desirable?
    b) Using finely divided iron in groundwater treatment barriers?
    c) Treatment of water for industrial use?
    d) Removal of dissolved organics to very low levels must be done before chlorination?
    e) Measurement of the pH of water should be made in the field or very shortly after sampling?

Q3) Answer the following questions:
    a) What are the sources of H_2S in the environment? **(2 marks)**
    b) How the removal of nitrogen from wastewater is carried out? (Show the equations)**(8 marks)**
    c) Mention terms by them water quality standards are defined? **(5 marks)**

Best wishes
Dr. Abeer S. Elsherbiny

Model 4

	Tanta University, Faculty of Science, Department of Chemistry		
	Final Exam for 4th year Chemistry Section		**(Model 4)**
	Course Title	**Water treatment**	**Code: CH4127**
21/01/2023	**1st Semester**	**Total Assessment Marks: 50**	**Time: 2h**

Q1) Choose the correct answer: **(20 marks, 1 for each one)**

1. All of these salts cause water less affected by acid rain except...........

   a. carbonate   b. bicarbonate   c. sulfate

2. Plants used phosphorus as a nutrient in the form of

   a. orthophosphate   b. hydrophosphate   c. phosphorus oxide

3. The cost-effective method of removing inorganic materials from wastewater is............

   a. distillation   b. membrane   c. freezing

4. Removal of dissolve organics from water must be .... chlorination.

   a. after   b. during   c. before

5. Alum is ....

   a. hydrated aluminum sulfate   b. aluminum sulfate   c. hydrated sodium sulfate

6. Wetlands were provided with water from all of the following except.......

   a. rivers   b. groundwater   c. wastewater

7. Extremely pure water is desirable in.......

   a. laboratories   b. houses   c. factories

8. ....is a natural ion exchanger.

   a. aluminum silicate minerals   b. poly styrene   c. Amberlite XAD-4

9. The chemical species in water can determine by using............technique.

   a. XRD   b. FT-IR   c. Ion chromatography

10. TDS can be removed by

    a. flocculation   b. ion-exchange   c. filtration

11. removing of Manganese from water is carried out by...............

    a. reduction   b. precipitation   c. oxidation

12. As the concentration of CO_2 in soil air increases, the pH of the groundwater
   a. increases   b. decreases   c. doesn't change

13. When lowest levels of phosphorus are needed in treated water, addition of .... with lime is necessary.
   a. sodium chloride   b. sodium fluoride   c. calcium fluoride

14. Agriculture surface water is suitable for all of the following uses except......
   a. irrigation   b. livestock   c. domestic

15. Plants take up ammonia and nitrogen oxides from
   a. air   b. soil pore water   c. irrigation water

16. For softening water,.................. is added as chelating agent.
   a. polyphosphate salts   b. lime-soda   c. soda ash

17. An example of organic carbon in water is.................
   a. carbonate ions   b. bicarbonate ions   c. cellulose

18. Evaluation of water quality depends on all of the following except..........
   a. It's used   b. its chemical composition   c. its taste

19. Rain has virtually ....content until it reach the surface of the earth
   a. with bacterial   b. no bacterial   c. with fungal

20. Carbon dioxide is present as a gas in each of the following except...........
   a. atmosphere   b. soil pore space   c. rainwater

Q2) Give a reason for each of the following: (15 marks)
   a) Truly pure water generally is not desirable?
   b) Using finely divided iron in groundwater treatment barriers?
   c) Treatment of water for industrial use?
   d) Removal of dissolved organics to very low levels must be done before chlorination?
   e) Measurement of the pH of water should be made in the field or very shortly after sampling?

Q3) Answer the following questions:
   a) What are the sources of H_2S in the environment? **(2 marks)**
   b) How the removal of nitrogen from wastewater is carried out? (Show the equations)**(8 marks)**
   c) Mention terms by them water quality standards are defined? **(5 marks)**

Best wishes
Dr. Abeer S. Elsherbiny

	TANTA UNIVERSITY	
	FACULTY OF SCIENCE	
	DEPARTMENT OF MATHEMATICS	
	EXAMINATION FOR PROSPECTIVE STUDENTS (FOURTH YEAR) STUDENTS OF STATISTICS	
	COURSE TITLE: STATISTICAL INFERENCE 2	COURSE CODE: ST4105
DATE: : JAN 2023	TERM: FIRST	TOTAL ASSESSMENT MARKS: 150	TIME ALLOWED: 2 HOURS

Answer the following questions:

1- (a) Define: Statistic, the level of confidence , statistical hypothesis, null hypothesis, sample.   (10 marks)

(b) You randomly select and weigh 16 samples of 20-ounce bags of potato chips. The sample standard deviation is 0.05 ounce. Assuming the weights are normally distributed, construct a 99% confidence interval for the population standard deviation.   (20 marks)

2- (a) One of the researchers wanted to know whether the average blood pressure in a person differs in the case of measuring it and the person is of moderate stature from it in the case of the same person lying on his back, so he took a random sample of 12 people and the following results show the differences between blood pressure while standing and pressure while he is in if lying on his back, what was his decision at 0.05 level?

-4 , 1 , 1 , -5 , -6 , -3 , 2 , -9 , 1 , -4 , -7 , -7 .   (20 marks)

(b) A study has been made to compare the nicotine contents of two brands of cigarettes. Ten cigarettes of Brand A had an average nicotine content of 3.1 milligrams with a standard deviation of 0.5 milligram, while eight cigarettes of Brand B had an average nicotine content of 2.7 milligrams with a standard deviation of 0.7 milligram. Construct a 98% confidence interval for $\dfrac{\sigma_1^2}{\sigma_2^2}$.   (20 marks)

3-(a) Construct a 94% confidence interval for the difference between the mean lifetimes of two kinds of light bulbs, given that random sample of 40 light bulbs of the first kind lasted on the average 418 hours of continuous use and 50 light bulbs of the second kind lasted on the average 402 hours of continuous use. The population standard deviations are known to be $\sigma_1 = 26$ and $\sigma_2 = 22$.   (20 marks)

(b) Test the hypothesis that the mean of the first population differs from the mean of the second population at $\alpha = 0.06$.   (20 marks)

4- A journalist in Italy wants to challenge a claim that 5% of the registered voters in his country are Socialists; he thinks the percentage is lower than that. In a test of hypothesis, H_0: $p = 0.05$ vs. H_1: $p < 0.05$, his random sample of size 1,000 registered voters revealed that the number of Socialists was 40.

(a) Test the hypotheses at the 5% significance level.   (20 marks)

(b) Construct a 95% confidence interval estimate of the population proportion.   (20 marks)

$Z_{0.005} = 2.575$, $Z_{0.05} = 1.645$, $\chi^2_{(0.005,15)} = 32.801$, $\chi^2_{(0.995,15)} = 4.601$, $Z_{0.03} = 1.88$, $Z_{0.025} = 1.96$

$t_{0.025, 11} = 2.201$, $f_{0.01,9,7} = 6.72$, $f_{0.01,7,9} = 5.61$

Answer the Following Questions:

Q1: Salt-free diets are often prescribed to people with high blood pressure. The following data values were obtained from an experiment designed to estimate the reduction in diastolic blood pressure as a result of consuming a salt-free diet for 2 weeks. Assume diastolic readings to be normally distributed

Before	93	106	87	92	102	95	88	110
After	92	102	89	92	101	96	88	105

At $\alpha = 0.05$, Is there a reduction in the diastolic reading after 2 weeks on this diet? **(10 Mark)**

Q2: Test at $\alpha = 0.05$, Is there a significant correlation between the two variables? **(10 Mark)**

X	12	10	14	11	12	9
Y	18	17	23	19	20	15

Q3: Listed below are measured amounts of greenhouse gas emissions from cars in three different categories. The measurements are in tons per year, expressed as CO equivalents. *At $\alpha = 0.05$,*

4 cylinders	4.7	5.1	5.2		
6 cylinders	8.4	5.1	5.4	5.4	
8 cylinders	5.1	5.2	5.2	5.4	5.6

Determine is there a significant difference between mean amounts of greenhouse gas emissions? **(10 Mark)**

Q4: The following data shows the additional sleeping hours gained by 10 patients in an experiment with a sleeping drug ; **0.7, 1.1, 0.2, 1.2, 0.1, 3.4, 3.7, 0.8, 1.8, 2**. Assuming that the sleeping hours are normally distributed, Test at, $\alpha = 0.05$, is that drug is effective in increasing the average sleeping hour?

(10 Mark)

Q5: The breaking strength of cables produced by a manufacturer have a mean 1800 bound , and the standard deviation is 100, by a new technique in a manufacturing process, it is claimed that the breaking strength can be increased. Test this hypothesis for a sample of size 50 cables with mean 1850 b. Can we support this hypothesis at level of significance 0.01? **(10 Mark)**

You may use:
$F_{0.05,2,9} = 4.26$, $t_{0.05,7} = 1.895$, $F_{0.05,2,12} = 3.89$, $t_{0.05,5} = 2.015$, $t_{0.05,9} = 1.833$, $t_{0.025,4} = 2.776$, $t_{0.05,8} = 1.86$. $z_{0.01} = 2.33$, $z_{0.025} = 1.96$.

WITH ALL MY BEST WISHES

DR.WAFAA ANWAR

	TANTA UNIVERSITY	
	FACULTY OF SCIENCE	
	ZOOLOGY DEPARTMENT	
First term Examination forthe4th Year Students Of special zoology			
Course title:	Biodiversity and Conservation	Course code: ZO 411:
Date: 21/1/2023	First term exam.	Degree: 100 marks	Time allowed: 2 Hou

Answer allthe following questions:

I) **Choose the correct answer:(26 marks)**

1. Habitat destruction is directly related to ……………………….

2. There is recent evidence that climate changes are having effectson……………………………

3. Studies of various chemicals produced by animals have led to discoveries of ……………

4. ………………………is a biogeographic region with a large amount of biodiversity that is threatened by human habitation.

5. ……………………….. Is a basic commodity worldwide it's a primary source of fuel and used in…………………………………and…………………………………………………….

6. When mangrove areas are cleared, populations of commercial fish species which rely on it will……………………….

7. Amphibians are more vulnerable to extinction because of………………………

8. In particular ……………………………………… are derived from microorganisms.

9. Invasive alien species consider the main cause of……………………. In…………. habitats

10. Chemical contaminants from pesticides and fertilisers from agriculture via……………………….pose threats to species and ecosystems

II).A) Write [T] or [F]+ the correction of false statements only in your answer sheet(24 marks).

1. Competitive species are native species restricted to a particular geographical area.

2. Increasing the demand for food and energy leads to increasing the activity of ecosystem.

3. Land degradation leads to clearing and over-exploitation of forest land for agricultural purposes.

4. There is lower biodiversity in temperate regions due to high variations in climatic conditions.

5. The climate in the fragment is favorable for the living of different species.

6. Rainy forests are very important because they harbor at least 50% of world diversity.

7. Diversity amongst species increase at the equators.

8. The development and diffusion of scientific knowledge and technologies allow for increased efficiency in resource use.

9. Pesticides Provide resistance to crops and livestock from pests and diseases.

10. For terrestrial ecosystems, the most important direct driver of change in the past 50 yearsare fishing.

B)Briefly mention about: biodiversity crisis.   (4 marks)

III):)Answer the following questions: (50 marks)

1. Identify each of following terms:(20 marks)

a. Assessment.

b. Biological indicator.

c. Paper park.

d. Ecotourism.

e. Conservation plan.

2. Explain the stages of industrial waste water treatment.   (15 marks)

3. From your previous and present studies suggest a new protectorate in Egypt with full explanation of causes and benefits. (15 marks)

With our Best Wishes

EXAMINERS:	Prof.Dr. / Ensaf El-Gayar Dr./Ahmed Abossery