UNIVERSITAS
NEGERI
YOGYAKARTA

CURRICULUM 2014

ASSESSMENT DOCUMENTS

Bachelor of Education
In Chemistry
FMIPA - UNY

Content

Insight and Analysis of Mathematics and Natural Sciences Studies

UNIVERSITAS NEGERI YOGYAKARTA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
CHEMISTRY EDUCATION DEPARTMENT/ CHEMISTRY EDUCATION STUDY PROGRAMME

Course Name	: Insight and Analysis of Mathematics and Natural Sciences Studies	Lecturer	: Nur Fitriyana, S.Pd., M.Pd. Dina, S.Pd., M.Pd. Metridewi Primastuti, S.Pd., M.Pd. Agus Salim, S.Si., M.Si.
Course Code	: AMF6201	Study Prog/Class/ Smt	: Chemistry Education (A and I)/ 4
Document	: **Indicators of Mid-term Exam**	Academic Year	: 2019/2020

No	CO	ELO	Indicators	Cognitive Level	Form of Assessment	Total Item	Item Weight (%)	No of Item
1	Students are able to use logical thinking about science philosophy and reasoning in decision making in order to solve problems individually or in a group.	ELO-3	Students are able to describe the differences among scientific and non-scientific knowledges in order to draw a decision	C4	Essay	1	10%	2
		ELO-5 ELO-6	Students are able to apply the principles of scientific logical and reasoning	C3	Essay	1	20%	3

No	CO	ELO	Indicators	Cognitive Level	Form of Assessment	Total Item	Item Weight (%)	No of Item
		ELO-5 ELO-6	Students are able to draw conclusion or decision of a problem	C5	Essay	1	20%	4
2	Students are able to apply the scientific methods and determine the scientific truth to implement scientific attitude based on piety	ELO-3 ELO-5	Students are able to apply scientific methods to solve a problem in the daily life	C3	Essay	1	15%	5
		ELO-3 ELO-6	Students can implement scientific attitude in constructing a scientific work by avoiding plagiarism	C3	Essay	1	15%	6
3	Students are able to analogize natural phenomena and its principles in macro and micro as a medium to self-learning according to science phylosophy among ontology, epistemology, and axiology	ELO-3	Students are able to analyse the role of green plant in equilibrium of energy flows	C4	Essay	1	10%	1a
		ELO-3 ELO-5	Students are able to predict the directness of food chain if one or more components are distrubed	C2	Essay	1	10%	1b

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FACULTY OF MATHEMATICS AND NATURAL SCIENCES
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Course Name	: Insight and Analysis of Mathematics and Natural Sciences Studies	Lecturer	: Nur Fitriyana, S.Pd., M.Pd. Dina, S.Pd., M.Pd. Metridewi Primastuti, S.Pd., M.Pd. Agus Salim, S.Si., M.Si.
Course Code	: AMF6201	Study Prog/Class/ Smt	: Chemistry Education (A and I)/ 4
Document	: **Marking Guide of Mid-term Exam**	Academic Year	: 2019/2020

No	Item	Key Answer	Skor
1	Nature always tries to maintain the balance of its components and energy with a variety of processes and cycles. The main energy source for life on earth is the sun. It can be said that, without the sun it is impossible to find an ecosystem which is a flow of energy that can be seen in food structure, biotic diversity, and material cycles; namely the exchange of materials between living and non-living parts. a. Green plants are one component that has an important role in maintaining the balance of energy flow. Explain the role of green plants in the energy cycle! b. If one component of the food chain in a system is disrupted, how is the continuity of the food chain? Explain with an example	a. The role of green plants in energy cycles are as the place of fotosynthesis or the form of energy which are carbohydrate and oxygen. These green plants was serve as autotorof organism because they made their own food supply through fotosynthesis. The green plants also has main role as a produsen, they become the food supply to other organism. b. The food chain become unbalance. See the example of food chain, below: Ricefield → Mouse → Snake → Eagle If the snake become extinct, thus the growth of mouse will abundant. In contrast, the number of eagle will be decline and might be extinct. Hence, if one component of organism in disrupted, it will leads the food chain unbalance and the	10 10

No	Item	Key Answer	Skor
		component will disrupted as well.	
2	It is clear that there is a difference between "non-scientific knowledge" and "science (scientific knowledge)". Non-scientific knowledge is the result of sensory perception or the result of intuition about everyday life experiences. Can non-scientific knowledge be used as a basis for decision making? Explain with an example!	The non-scientific knowledge can be use as the basis in decision making. As an example that the myth if someone take a sower in the night it will initiate rheumatic disease. However, according to the experts, taking shower in the night doesn't initiate rheumatic disease but for someone that already has rheumatic disease taking shower in the night will leads muscle cramp. Therefore, peoples will re-thinking if they will take shower in the night.	10
3	Logic is a field of knowledge in a philosophical environment that studies regularly principles and rules of correct reasoning a. Make three fact sentences, then draw a conclusion using deductive logic and inductive logic from the three fact sentences that relate to the theme of the article b. Determine the following truth value: If plastic is a material that takes a long time to decompose, plastic from avocado seeds is nonbiodegradable	a. The fact sentences: Spoon that made from avocado seed which is processed by BioFase company is environmental friendly Fork that made from avocado seed which is processed by BioFase company is environmental friendly Knive that made from avocado seed which is processed by BioFase company is environmental friendly Deductive conclusion: all of eating tools made from avocado seed which is processed by BioFase company is environmental friendly Inductive conclusion: all of eating tools which is processed by BioFase company is environmental friendly b. Premise 1: Has right value (B) $\longrightarrow$ p Premise 2: Has false value (S) $\longrightarrow$ -q P $\longrightarrow$ -q conclusion: has a false value (S)	10 10
4	Arguments are a series of statements that have conclusions drawn. The argument consists of statements divided into two groups,	a. Ponens Mode Premise 1: If a plastics is difficult to unravel, thus it belongs to	6

No	Item	Key Answer	Skor
	namely the premise group (hypothesis) and the group conclusion (conclusions). Based on the article, write one example of each drawing conclusions using: a. Ponens Mode b. Tollens Mode c. Syllogism	non-biodegradable materials Premise 2: Plastics difficult to unravel Conclusion: Plastics belongs to non-biodegradable materials b. Tollens Mode Premise 1: If the eating tools made from avocado seed, thus it will easily ravel Premise 2: The eating tools did not easily ravel Conclusion: The eating tools did not made from avocado seed c. Syllogism Premise 1: If the eating tools made from avocado seed, thus it will easily ravel Premise 2: If the eating tools easily ravel, it belongs to environmental friendly Conclusion: If the eating tools made from avocado seed, thus it belongs to environmental friendly	6 8
5	The scientific method can be said as a scientific process to gain knowledge systematically through physical evidence. This method has a stage better known as 5M (Observing, Asking, Collecting Information, Associating, and Communicating). Briefly explain the scientific method for solving the problem according to the article using the 5M technique!	Observing: the pollution problems and the consumption of plastics that difficult to unravel in the society Asking: Is there any materials that can be use to replace pkastics? Collecting information: Scott Munguia searching for natural resources that can be use as the replacement of plastics materials and it draw a conclusion to use mango and avocado seed Associating: Scott Munguia doing an experiment in one and half year to get an exact methods for processing avocado seed become plastics or a materials that replace plastics Communicating: Scott Munguia work has been protected by copyrights in Mexico and has been selling in several countries	3 3 3 3 3
6	One scientific attitude that must be possessed by academics is to	Students should use their own language and paraphrase the text	15

No	Item	Key Answer	Skor
	avoid plagiarism. Plagiarism is included in academic crime, so as academics we must be able to avoid it. One way to avoid plagiarism is to paraphrase the writings of others. Paraphrasing the "Plastic Trash Dangerous for Sea Creatures" subsection!	correctly	
	SKOR TOTAL		100

UNIVERSITAS NEGERI YOGYAKARTA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
CHEMISTRY EDUCATION DEPARTMENT, CHEMISTRY EDUCATION STUDY PROGRAMME
MID-TERM EXAM OF EVEN TERM OF 2018/2019 ACADEMIC YEAR

Course Name	Insight and Analysis of Mathematics and Natural Sciences Studies	Lecturer	Agus Salim, M.Si. Nur Fitriyana, S.Pd., M.Pd.
Course Code	AMF6201	Day/ Date	Monday, October of 21st 2019
Class	Chmistry Education/ A and I	Time	11.10-12.50 WIB
Semester	4	Place	D.03.1.01.05

Directions

- Write your answer in the answer sheet provided
- If it is required, use the other sheet of this paper to make a calculation
- Pray first before doing the examination
- Please be honest in doing the examination

Pertanyaan

1. Nature always tries to maintain the balance of its components and energy with a variety of processes and cycles. The main energy source for life on earth is the sun. It can be said that, without the sun it is impossible to find an ecosystem which is a flow of energy that can be seen in food structure, biotic diversity, and material cycles; namely the exchange of materials between living and non-living parts.
   a. Green plants are one component that has an important role in maintaining the balance of energy flow. Explain the role of green plants in the energy cycle!
   b. If one component of the food chain in a system is disrupted, how is the continuity of the food chain? Explain with an example
2. It is clear that there is a difference between "non-scientific knowledge" and "science (scientific knowledge)". Non-scientific knowledge is the result of sensory perception or the result of intuition about everyday life experiences. Can non-scientific knowledge be used as a basis for decision making? Explain with an example!

   Read the attach article to answer item no 3-6!
3. Logic is a field of knowledge in a philosophical environment that studies regularly principles and rules of correct reasoning
   a. Make three fact sentences, then draw a conclusion using deductive logic and inductive logic from the three fact sentences that relate to the theme of the article
   b. Determine the following truth value: If plastic is a material that takes a long time to decompose, plastic from avocado seeds is nonbiodegradable
4. Arguments are a series of statements that have conclusions drawn. The argument consists of statements divided into two groups, namely the premise group (hypothesis) and the group conclusion (conclusions). Based on the article, write one example of each drawing conclusions using:
   a. Ponens Mode
   b. Tollens Mode
   c. Syllogism

5. The scientific method can be said as a scientific process to gain knowledge systematically through physical evidence. This method has a stage better known as 5M (Observing, Asking, Collecting Information, Associating, and Communicating). Briefly explain the scientific method for solving the problem according to the article using the 5M technique!
6. One scientific attitude that must be possessed by academics is to avoid plagiarism. Plagiarism is included in academic crime, so as academics we must be able to avoid it. One way to avoid plagiarism is to paraphrase the writings of others. Paraphrasing the "Plastic Trash Dangerous for Sea Creatures" subsection!

Article

Cool! These Tableware are made from Avocado Seeds and Can be Decomposed

Tyas Wening - Thursday, Februaru of 7th, 2019 | 19:37 WIB

Bobo.id - Plastic waste is still a problem that continues to be sought a solution by many parties. Plastic is a material that takes a long time to decompose, even plastic can also be carried into the sea and endanger sea creatures. This is the reason that makes many companies try to make goods that were made from plastic and then replaced with materials that are more environmentally friendly. One of them is a company from Mexico that makes cutlery from avocado seeds.

Avocado Seeds Spoons, Forks, Knives and Straws

A company from Mexico, namely BioFase has just released cutlery, namely spoons, forks, knives, and straws made from avocado seeds. The idea of creating avocado cutlery comes from Scott Munguia, an engineering student who intends to solve pollution problems and look for sources that can be used as plastic substitutes. Before finding avocado seeds as the right ingredients, Mungia had previously conducted experiments using mango seeds. After testing for one and a half years to find the right method for changing avocado seeds, finally in 2013 this process was patented by Munguia.

Unravelable Tableware

Not only environmentally friendly because it is made from avocado seeds, cutlery produced by Munguia's ideas is also environmentally friendly because it can decompose. This cutlery can only be used once. But after 240 days of being used and exposed to other elements or buried in the ground, these tableware will decompose naturally. This decomposition process is certainly faster when compared to plastics made from fossils and takes more than 100 years to decompose. As long as they are stored in a dry place, these cutlery, forks, knives and straws can survive without damage.

Unique Invention

Munguia's idea of turning avocado seeds into tableware is of course unique. Moreover, Mexico is one of the countries that is the largest avocado producer in the world. Every year, Mexico consumes more than 1 million tons of avocados, and more than 30,000 tons is waste in the form of seeds and skin. That is why Munguia's invention was protected by Mexican patents and won many awards. Although the price of this tableware is more expensive than plastic tableware, but using environmentally friendly tableware will reduce plastic waste. The next step that Munguia will take is

to export this avocado-made tableware to America, where 9 percent of the world's plastic is used by this country.

Plastic Trash Dangerous For Sea Creatures

There have been various cases that mention that plastic waste is a threat to living things, especially for marine dwellers. An example is the square head whale that was stranded in Southeast Sulawesi with a lot of plastic waste found in its stomach. In addition, there are also many news about turtles that cannot escape from the net that binds their bodies. Plastic waste is also often considered food by animals such as seabirds, whales, turtles, or seals. Plastic trash has a smell like food eaten by seabirds. Whereas sea animals see plastic as a jellyfish, because it has a transparent color.

Good Luck and Success!

Made by : Nur Fitriyana, S.Pd., M.Pd.	Reproduction of part or all of the contents of the document is prohibited without written permission from the Faculty of Mathematics and Natural Sciences, Universitas Negeri Yogyakarta	Checked by : Dr. Retno Arianingrum, M.Si.

Reactivity and Reaction Mechanism of Organic Compounds

YOGYAKARTA STATE UNIVERSITY
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
CHEMISTRY EDUCATION DEPARTMENT/CHEMISTRY EDUCATION STUDY PROGRAM

Course Title	: Reactivity and Reaction Mechanism of Organic Compounds	Lecturer	: Dr. Sri Handayani
Course Code	: KIM 6408	Study Program/Class/Semester	: Chemistry Education (A and I) / 4
Document	: **Final Exam Item Blueprint**	Academic Year	: 2018/2019

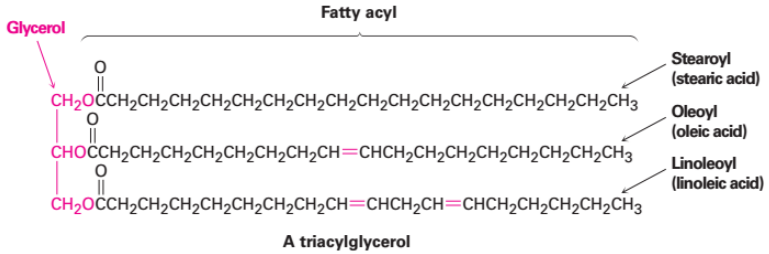
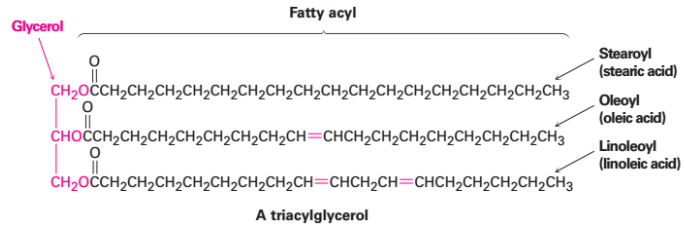
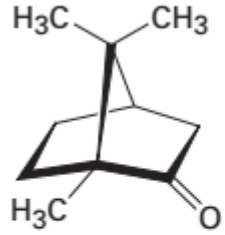
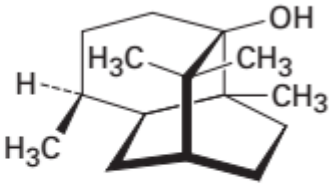
No	CO	ELO	Item Indicator	Item Form	Number of Item	Weight (%)	Item Number
1	Students are able to explain the basic concepts of molecular structure, and types of organic compound reactions, understand and apply basic concepts, structures, physical properties, and mechanisms occurring in carbonyl and amide compounds, understand aromatic and heterocyclic aromatic compounds, understand and apply basic concepts regarding structure, nomenclature,	ELO-3	Students can draw the compound structure, identify, and classify structure of each monomer and polymer.	Essay	3	60	2, 3, 5

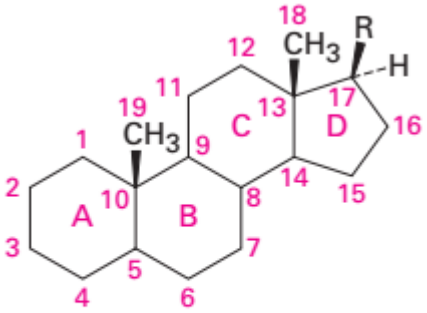
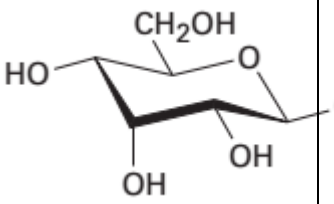
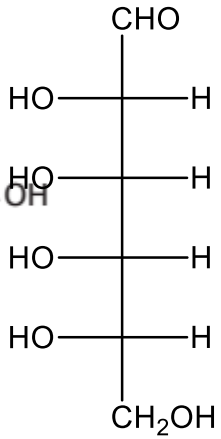
	classification, physical and chemical properties, and reactions of carbohydrates, proteins, amino acids, and lipids and polyfunctional compounds (C1, C2)						
2	Students can use the concepts of reaction mechanisms in various chemical reactions found in everyday life. (C2, D1)	ELO – 3 ELO – 4	Students are able to identify and classify chemical compounds in daily life based on their structure.	Essay	2	40	1, 4

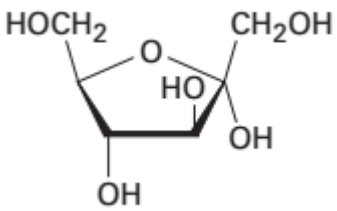
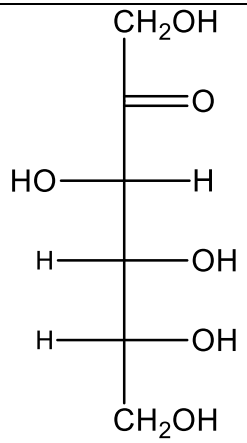
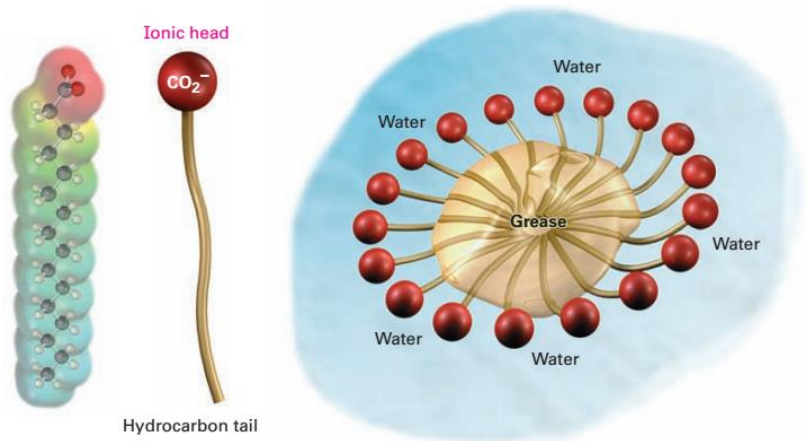
YOGYAKARTA STATE UNIVERSITY
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
CHEMISTRY EDUCATION DEPARTMENT/CHEMISTRY EDUCATION STUDY PROGRAM

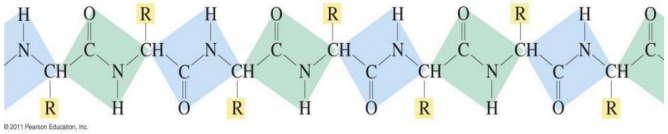
Course Title	: Reactivity and Reaction Mechanism of Organic Compounds	Lecturer	: Dr. Sri Handayani
Course Code	: KIM 6408	Study Program/Class/Semester	: Chemistry Education (A and I) / 4
Document	: **Marking Scheme**	Academic Year	: 2018/2019

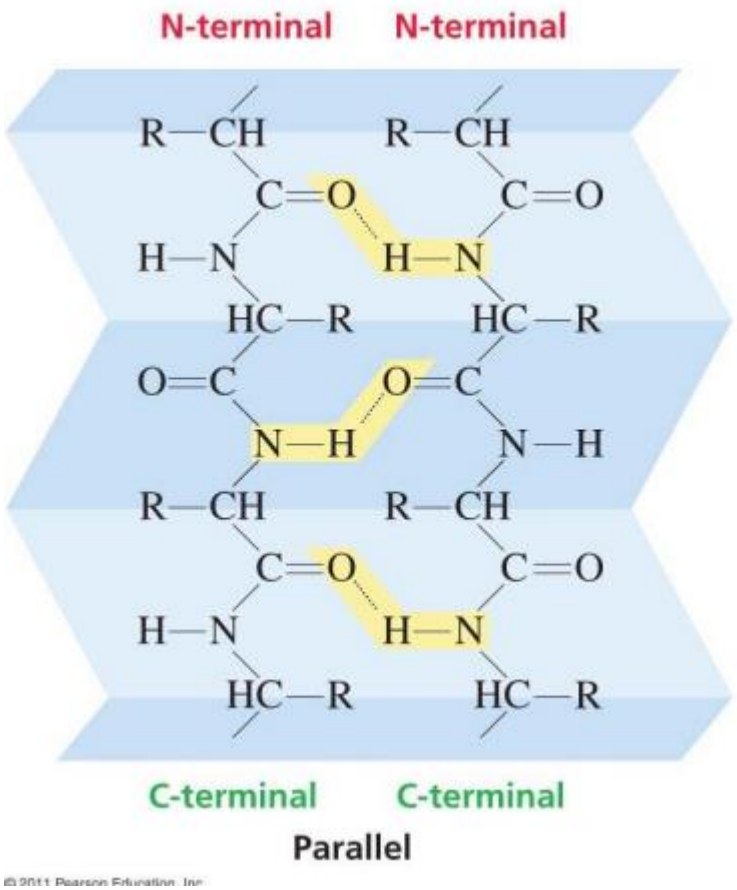
No	QUESTION	Answer/Assessed Aspect	Score	
1	What are the differences between fat and oil? Please Explain. (20)	Fat: - Triglycerides with dominant saturated fatty acids - Animal-based - Solid (at room temperature) Oil: - Triglycerides with dominant unsaturated fatty acids - Plant-based - Liquid (at room temperature) -	20= correct structure, classification, and example 15 = one incorrect structure, classification, or example 10 = only one correct answer 5 = incorrect answer 0 = no answer	20%

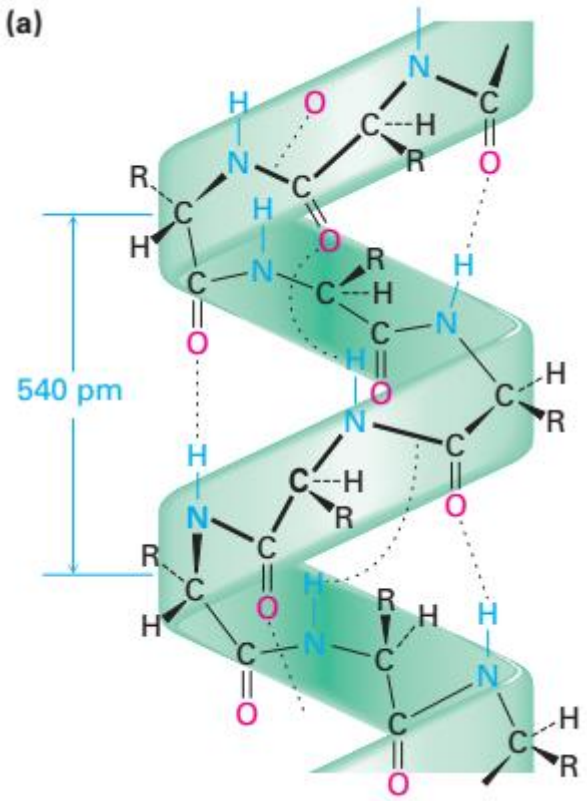
		 A triacylglycerol		
2	Draw the compound structure of a. Triglycerides b. Terpenoids c. Steroid	a.  A triacylglycerol b.  **Camphor** (a monoterpenoid—C_{10})  **Patchouli alcohol** (a sesquiterpenoid—C_{15})	20 = 3 correct structures 14 = 2 correct structures 7 = 1 correct structure 0 = no answer	20%

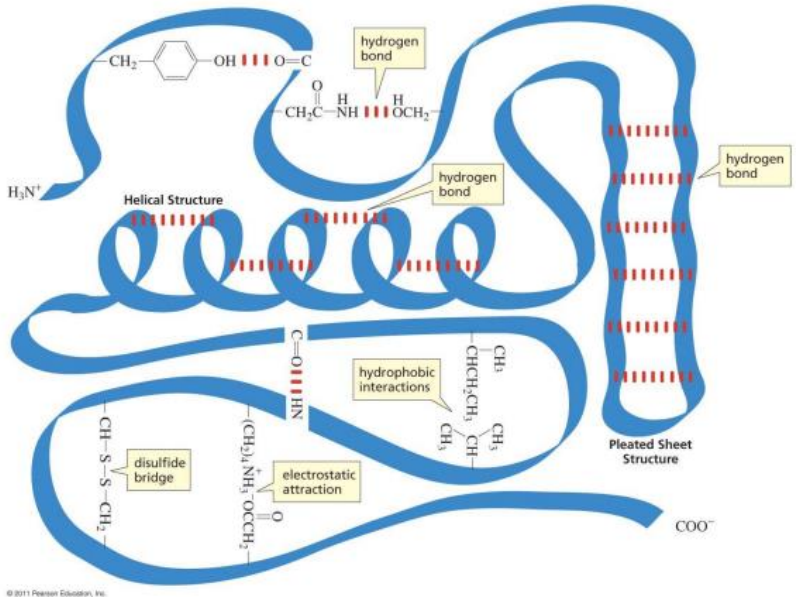
		 **A steroid** **(R = various side chains)**		
3	a. Draw a Fischer (L) projection for the following structure:  b. Draw a Fischer (L) projection for the following structure:	a.  b.	20 = 2 correct structures 10 = 1 correct structure 5 = 2 incorrect structures 0 = no answer	20%

				
4	What is the mechanism for removing impurities with soap? Please explain.	 FIGURE 27-1 A soap micelle solubilizing a grease particle in water. An electrostatic potential map of a fatty acid carboxylate shows how the negative charge is located in the head group. Soap has long ester chain that binds ionically with Na which is commonly called 'head' that is hydrophilic in nature. The long chain is non-polar, fat soluble (hydrophobic), commonly called 'tail'. See above picture.	20 = correct structure and explanation 15= incorrect structure but correct explanation 10= incorrect structure and inaccurate explanation 5 = incorrect structure and explanation 0 = no answer	20%

		Dirt is usually made of fat, so the tail of the soap will be bound to dirt, while its head dissolves in water to remove dirt.		
5	How does the classification of proteine-based on their structure look like? Draw and explain	a. Polypeptides or primary protein structures consist of many amino acids binding with peptides to form chains consisting of around 50 amino acids.  b. Secondary protein structure consists of a series of amino acids that have peptide, hydrogen and or disulfide chains. Below are examples of alpha helix and beta pleated sheets.	20= protein structure and explanation are correct 15=one incorrect structure 10 = two incorrect structures 5 = only one correct structure 0 = no answer	20%

		 N-terminal N-terminal C-terminal C-terminal Parallel		

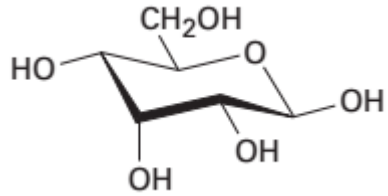
		 c. Tertiary protein structure is a more complicated structure because there are additional three chains and interactions among side chains, van der waals chains or ionic chains		

		 d. Quaternary protein structure is formed when there are interactions or chains between several tertiary proteins		

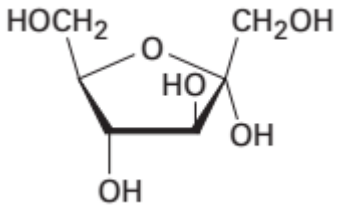
UNIVERSITAS NEGERI YOGYAKARTA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
CHEMISTRY EDUCATION DEPARTMENT
FINAL EXAM TEST PAPER OF ODD TERM ACADEMIC YEAR OF 2018/2019

Course Name	: Reactivity and Reaction Mechanism of Organic Compounds	Lecturer	: Dr. Sri Handayani
Course Code	: KIM 6408	Day/date	: Tuesday, January of 7th, 2019
Major/Class	: Chemistry Education/ A and I	Time	: 13.00-14.30 WIB
Semester	: 4	Place	: D.07.2.01.10

1. What are the differences between fat and oil? Please Explain
2. Draw the compound structure of
   a. Triglycerides
   b. Terpenoids
   c. Steroid
3. a. Draw a Fischer (L) projection for the following structure:



   b. Draw a Fischer (L) projection for the following structure:



4. What is the mechanism for removing impurities with soap? Please explain.
5. How does the classification of proteine-based on their structure look like? Draw and explain

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Environmental Chemistry

UNIVERSITAS NEGERI YOGYAKARTA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
CHEMISTRY EDUCATION DEPARTMENT / CHEMISTRY EDUCATION STUDY PROGRAMME

Course Name	: Environmental Chemistry	Lecturer	: Regina Tutik P, M.Si
Course Code	: KIM6215	Major/Class	: Chemistry Education/I
Document	: **Kisi-kisi Soal UAS**	Academic Year	: 2019/2020

No	Course Outcome	ELO	Indicator	Cognitive Level	Item Type	Number of Item	Weight (%)	Item Number
1	Students are able to describe the basic concepts of various sources, reactions, transportation, effects and the presence of chemical species in the air, water and soil environment, and also the influence of human activities on these processes. (C1, C2, D1)	ELO-3	C.2. applying chemical knowledge in the various cases	C2, C3, C456	Essay	1	40	III
		ELO-3	C.1 mastering the theoritical concept of chemical energy, basic principle of separation method, analysis, and their characterictics.	C2, C3	Short Answer	15	25	I.1- I.15
				C3,C456	Essay	1	15	II
2	Students can apply ways to prevent and overcome the occurrence of various problems caused by chemicals in the	ELO – 3	C.2. applying chemical knowledge in the various cases	C2, C3, C456	Essay	1	40	III

	environment. (C1,C2, D1, D2, D4)							
3	Students can apply ways to prevent and overcome the occurrence of various problems caused by chemicals in the environment in daily life (C1,C2, D1, D2, D4, E3)	ELO-3	C.1 mastering the theoritical concept of chemical energy, basic principle of separation method, analysis, and their characterictics.					
		ELO-4	D.1. applying logical, critical, systematic, and innovative thinking in the context of environmental management					
		ELO-4	D.2. examining the implications of the development or implementation of science and technology to apply the value of humanities in accordance with their expertise based on the rules, procedures and scientific ethics in order to produce solutions, ideas, designs in environmental problems					
		ELO-4	D.4. make an appropriate decisions in the context of solving environmental problems, based on the results of information and data analysis;					
		ELO-5	E.3. responsible for the achievement of group work and supervising					

			and evaluating the completion of work assigned to workers under their responsibility;					
4	Students are able to compile and present written and oral reports in solving environmental problems (C1,C2, D1, D2, D4, E3)	ELO -3	C.2. applying chemical knowledge in the various cases	C2, C3, C456	Uraian	1	40	III
		ELO-3	C.1 mastering the theoritical concept of chemical energy, basic principle of separation method, analysis, and their characterictics.					
		ELO-4	D.4. make an appropriate decisions in the context of solving environmental problems, based on the results of information and data analysis;					
		ELO-5	E.3. responsible for the achievement of group work and supervising and evaluating the completion of work assigned to workers under their responsibility;					

UNIVERSITAS NEGERI YOGYAKARTA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
CHEMISTRY EDUCATION DEPARTMENT / CHEMISTRY EDUCATION STUDY PROGRAMME

Course Name	: Environmental Chemistry	Lecturer	: Regina Tutik P, M.Si
Course Code	: KIM6215	Major/Class	: Chemistry Education/I
Document	: **Indicators on Final Exam**	Academic Year	: 2019/2020

Number	Questions	Answer Key	Maximum Score
I 1-9	Dissolved oxygen can be analyzed in two ways, namely: the Winkler Method and Electrochemistry Method. In the Winklter Method, a total 100 ml of water as a sampel to be analyzed, is added with a solution of $MnCl_2$ and NaOH – KI, so that the sediment will occur is 1) ... By adding H_2SO_4 or HCl, the sediment that occur will be 2) ... and also release the molecules of 3) ... which is equivalent to dissoleved oxygen. Molecule of 4) ... was titrated by a standard solution of sodium thiosulphate 0.1M, indicator solution that used was 5) ... The titration process is stopped when the blue color disappear, i.e. at a volume of 5 ml sodium thiosulphate as much as 5 ml. Write the question of the chemical reaction that occurs, complete with the phases and the coefficient. 6) _____ 7)	1) White sediment of $Mn(OH)_2$ 2) Dissolved 3) Iodine 4) Iodine 5) Amilum 6) $MnCl_2 + 2NaOH \longrightarrow Mn(OH)_2 + 2NaCl$ 7) $2\ Mn(OH)_2 + O_2 \Longrightarrow 2\ MnO_2 + 2\ H_20$ 8) $MnO_2 + 2\ KI + 2\ H_2O \Longrightarrow Mn(OH)_2 + I_2 + 2\ KOH$ $I_2 + 2\ Na_2S_2O_3 \Longrightarrow Na_2S_4O_6 + 2\ NaI$	14

	8) _____ 9) _____		
I.10	Calculate the dissolved oxygen in the sample!	- Na2S2O3 which is reacts = 0.5 mmol - Iodine which is reacts = 0.25 mmol - Oxygen which is reacts = 0.25 mmol in 100 mL or (0.25 x 32) mg = 8 mg per 100 mL = 80 ppm	6
I.11 – I.15	In the electrochemical method, a DO meter is used, this probe usually uses a cathode 11) ... and anode 12) ... Overall, these electrodes are coated with a plastic membrane that is semipermeable to 13) ... Write the reaction that happen at 14) Cathode _____ 15) Anode _____	11) Cathode : Ag 12) Anode: Pb 13) Oxygen 14) Cathode: $O_2 + 2\ H_2O + 4e \rightarrow 4\ HO^-$ Anode: $Pb + 2\ HO^- \rightarrow PbO + H_20 + 2e$	5
II	**Pollutant Measurement** The CO_2 gas measurement can be done by evaporation gravimetry. Explain how the sample was taken, the analysis procedure and the calculation of CO_2 level.	The maximum score of each aspect as follows: 1. How to take samples (5) 2. the analysis procedure (5) 3. calculation of the levels. (5)	15
III	Write down your group assignments, sequentially about the following: 1. Title 2. Objective 3. The principle of experiment/observation 4. Observation results	The maximum score of each aspect as follows: 1. Title (2) 2. Objective (5) 3. The principle of experiment/observation (5) 4. Observation results (5)	40

	5. Chemical reaction that occur 6. Simulation/model of natural phenomena studied 7. Conclusions	5. Chemical reaction that occur (5) 6. Simulation/model of natural phenomena studied (5) 7. Conclusions (3)	
		TOTAL SCORE	80

UNIVERSITAS NEGERI YOGYAKARTA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
CHEMISTRY EDUCATION DEPARTMENT
FINAL EXAM TEST PAPER OF ODD TERM
ACADEMIC YEAR OF 2019/2020

Course Name	: Environmental Chemistry	Lecturer	: Regina Tutik P
Course Code	: KIM6215	Day/Date	: Monday, January 7th, 2020
Major/Class	: Chemistry Education/I	Time	: 10.00-11.30
Semester	: 5	Place	: D.03.1.01.05

DIRECTIONS: Fill in the balnk into a correct statement.

I. DO Measurement

Dissolved oxygen can be analyzed in two ways, namely : the Winkler Method and Electrochemistry Method. In the Winklter Method, a total 100 ml of water as a sampel to be analyzed, is added with a solution of $MnCl_2$ and NaOH – KI, so that the sediment will occur is 1) _____. By adding H_2SO_4 or HCl, the sedimentation that occur will be 2) _____ and also release the molecules of 3) _____ which is equivalent to dissoleved oxygen. Molecule of 4) _____ was titrated by a standard solution of sodium thiosulphate 0.1M, indicator solution that used was 5) _____ The titration process is stopped when the blue color disappear, i.e. at a volume of 5 ml sodium thiosulphate as much as 5 ml.

Write the question of the chemical reaction that occurs, complete with the phases and the coefficient.

6) _____
7) _____
8) _____
9) _____
10) Calculate the dissolved oxygen in the sample!

In the electrochemical method, a DO meter is used, this probe usually uses a cathode 11) _____ and anode 12) _____. Overall, these electrodes are coated with a plastic membrane that is semipermeable to 13) _____

Write the reaction that happen at

14) Cathode _____

15) Anode _____

DIRECTION: Work on striped folio paper!

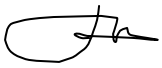
II. Pollutant Meaasurement

The CO_2 gas measurement can be done by evaporation gravimetry. Explain how the sample was taken, the analysis procedure and the calculation of CO_2 level!

III. Environmental Pollution

Write down your group assignments, sequentially about the following:

1. Title
2. Objective
3. The principle of experiment/observation
4. Observation results
5. Chemical reaction that occur
6. Simulation/model of natural phenomena studied
7. Conclusions

Dibuat oleh :  Regina Tutik P	Dilarang memperbanyak sebagian atau seluruh isi dokumen tanpa ijin tertulis dari Fakultas MIPA, Universitas Negeri Yogyakarta	Diperiksa oleh : Dr. Retno Arianingrum

Analysis of Organic Compound Structures

YOGYAKARTA STATE UNIVERSITY
FACULTY OF MATHEMATICS AND SCIENCE
DEPARTMENT OF CHEMISTRY EDUCATION/CHEMISTRY EDUCATION STUDY PROGRAM

Course Title	: Analysis of Organic Compound Structures	Lecturer	: Prof. Dr. Sri Atun
Code of Course	: KIP 6204	Study Program/Class/Semester: **Chemistry Education** (Gab A and I) / 6	
Document	: Blueprint of Final Exam Questions	Academic Year	: 2019/2020

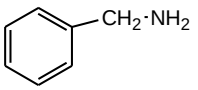
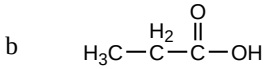
No	CO	ELO	Question Indicator	Question Form	Number of Test Item	Test Item Weight (%)	Test Item Number
1	Students are able to master theoretical concepts on spectroscopy, including UV, IR, NMR (proton and carbon), and MS, and their use in the identification of organic compound structures	ELO-1 ELO – 4	Students are able to explain the basic principles of UV, IR, NMR (proton and carbon), and MS spectroscopy and give examples of their use in identifying the organic compound structures	Essay	1	40	1
2	Students are able to predict data that	ELO – 3	Students are able to predict data that will	Essay	1	40	2

	will be obtained from UV, IR, NMR (proton and carbon), and MS spectroscopy.	ELO – 4 ELO – 5	be obtained by UV, IR, NMR (proton and carbon), and MS spectroscopy from organic compounds whose structure is known.				
3	Students are able to analyse one of the spectroscopic data.	ELO – 4 ELO - 5	Students are able to analyse the MS spectroscopic data	Essay	1	20	3

YOGYAKARTA STATE UNIVERSITY
FACULTY OF MATHEMATICS AND SCIENCE
DEPARTMENT OF CHEMISTRY EDUCATION/CHEMISTRY EDUCATION STUDY PROGRAM

Course Title	: Analysis of Organic Compound Structures	Lecturer	: Prof. Dr. Sri Atun
Code of Course	: KIP 6204	Study Program/Class/Semester: **Chemistry Education** (Semester 5)	
Document	: **Marking Scheme**	Academic Year	: 2019/2020

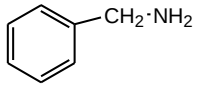
No	QUESTION	Answer/ Assessed Aspect	Score	
	Explain briefly, if necessary, with examples of the principles of determination and information to be obtained from each type of spectroscopy: a. Spectroscopy UV-VIS b. Spectroscopy IR c. Spectroscopy ^{1}H NMR d. Spectroscopy ^{13}C NMR e. Spectroscopy MS	Clarity of the answers to the basic principles of each type of spectroscopy and examples of the use of each spectroscopy	The basic principles of UV spectroscopy and examples of their use	20% (score/40)
			The basic principles of IR spectroscopy and examples of their use	20% (score /40)
			The basic principles of ^{1}H NMR spectroscopy and examples of their use	20% (score /40)
			The basic principles of ^{13}C NMR spectroscopy and examples of their use	20% (score/40)
			The basic principles of MS spectroscopy and examples of their use	20% (score/40)
	Estimate how the spectroscopic data (IR, ^{1}H NMR, dan ^{13}C NMR) will be	The accuracy of the estimated answer of data to the according to IR, ^{1}H NMR,	Accuracy of estimated answers of data according to IR, ^{1}H NMR, dan ^{13}C NMR spectroscopy of each	50% (score/40)

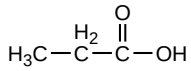
	obtained from the following compounds: a  b 	dan ^{13}C NMR spectroscopy rules of each structure	benzylamine structure (structure a)	
			The accuracy of the estimated answers of the data according to the IR, 1H NMR, and 13C NMR spectroscopy of each propanoic acid structure (structure b)	50% (score/40)
	Draw the fragmentation pattern of 3-methyl -1-butanol, which shows MS spectrum data at m/z: 88; 70; 73; 55; 43; 15	The accuracy of each fragment's answer with the price according to m/z and the total depiction of the fragmentation pattern	Fragment with price equalling to m/z	60% (score/20)
			Total fragmentation pattern	40% (score/20)
	SKOR TOTAL			100

UNIVERSITAS NEGERI YOGYAKARTA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
CHEMISTRY EDUCATION DEPARTMENT, CHEMISTRY EDUCATION STUDY PROGRAMME
MID-TERM EXAM OF EVEN TERM OF 2019/2020 ACADEMIC YEAR

Course Name	Analysis of Organic Compound Structures	Lecturer	Prof. Dr. Sri Atun
Course Code	KIP 6204	Day/ Date	Monday, October of 21st 2019
Class	Chmistry Education/ A and I	Time	11.10-12.50 WIB
Semester	5	Place	D.03.1.01.05

1. Explain briefly, if necessary, with examples of the principles of determination and information to be obtained from each type of spectroscopy:
   a. Spectroscopy UV-VIS
   b. Spectroscopy IR
   c. Spectroscopy ^{1}H NMR
   d. Spectroscopy ^{13}C NMR
   e. Spectroscopy MS
2. Estimate how the spectroscopic data (IR, ^{1}H NMR, dan ^{13}C NMR) will be obtained from the following compounds:

a 

b 

3. Draw the fragmentation pattern of 3-methyl -1-butanol, which shows MS spectrum data at m/z: 88; 70; 73; 55; 43; 15

Made by : Prof. Dr. Sri Atun	Reproduction of part or all of the contents of the document is prohibited without written permission from the Faculty of Mathematics and Natural Sciences, Universitas Negeri Yogyakarta	Checked by : Dr. Retno Arianingrum, M.Si.

Chemistry Laboratory Management

UNIVERSITAS NEGERI YOGYAKARTA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
CHEMISTRY EDUCATION DEPARTMENT / CHEMISTRY EDUCATION STUDY PROGRAMME

Course Name	: Chemistry Laboratory Management	Lecturer	: Regina Tutik P, M.Si
Course Code	: KIP 6205	Major/Class	: Chemistry Education/I
Document	: **Kisi-kisi Soal UAS**	Academic Year	: 2019/2020

No	Course Outcome	ELO	Indicator	Item Type	Number of Item	Weight (%)	Item Number
1	Students are able to mastering theoritocal concept about (5) chemical management, (7) laboratory safety, (9) laboratory waste management, (10) dangerous experimental technique, and (11) MSDS (C1, C2, D1, D2, D4)	ELO – 3	C.1. mastering theoretical concepts about the structure, dynamics, chemicals energy, and their characteristics.	Short Answer Short Answer Essay Short Answer Essay	1 1 1 4 	16 1 5 10 12	1 2 3 9,10, 11, 12 8
		ELO-3	C.2. applying chemical knowledge in various cases.	Essay	3	15	4, 5, 6
		ELO-4	D.1. applying logical, critical, systematic, and innovative thinking in the context of the development or implementation of science and	Essay	1	7	12

			technology that pays attention to and applies the value of humanities in accordance with their fields of expertise.				
			D.2. analyzing the implications of the development, or implementation of science and technology that apply the value of humanities in accordance with their expertise based on scientific rules, procedures and ethics in order to produce solutions, ideas, designs or criticism;	Essay	1	20	13
			D.4. making an appropriate decisions in the context of problem solving in their areas of expertise, based on the results of information and data analysis;				

UNIVERSITAS NEGERI YOGYAKARTA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
CHEMISTRY EDUCATION DEPARTMENT / CHEMISTRY EDUCATION STUDY PROGRAMME

Course Name	: Chemistry Laboratory Management	Lecturer	: Regina Tutik P, M.Si
Course Code	: KIP 6205	Major/Class	: Chemistry Education/I
Document	: **Marking Scheme**	Academic Year	: 2019/2020

No	Problem	Answer	Maximum Score
1	Material Safety Data Sheet (MSDS) contains ...	The 16 components of MSDS	16
2	A number of 1 ppm of LC50 means ...	A substance that has an LC50 of 1 ppm means that if a number of experimental animals are given 1 ppm, the substance orally will die by 50%	1
3	Draw the harmful symbol for concentrated sulfuric acid according to NPFA in the coloumn below!	 Red (0): non-flammable Blue (3): small amounts of exposure can cause temporary or moderate to serious	5

		residual injuries (for example, chlorine gas) Yellow (2): Can be detonated or exploded but requires strong stimulation, such as being heated before initiation, reacting explosively with water, or will explode if "shocked" (for example, ammonium nitrate) White (acid): acidic substances	
4	Explain the step to handle the mercury spills on the floor!	- Take the vacuum, suck the mercury on the floor - Put it in a closed container - Cover the remaining mercury with solid ingredients - Shovel solid material, keep it in a closed and waterproof container - Leave it to the authorities	5
5	Explain the step to handle the spills of strong acid on the floor!	- Cover the surface of the spill with chalk - Take with a trowel, fit in a container - Pour water to dilute - Dry with a cloth	5
6	Explain the step to handle the spills of strong base on human skin!	- skin immediately wiped with a cotton swab or a soft cloth - washed with flowing water as much as possible - Next wash with 1% acetic acid - then wash again with water - Dry and rub with ointment Levertran	5
7	Mention the type of fire, the cause, and the appropriate fire extinguisher!	Type A: flammable solids Type B: Flammable liquids Type C: due to electricity, travo, wiring/ short circuit Type D: due to metal, this particular usually occurs in industries of metal	12

8	Draw the danger symbol following PBB for the materials with characteristics of:		6
9	Write the two examples of incompatible chemical by writing it's reaction that describe the characteristics of incompatible chemical with it's reason!	$Na(s) + HCl(aq) \rightarrow NaCl(aq) + H_2(g)$ $Na(s) + H_2O(aq) \rightarrow NaOH(aq) + H2(g)$ Hydorgen gas is flammable in the air	4
10	Give the example of chemical that belongs to strong oxidising and write it's reaction!		2

11	Give the example of chemical that belongs to strong reductor and write its reaction!		2
12	Give the example of chemical that belongs to very reactive toward acid and write its reaction!		2
13	Explain the differences among the waste handling of primarily, secondary, and tertiery!	There are differences in inputs, processes, procedures, equipment, techniques, and outputs	20
TOTAL			80

UNIVERSITAS NEGERI YOGYAKARTA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
CHEMISTRY EDUCATION DEPARTMENT
FINAL EXAM TEST PAPER OF ODD TERM ACADEMIC YEAR OF 2019/2020

Course Name	: Laboratory Management	Lecturer	: Regina Tutik Padmaningrum, M.Si.
Course Code	: KIP 6205	Day/date	: Tuesday, January of 7th, 2020
Major/Class	: Chemistry Education/ I	Time	: 13.00-14.30 WIB
Semester	: 5	Place	: D.07.2.01.10

DIRECTIONS: Fill in the blank into a correct statement!

1. Material Safety Data Sheet (MSDS) contains:

a. _____	i. _____
b. _____	j. _____
c. _____	k. _____
d. _____	l. _____
e. _____	m. _____
f. _____	n. _____
g. _____	o. _____
h. _____	p. _____

2. A number of 1 ppm of LC50 means
   _____
   _____

3. Draw the harmful symbol for concentrated sulfuric acid according to NPFA in the coloumn below!

	Description: .....

	....

4. Explain the step to handle the mercury spills on the floor!

(a) _____

(b) _____

(c) _____

(d) _____

(e) _____

5. Explain the step to handle the spills of strong acid on the floor!

(a) _____

(b) _____

(c) _____

(d) _____

6. Explain the step to handle the spills of strong base on human skin!

(a) _____

(b) _____

(c) _____

(d) _____

7. Mention the type of fire, the cause, and the appropriate fire extinguisher!

Type of fire	Cause	Approporiate fire extinguisher

8. Draw the danger symbol following PBB for the materials with characteristics of:

OXIDISING	CORROSIVE	ETREMELY FLAMMABLE	EXPLOSIVE
FLAMMABLE	RADIOACTIVE	TOXIC	IRRITANT

9. Write the two examples of incompatible chemical by writing it's reaction that describe the characteristics of incompatible chemical with it's reason!

a. _____,
because _____

b. _____,
because _____

10. Give the example of chemical that belongs to strong oxidising and write it's reaction!

_____
_____

11. Give the example of chemical that belongs to strong reductor and write its reaction!
_____
_____

12. Give the example of chemical that belongs to very reactive toward acid and write its reaction!

_____
_____

13. Explain the differences among the waste handling of primarily, secondary, and tertiery!
_____
_____
_____
_____
_____

_____
_____
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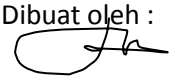
_____
_____

Dibuat oleh :  Regina Tutik P	Dilarang memperbanyak sebagian atau seluruh isi dokumen tanpa ijin tertulis dari Fakultas MIPA, Universitas Negeri Yogyakarta	Diperiksa oleh :

Review of Chemistry Education Research

YOGYAKARTA STATE UNIVERSITY
FACULTY OF MATHEMATICS AND SCIENCE
DEPARTMENT OF CHEMISTRY EDUCATION/CHEMISTRY EDUCATION STUDY PROGRAM

Course Title	: Review of Chemistry Education Research	Lecturer	: Sukisman Purtadi, M.Pd
Code of Course	: MPK 6213	Study Program/Class/Semester: **Chemistry Education** (Gab A dan I) / 5	
Document Question	: Blueprint of Final Exam	Academic Year	: 2019/2020

No	CO	ELO	Question Indicator	Question Form	Number of Test Item	Test Item Weight (%)	Test Item Number
1	Students are able to propose chemistry education research topics without plagiarism (A10, D4, D5)	ELO-1 ELO – 4	Students can propose research themes supported by a mindmap for developing the research theme	uraian	1	20	1
2	Students are able to choose, select, and analyze journals according to topics held by both national and international journals related to chemistry education	ELO – 3 ELO – 4	Students are able to make a summary of journal ideas through a coding system	Uraian	1	20	2

	(C3, D5, E1)	ELO – 5					
3	Students are able to analyze journals and make journal review reports according to the selected chemistry education research topic (D3, D4, E1)	ELO – 4 ELO - 5	Students are able to develop essays from journal review results by including a minimum of 15 International Journal articles in the last 5 years, and other additional references	uraian	1	60	3

YOGYAKARTA STATE UNIVERSITY
FACULTY OF MATHEMATICS AND SCIENCE
DEPARTMENT OF CHEMISTRY EDUCATION/CHEMISTRY EDUCATION STUDY PROGRAM

Course Title	: Review of Chemistry Education Research	Lecturer	: Sukisman Purtadi, M.Pd
Code of Course	: MPK 6213	Study Program/Class/Semester	: **Chemistry Education** (Gab A dan I) / 5
Document	: **Marking Scheme**	Academic Year	: 2019/2020

No	QUESTION	Answer/Assessed Aspect	Score	
	Decide a research theme that interests you. Make an outline or mind-mapping that shows how your idea is developed (30%) and supported by references (20%)	Theme Novelty	3 = a novelty with updated journal	20% (score/12)
			2 = a novelty but discussed in some theses	
			1 = often discussed in theses	
		The number of main concepts in the mind map are correlated with the main theme	3 = number of main concept (6 <)	20% (score/12)
			2 = number of main concept 4 – 6	
			1 = number of main concept < 4	
		Mindmap Structure	3 = shows a simple to complex mindset	20% (score/12)
			2 = some structures are unnatural	
			1 = there is no clear path in the mind map	
		Reference	3 x (number of references in accordance with the provisions/15) Max = 3	20% (score/12)
	Summarizing each journal in a coding system that makes it easy for you to	Number of appropriate journal	3 x (number of references in accordance with the provisions/15)	20% (score/9)

	find ideas in the journal		Max = 3	
		Coding Appropriateness	3 = Accurate coding percentage is above 80%	20% (score/9)
			2 = Accurate coding percentage is 50 - 80%	
			1 = Accurate coding percentage is below 50%	
		Coding Uniqueness	3 = coding in accordance with the theme and other supporting concepts	20% (score/9)
			2 = accurate coding but not developed	
			1 = coding but not supporting the theme	
	Develop your outline or mind-mapping into a whole essay (50%). Show the references you used, consisting of at least 15 International Journal articles in the last 5 years (40%), and other additional references (10%)	Whole Essay	3 = The essay consists of opening, body, and closing	60% (score/15)
			2 = The essay does not consist of one of the components	
			1 = The essay only covers descriptions of terms	
		Essay Structure	3 = The essays are easy to follow; there is coherence between paragraphs; it uses citation properly	60% (score/15)
			2 = Coherent paragraph, proper and correct citation, but disorganized structure.	
			1 = essay contains more opinions than citations	
		Use of APA Style	3 = Appropriateness of APA style is more than 80%	60% (score/15)
			2 = Appropriateness of APA style is 50 - 80%	
			1 = Appropriateness of APA style is less than 50%	
		Number of Appropriate supporting journals	3 x (number of references in accordance with the provisions/15)	60% (score/15)

		Number of Appropriate supporting journals	Max = 3	
		Number of Additional References	3 = higher than 6	60% (score/15)
			2 = 4 – 6	
			1 = less than 4	
	TOTAL SCORE			

YOGYAKARTA STATE UNIVERSITY
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
THE 2019/2020 ACADEMIC YEAR
ODD SEMESTER TEST PAPER

Course Title	: Review of Research on Chemistry Education	Lecturer	: Sukisman Purtadi, M.Pd
Course Code	: MPK 6213	Test Date	: Thursday, January 9, 2020
Study Program/Class: Chemistry Education (A and I)		Time	: 13.00 – 15.00 WIB
Semester	: 5	Room of Testing	: D.07.3.01.09

Direction

1. There two parts of questions in this exam
2. Part A is an open-book exam to be completed during this exam.
3. Part B is a take-home exam to be submitted no later than three days after this exam.

Questions

Part A (40%)

Since more advanced communication media are used by researchers, including those in the field of Chemistry education and learning, we may develop and put our studies in between the previous studies. Select a theme according to your interest, and find fifteen articles published by international journals related to the selected theme.

1. Make a summary for each article using the coding system, so you can easily find the ideas of those articles.
2. Make an outline showing how your ideas are developed or supported by the references.

Part B (60%)

1. Develop your outline into a complete essay (50%). The references should be taken from at least fifteen international journal articles published in the last five years (40%) and other additional references (10%)

Sukisman Purtadi, M.Pd	the document is prohibited without written permission from the Faculty of Mathematics and Natural Sciences, Yogyakarta State University.	

Products of Chemical Technology

	YOGYAKARTA STATE UNIVERSITY FACULTY OF MATHEMATICS AND NATURAL SCIENCES DEPARTMENT OF CHEMISTRY EDUCATION/ CHEMISTRY EDUCATION STUDY PROGRAMME

Couse Title : Products of Chemical Technology	Lecturer : Dewi Yuanita Lestari, M.Sc
Code : MPK 6217	Study program/Class/Semester: Chemistry Education (A and I) / 5
Document paper : Blueprint of the Mid Semester exam	Academic Year : 2019/2020

No	CO	ELO	Item Indicator	Test Item Form	Number of Item	Item Weight (%)	Item No.
1	Being able to apply chemistry concepts in the manufacture of food products in the form of black garlic	ELO-3	Students are able to apply chemistry concepts in the manufacture of food products in the form of black garlic	Essay	1	10%	1
2	Being able to adapt skills in making food products in the form of black garlic, *nata* (coconut gel), and Virgin Coconut Oil (VCO)	ELO – 4	Students are able to understand the concept for manufacturing *nata* and VCO	Essay	4	75%	2,3,5, 6

3	Having critical thinking skills to process food products such as *nata* and VCO into other products	ELO - 5	Students understand product quality testing	Essay	1	15%	4

YOGYAKARTA STATE UNIVERSITY
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
DEPARTMENT OF CHEMISTRY EDUCATION/ CHEMISTRY EDUCATION STUDY PROGRAM

Course Title	: Products of Chemical Technology	Lecturer	: Dewi Yuanita Lestari, M.Sc
Code	: MPK 6217	Study program/Class/Semester: Pend Kimia (A and I) / 5	
Document	: **Marking Scheme**	Academic Year	: 2019/2020

No	Exam Item	Response/Aspect Assessed	Score	
1	Explain the chemical processes that occur in making black garlic!	With the thermal processing, some chemical components in fresh raw garlic will turn into Amadori or Heyns which are important in the Maillard reaction	10	
2	Explain the effect of temperature on the production of black garlic! What is the ideal temperature in manufacturing black garlic?	The higher the temperature, the shorter the aging period (the reaction rate is greater). However, too high temperatures might produce undesired products that are bitter and acidic in taste and the garlic produced is burnt. At low temperatures, the reaction rate is slow, and the garlic color produced is not homogeneous. The ideal temperature is 70-80 degrees Celsius, and at that temperature, the desired Black Garlic will be obtained with good taste and homogeneous black color.	15	

3	Mention and explain the 5 methods that can be used in making VCO!	1. Salting Salting method is carried out for cracking the coconut milk emulsion system by regulating the solubility of proteins in the salt. Protein contained in the coconut milk will dissolve with the addition of salt (salting in), but under certain conditions, this solubility will decrease along with the increase in salt concentration followed by the binding of water molecules by the salt, which then also occurs the separation between the liquid oil with water (salting out). The method of making coconut oil by salting is done by adding a salt solution to coconut milk cream that has been obtained from the initial stage of oil production. 2. Fermentation VCO extraction is done by involving microbes that produce enzymes that can break protein bonds with oil in the coconut milk emulsion 3. Centrifugation Spinning shall cause the coconut milk emulsion to crack and at this time, air will act as a coagulant to bind proteins from oil and water. 4. Acidification Emulsion cracking method by regulating acidity level. Proteins will be denatured because zwitterions are formed under isoelectric conditions that occur under certain pH values 5. Inducement Producing VCO by using the ready-to-use VCO to induce the creation of new VCO	20	

4	Mention and explain the 5 product quality tests for VCO!	1. Moisture content Moisture content or water content is the amount (in %) of material that evaporates at a certain temperature and time of heating. 2. Acid number Acid number is expressed as the number of milligrams of KOH needed to neutralize free fatty acids found in one gram of oil or fat 3. Lathering coefficient Lathering coefficient can be used to determine the size of oil and fat molecules roughly. 4. Iodine value Iodic value explains the unsaturation of fatty acids making up oil and fat. 5. Peroxide value Peroxide value is expressed in milliequivalents of peroxide in every 1000g of oil or fat.	20	
5	Mention and explain 5 factors that contribute to the manufacture of *nata*!	**Acidity level** *Nata* is only formed at intervals of pH of 3.5 - 7.5. At pH 3.5 and pH 7.5 thin and soft *nata* is produced. The optimum acidity level to produce *nata* is pH 5.0. Below the pH 3.0, no *nata* is formed **Temperature** The optimum temperature for fermentation is 28 – 31^{o}C or at room temperature. At this temperature thick *nata* is well produced compared to that produced at other temperatures. At a temperature of 20^{o}C, the growth of Acetobacter Xylinum is inhibited, resulting in thin and soft *nata*. At 15^{o}C it turns out that Acetobacter Xylinum cannot grow. While at 35^{o}C *nata* is also not formed, although there is	20	

		still bacterial growth. **Sugar as a source of carbon** *Nata* can basically be produced from fermented liquids containing dextrose, galactose, sucrose, lactose, or maltose as sources of carbon. In maltose, lactose, and galactose fermentation liquids thin and soft *nata* are produced. Thick and firm *nata* is produced in dextrose and sucrose fermentation liquids. With sucrose as a carbon source, a concentration of 10% is the optimum concentration. **Source of Nitrogen** Nitrogen can be produced by Ammonium Sulfate, Ammonium Phosphate, and Bactopeptone. The best results are produced from Ammonium Phosphate, followed by Ammonium Sulfate. The fermented liquid that uses yeast extracts and peptones as sources of Nitrogen produces thicker and firmer *nata*. **Accuracy of Treatment** To get high-quality *nata*, the treatment of tools and materials must be aseptic to avoid contamination. Microbes that often act as contaminants or nests in *nata* production are fungi, yeast, and bacteria. These contaminants include Penicillium, Aspergillus, and stick-shaped bacteria. In its growth, microbial contaminants have almost the same growth requirements as inoculum bacteria. contamination is one problem often found in making *nata*, so prevention is needed. If it occurs, the growth of inoculum bacteria will be hampered, due to competition between bacteria forming *nata* with contaminating microbes.		

6	In a study of *nata de coco* production, the materials used include Ammonium sulfate, dextrose, and acetic acid. Explain the functions of these three materials!	Ammonium sulfate: source of nitrogen Dextrose: source of carbon Acetic acid: regulating acidity	15	
TOTAL SCORE				

UNIVERSITAS NEGERI YOGYAKARTA
FACULTY OF MATHEMATICS AND SCIENCES
CHEMISTRY EDUCATION DEPARTMENT
MIDTERM 2018/2019

Course Name : Products of Chemical Technology	Lecturer : Dewi Yuanita, MSc.& Marfuatun, M.Si
Course Code : MPK 6217	Day/Date : Jumat / 28 – 03 – 2019
Major : Chemistry Education	Time : 09.20-10.50 WIB
Semester : 4	Place : D07.2.01.10

DIRECTIONS: Fill in the balnk into a correct answer.

1. Explain the chemical processes that occur in making black garlic!

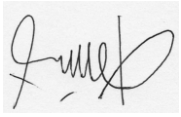
2. Explain the effect of temperature on the production of black garlic! What is the ideal temperature in manufacturing black garlic?

3. Mention and explain the 5 methods that can be used in making VCO!

4. Mention and explain the 5 product quality tests for VCO!

5. Mention and explain 5 factors that contribute to the manufacture of *nata*!

6. In a study of *nata de coco* production, the materials used include Ammonium sulfate, dextrose, and acetic acid. Explain the functions of these three materials!

dibuat oleh:  Dewi Yuanita, M.Sc.		Diperiksa oleh:

Chemistry of Natural Compounds

YOGYAKARTA STATE UNIVERSITY
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
CHEMISTRY EDUCATION DEPARTMENT/CHEMISTRY EDUCATION STUDY PROGRAM

Course Title	: Chemistry of Natural Compounds	Lecturer	: Prof. Dr. Sri Atun
Course Code	: KMA 6207	Study Program/Class/ Smt	: Chemistry Education (A and I)/6
Document	: Final Exam Item Blueprint	Academic Year	: 2019/2020

No	CO	ELO	Item Indicator	Question	Number of Item	Weight (%)	Item Number
1	Students are able to master theoretical concepts, analyze secondary metabolite compounds based on their skeletal structures, and find the biogenetic relationships among compounds in one family.	ELO –1 ELO –3 ELO – 4	Students are able to master theoretical concepts, analyze secondary metabolite compounds based on their skeletal structures, and find the biogenetic relationships among compounds in one family.	essay	1	60	1
2	Students analyze the results of research on secondary metabolites from articles published in the latest journal.	ELO – 3 ELO – 4	Students are able to analyze the results of research on secondary metabolites from articles published in the latest journal.	essay	1	40	2

		ELO – 6					

YOGYAKARTA STATE UNIVERSITY
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
CHEMISTRY EDUCATION DEPARTMENT/CHEMISTRY EDUCATION STUDY PROGRAM

Course Title	: Chemistry of Natural Compounds	Lecturer	: Prof. Dr. Sri Atun
Course Code	: KMA 6207	Study Program/Class/ Smt: Chemistry Education (6^{th} Semester)	
Document	: **Marking Scheme**	Academic Year	: 2019/2020

No	Question	Answer/Assessed Aspect	Score	
1	Look at the secondary metabolite compound structure below then answer the following questions: a. Group the compounds according to the natural compound classification b. Find the compounds related to each other, provide sufficient explanation on them, and mention the chemical reactions causing the changes in compounds from one structure	The accuracy of classes or groups of the natural compounds; finding the correlation among compound structures, and writing the biogenetic relationship reaction from several natural compound classes.	The accuracy of natural compound classifications	20% (score/60)
			The accuracy in determining the natural compounds having a biogenetic relationship	20% (score/60)
			The accuracy in writing biogenetic reactions	20% (score/60)
			Basic principles of ^{13}C NMR spectroscopy and its use	20% (score/40)
			Basic principles of mass spectroscopy and its use	20% (score/40)

	to the other. c. Mention the biogenetic reactions of each compound group			
2	Based on the research article you chose, answer the questions below: a. Analyse the secondary compound class in the research article b. Find the relationships among the compound structures that you have found.	The accuracy of making classifications of secondary metabolite compounds found in research articles and the accuracy in determining the biogenetic relationships among compounds	The accuracy of making classifications of the secondary metabolite compounds found in research	50% (score/40)
			The accuracy of determining the biogenetic relationships among compounds	50% (score/40)
TOTAL SCORE				100

UNIVERSITAS NEGERI YOGYAKARTA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
CHEMISTRY EDUCATION DEPARTMENT, CHEMISTRY EDUCATION STUDY PROGRAMME
MID-TERM EXAM OF EVEN TERM OF 2018/2019 ACADEMIC YEAR

Course Name	Chemistry of Natural Compounds	Lecturer	Prof. Dr. Sri Atun
Course Code	KMA 6207	Day/ Date	Monday, October of 21st 2019
Class	Chmistry Education/ A and I	Time	11.10-12.50 WIB
Semester	6	Place	D07.3.01.09

1. Look at the secondary metabolite compound structure below then answer the following questions:
   a. Group the compounds according to the natural compound classification
   b. Find the compounds related to each other, provide sufficient explanation on them, and mention the chemical reactions causing the changes in compounds from one structure to the other.
   c. Mention the biogenetic reactions of each compound group
2. Based on the research article you chose, answer the questions below:
   a. Analyse the secondary compound class in the research article
   b. Find the relationships among the compound structures that you have found.

Made by : Prof. Dr. Sri Atun		Checked by : Dr. Retno Arianingrum, M.Si.

Community Service

COMMUNITY SERVICE ASSESSMENT RUBRIC

RESEARCH INSTITUTIONS AND COMMUNITY SERVICE			
UNIVERSITAS NEGERI YOGYAKARTA			
MEASUREMENT OF COSTUMER SATISFACTION IN COMMUNITY SERVICE			
by FIGURE COMMUNITY/TARGET COMMUNITY			
No. FRM/LPPM-KKN/522	Revision : 00	Date November 3rd 2017	Page 1 from 1

Introduction:

The following instrument is a tool to capture customer satisfaction in Community Service activities which held in the community. Put a check mark (√) in the score column in accordance with your experience relating to the implementation of Community Service Program in the community. The higher the score you choose, it means the better your assessment of Community Service from LPPM UNY. Thank you for your cooperation.

No	STATEMENT	SCORE			
		1	2	3	4
1	Suitability of Community Service activities with community needs				
2	Student collaboration with the community				
3	Emerging aspects of community empowerment				
4	Increasing community motivation to the development of community				
5	The attitude/behavior of students in the community				
6	LPPM communication/coordination with the Local/Regional Government				
7	Conformity of implementation time with community activities				

8	Suitability of student provision with Community Service location				
9	Ability to build independence/self-sufficiency in community				
10	Community Service results can be utilized by the community				

Comments/suggestions/inputs for the implementation of community service:

Underwriter,

Note:

4 = Very Good 2 = Fair

3 = Good 1 = Poor ( )

Final Project

FINAL PROJECT ASSESSMENT RUBRIC

Scoring Format of Thesis Final Task

No	Component	Credit (C)	Score (0-100) (C)	Credit x Score (C x S)
A.	**Document Scoring**			
1	Problem selection and formulation	2		
2	Relevance of theoretical framework/study and hypothesis and/or research problem, and the reference updates	3		
3	Methodology accuracy (sampling technique, data collection, analysis, etc.)	3		
4	Depth of discussion and logical description/elaboration	3		
5	Language and writing structure	1		
B.	**Oral Scoring**			
1	The ability to state the opinion logically	2		
2	The accuracy in asking the test questions	2		
3	The subject task	2		
4	Manners and ethic	2		
Total				
Average				

GUIDELINES FOR USING THE ASSESSMENT FORMAT BOOK

The Assessment Format Book was prepared to help the implementation of the assessment of Supervised Teaching Practice (STP) activities of Yogyakarta State University in Institutions. Several formats in the book may be used to assess the STP program, as a document to determine the achievement, process, and work results of the student interns.

The following is the provision for using the assessment formats.

No.	Code	Purpose	Assessor
1.	F12	For assessing the STP Program Plan	Supervisor & Instructor
2.	F13	For assessing the Program Implementation	Supervisor & Instructor
3.	F14	For assessing the Personality Competencies	Supervisor & Instructor
4.	F15	For assessing the Social Competencies	Supervisor & Instructor
5.	F16	For assessing the STP Report	Supervisor
6.	F17	For recording the STP grade	Supervisor and Institution STP Coordinator

The procedure of the assessment mechanism is as follows.

1. The book shall be given to the Instructor to assess the Program Plan, Program Implementation, Personality Competencies, and Social Competencies.
2. The Assessment Book that has been filled out by Instructor shall be given to the STP Supervisor.
3. Once receiving the Assessment Book from the Instructor, the STP Supervisor shall fill it with the score for the STP Report, and record the student's STP scores.
4. The STP Supervisor shall give the completed Assessment Book to the STP Team at the Yogyakarta State University's Center for Supervised Teaching Practice and Internship Programs.

Yogyakarta, July 2017

Supervised Teaching Practice Team
Yogyakarta State University

YOGYAKARTA STATE UNIVERSITY
Center for Supervised Teaching Practice and Internship Programs
Address: Karangmalang, Yogyakarta 55281. Phone (0274) 548204, (0274) 586168 ext.230.308

F12

For Lecturer and Instructor of Supervised Teaching Practice (STP)

ASSESSMENT SHEET FOR SUPERVISED TEACHING PRACTICE PROGRAM PLAN IN INSTITUTIONS

No.	Assessed Component	Maximum Score	Real Score
1.	Rationale of the Program Plan	20	
2.	Feasibility of the Program Plan	20	
3.	Integration with the Institution's Program	40	
4.	Evaluation Design and Follow-up Program	20	
Total Score of STP Program Plan		100	

Yogyakarta, ...

Supervisor/ Institution Supervisor

_____

NIP.

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F13

For Lecturer and Instructor of Supervised Teaching Practice (STP)

FORMAT OF SCORE RECORDING IN INSTITUTIONS

No.	Assessed Component	Maximum Score	Real Score
1.	Program Preparation	10	
2.	Program Implementation	30	
3.	Program Evaluation	20	
4.	Result	30	
5.	Follow-up Program	10	
STP Total Score		100	

Comment/Suggestion from Supervisor/Instructor

……,……

STP Supervisor

Institution Supervisor/Instructor

_____

NIP.

_____

NIP.

SCORE CONVERSION

SCORE	GRADE
86 - 100	A
81 -85	A-
76 -80	B+
71 -75	B
66 - 70	B-
61 - 65	C+
56 - 60	C
41 - 55	D
0 - 40	E

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F14

For Supervisor and Instructor

PERSONALITY COMPETENCE SUPERVISION SHEET

Criteria for assessing Social Competence as Prospective Educational Staff are as follows:

4=excellent, 3=very good, 2=good, 1=fair

No.	Component/Aspect	Assessment Period	
		Beginning	End
1.	Hospitality and Friendliness		
2.	Sense of Crisis and Creativity		
3.	Composure and Confidence		
4.	Politeness and eloquence		
5.	Friendliness in Communication		
6.	Maturity		
7.	Simplicity, orderliness, and modesty		
Final Score= $\frac{\text{Obtained Score}}{\text{Total Score}} \times 100$			
Final Score of Personality Competence (Average of Initial and Final Scores)			

No.	Comment from Supervisor
Initial Score	
Final Score	

STP Supervisor

……,……
Institution Supervisor/Instructor

_____ **NIP.**

_____ **NIP.**

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Center for Supervised Teaching Practice and Internship Programs
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F15

For Supervisor and Instructor

SOCIAL COMPETENCE SUPERVISION SHEET

The criteria to assess the Practical Social Competence as the Prospective Educational Personnel are as follow: 4 = very good, 3= good, 2 = fair, 1 = poor.

NO	Component/ Aspect	Assessment Period	
		Beginning	End
1	Sympathy and Empathy to students/ colleague		
2	Obedience to decision made		
3	Cooperation in groups/organizations		
4	Cooperation with students		
5	Orderliness in workplace		
6	Respect/Appreciation to other people		
	Final Score= $\frac{\text{Obtained Score}}{\text{Total Score}} \times 100$		

Period	Comments/ Note: Unit Supervisor
Beginning	
End	

.....,.....

Supervisor

Unit Supervisor

_____

NIP.

_____

NIP.

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Address: Karangmalang, Yogyakarta 55281. Phone (0274) 548204, (0274) 586168 ext.230.308

F16
For Supervisor

FORMAT OF SUPERVISED TEACHING PRACTICE REPORT ASSESSMENT IN INSTITUTION

No	Assessed Report Component	Max Score	Score
1	Content	40	
2	Significance of conclusions and suggestions	30	
3	Systematization	30	

Yogyakarta,.....
Supervisor

.....
NIP.

YOGYAKARTA STATE UNIVERSITY
Center for Supervised Teaching Practice and Internship Programs
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F17

For Supervisor and Institution SPT Coordinator

ASSESSMENT SHEET FOR INTERNSHIP PROGRAM IN INSTITUTIONS

Program	Assessed Component	Source	Real Score (0-100)	Weight	Final Score (Weight x Real Score)
Supervised Teaching Practice	Program Plan	F12		2	
	Program Implementation	F13		4	
	Personality Competence	F14		2	
	Social Competence	F15		1	
	STP Report	F16		1	
STP Total Score					
Final Score=$N_{STP}=\frac{STP\ Total\ Score}{10}$					

Yogyakarta,……

Supervisor

Institution STP Coordinator

_____ NIP.

_____ NIP.

Head of Institution,

_____ NIP.