	BOGOR AGRICULTURAL UNIVERSITY FACULTY OF MATHEMATICS AND SCIENCE DEPARTMENT OF CHEMISTRY	Code : POB/KIM-PP/05/FRM-02-00
	SOP OF VERIFICATION EVALUATION RESULTS OF LEARNING UNDERGRADUATE PROGRAM	Effective date : 1 September 2016
	EVALUATION FORM OF RESULTS LEARNING	Revision Number : 00

STRUCTURED TASK/MIDDLE SEMESTER EXAM


Subjects : Electroanalytic and Spectrometry Practices/KIM 337 **Name** : _____
SEMESTER / Academic year : Odd / 2018-2019 **NRP** : _____
Date/Date of Test : Tuesday/ 30 October 2018 **Parallel class:** _____
Time : 80 Minutes

**STUDENTS WHO INVOLVED IN CHEATING DURING THE EXAM,
STATED THE INDISCIPLINER AND REPRESENTED NOT PASS**

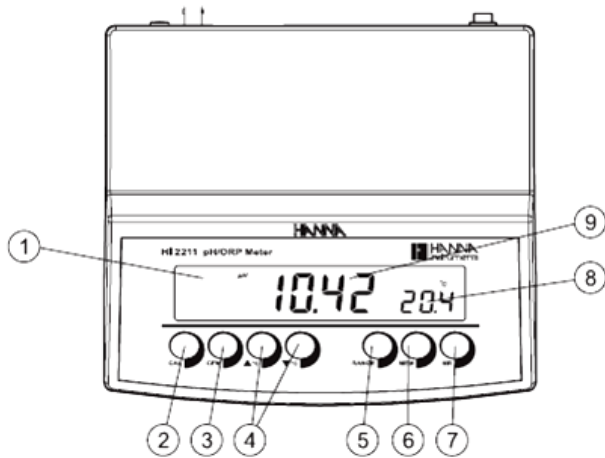
Choose the right answer by giving a cross (X), if there is no one matching then cross letter D and fill your answer D choice

- Electrical quantities should not be on the glass membrane of the pH electrode, *except*.....
A. Current B. Conductance C. Resistance D. Potential
- The comparison electrode at the pH meter requires the following solution
- The comparison electrode will produce a potential with a value of 0.00 V which is.....
- The appearance of stress on the surface of the membrane even with the same concentration is called ...
- The electrode capacity in response to changes in the type and amount of analate is called....
- The Na⁺ selective electrode has a selectivity coefficient of 0.01 against H⁺, that means.....
- The silver chloride electrode potential will always be retained at a constant value due to ion activity ...
- The asymmetry potential of the membrane electrode is caused by the following ...
- Glass membranes containing the following compounds produce selectivity to Na⁺ is.....
- The pH meter calibration point at pH 4 or 10 which will correct.....
- Measurement of solution potential's must be carried out at room temperature, because....
- Option buffer with a pH value of 4.01; 7.00; and 10.01 is a characteristic of the buffer sourced from.....

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13. Part of HI 2211 pH meter that shows temperature and confirmation, which are.....

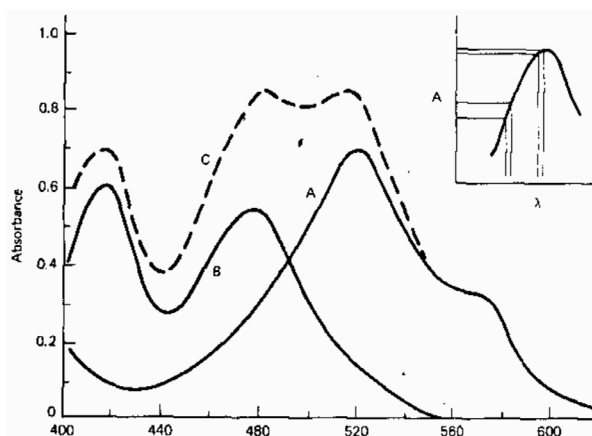


- A. 8 & 2 B. 8 & 7 C. 8 & 4 D. 8 & 3
14. Interaction of electromagnetic radiation with materials used as the basis for measuring UV-VIS spectrophotometry methods, **except**...
- A. Light Diffraction
B. Light Transmission
C. Light Reflection
D. Light Absorption
15. The pairs of complementary colors and the following color observation are....
- A. Orange - yellow
B. Green - red
C. Yellow - blue
D. Purple - blue
16. The deviation of Lambert-Beers can occur for the following reasons, **except**...
- A. Chemical processes in analytes such as ionization and complexation
B. Radiation source is not monochromatic
C. The absence of a spectrum that is typical of pure substances
D. Exhaustion of equipment that continues to occur
17. Following are the characteristics of tungsten filament lamps, **except** ...
- A. Consists of thin tungsten wire coils
B. When the lamp is heated at 2900 K, λ max at 500-100 nm
C. Tungsten lamp filaments include the UV-Vis area
D. Filament can also produce IR radiation
18. Following are the characteristics of the wavelength selector, **except** ...
- A. The type of monochromator in spectrophotometry is lattice and prism
B. The grooves on the lattice monochromator are 2000-6000/mm if want to get the second order λ max
C. the Ebert mount lattice monochromator is a type of monochromator that utilizes light diffraction
D. Prism monochromator utilizes refraction properties from light
19. The following is the right statement regarding phototubes, **except** ...
- A. Each encode is coated with BeO, CsSb, GaP compounds to multiply the electrons that come
B. Each dinode focuses each electron to be emitted towards the next node which has a very positive potential
C. Multiplication of electrons in each dinode can collect 107 electrons
D. The photo tube will emit a negative charge towards the anode

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20. Here is the difference between a single beam spectrophotometer and a double beam, **except...**
- Both a single beam spectrophotometer and a double beam are obtained by a detector signal producing A or % T record as λ function
 - In a single beam spectrophotometer the reagent blanks are placed into the cell compartment while in the double beam spectrophotometer there are 2 sample compartments
 - Light regulators are set to 100% T or 0A readings on a single beam spectrophotometer while simple electronic comparisons allow direct readings of absorbance on multiple beam spectrophotometers
 - Readings that occur in multiple beam spectrophotometers are carried out simultaneously for samples and blanks
21. Look at the spectrum pattern below, A is the analyte absorption spectrum, B is a diverse substance, and C is a mixture in the example



The statement is right below, **except....**

- The measurement of absorbance of substance A in example C cannot be carried out below 560 nm without interference from substance B
 - at 520 nm, absorbance of substance A is only 0.7, but the measured value reaches 0.84, there is a positive error of 20%
 - 5 standard curves are needed to determine each concentration A and B in the sample mixture
 - Measurement of mixture must be carried out at each maximum wavelength
22. Following specifications that the difference between SPECTRONIC 20 and 20D + are...
- The width of the spectrum gap is 20 nm
 - Wavelength range ranges from 340-950 nm
 - Display / display of measurement results
 - Photometric accuracy $\pm 2\%$
23. Components on the SPECTRONIC 20 D + that are used to select the transmittance / absorbance mode is ...
- Digital reading
 - Print button
 - DECREASE / INCREASE button
 - Indicator mode
24. The pairs of analytes and blanks used in the SPECTRONIC 20 D + usage competency test are ...
- KMnO_4 and H_2SO_4
 - KMnO_4 and HCl
 - KMnO_4 and HNO_3
 - KMnO_4 and H_3PO_4
25. Spectrophotometric determination techniques for compounds that require complexes are...
- Direct determination technique
 - Techniques for determining inorganic compounds
 - Techniques for determining organic compounds
 - Multicomponent determination techniques

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Please explain briefly but precisely the question below

1. Describe the comparative electrode Ag / AgCl (Silver-silver Chloride Electrode, SSCE) based on the following points

a. Scheme of Electrode

.....

.....

.....

b. The ion used to retain potential is always constant.....

c. The Advantage of SSCE comparison electrode

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2. Explain the calibration steps of the 2-point pH meter for measuring compounds that are of a nature (pH Meter HANNA HI 2211)

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3. Please explain the simultaneous multicomponent determination techniques on spectrophotometry (e.g. mixtures solution between A and B)

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4. Describe the working procedures that you performed during the SPECTRONIC 20 D + tool competency test

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