

# Sukanta Mahavidyalaya

1<sup>st</sup> Semester Practical Examination, 2022- March

Subject: Chemistry (CC1)

Time: 2 Hrs

F.M. 20.

A. Answer the following questions (Any three)

[3×5 = 15]

1. What is acid base indicator? Give one example with their colours and chemical structure in acid and alkaline medium. Why no indicator is found in titration of weak acid verses weak base? 1+2 +2
2. Why two different indicators are used in Estimation of carbonate and hydroxide present together in mixture. Explain it with chemical equation. 3 +2
3. What are Normal Solution and Molar Solution? What is the relation between them? Calculate how much weight is taken for preparation of 1 liter of (N/20)  $\text{KMnO}_4$  solution. 2+1+2
4. What is Primary standard and secondary standard solution? Why  $\text{KMnO}_4$  solution is Secondary Standard solution? Which Solution is used for Standardization of  $\text{KMnO}_4$  solution? 2+2 +1
5. How estimation of Fe(II) in a solution using standardized  $\text{KMnO}_4$  solution. Explain it Redox equation. 3+2

B. Laboratory Note Book.

3

C. Performance in class.

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# Sukanta Mahavidyalaya

Practical Assessment  
Subject:-CC2 practical  
Physical Chemistry  
2022

Full Marks: 15

Time: 2 Hour

Answer any three questions

3×5 = 15

- 1) (i) Define surface tension and surface energy. (ii) Why stalagmometer should be perfectly vertical during measurement of surface tension. (iii) Equal volume of an organic liquid and water gave 65 and 30 number of drops respectively. The densities of water and organic liquid are 0.996 and 0.80 g.cm<sup>-3</sup> and the surface tension of water is  $7.2 \times 10^{-2}$  N.m<sup>-1</sup>. Calculate the surface tension of the organic liquid. (2 + 1+ 2)
- 2) (i) Explain why a liquid drop is spherical in shape. (ii) How the surface tension of a liquid changes with temperature. (iii) Define viscosity coefficient of a liquid and find its dimension. (2 + 1 + 2)
- 3) (i) Write down the working principle of Ostwald's viscometer. (ii) How viscosity coefficient vary with temperature in case of gas and liquid. (3 + 2)
- 4) (i) What are the unit of surface tension and surface energy? (ii) Why detergent is used during washing the clothes? (iii) The coefficient of viscosity of two liquids at 298 K are  $1.408 \times 10^{-3}$  kg.m<sup>-1</sup>.s<sup>-1</sup> and  $1.594 \times 10^{-3}$  kg.m<sup>-1</sup>.s<sup>-1</sup> and their densities at the same temperature are  $8.07 \times 10^2$  kg m<sup>-3</sup> and  $10.17 \times 10^2$  kg m<sup>-3</sup> respectively. If the time of flow in an Ostwald viscometer for the first liquid is 100 seconds, calculate the time of flow for the second liquid. (1 + 1 + 3)
- 5) (i) Write down the working principle of Stalagmometer. (ii) A beaker contain 50 mL of 0.2 (N) HCl solution. Now, if you added 30 mL 0.1 (N) NaOH, what will be the pH of the solution? (3 + 2)

# Sukanta Mahavidyalaya

1<sup>st</sup> Semester Practical Examination, 2022

Subject: Chemistry (DSC/GE)

Time: 2 Hrs.

F.M. 20

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A. Answer **any three** from the following:

1. What is primary standard solution? What is secondary standard solution? Give example of both primary and secondary standard solution. [1.5+1.5+2]
  2. What is volumetric analysis? What is the principle of Volumetric Analysis? [2.5+2.5]
  3. In the estimation of oxalic acid by titrating it with  $\text{KMnO}_4$  solution why standard Ferrous ammonium sulphate (FAS) is used? Calculate the equivalent weight of oxalic acid. Which indicator is used in the permanganate titration? [3+1+1]
  4. Describe how Lassaigne's test is performed. Why it is performed before the detection of special elements present in organic compound? [3+2]
  5. How Nitroprusside test for detection of 'S' is performed? How will you detect the presence of 'Cl' in an organic compound? Which complex compound is formed during Prussian Blue test? [2+2+1]
- B. Laboratory Note Book. [5]

**Sukanta Mahavidyalaya**  
3rd, Semester Practical Examination, 2022  
Subject:- CC5(Inorganic Chemistry)

Full Marks=20

Time Allowed= 2hrs

- 1) Laboratory Note Book. (5)
- 2) Answer any **three** questions. (5x3=15)
- A. i) What is Primary standard solution?  
ii) Why is  $\text{KMnO}_4$  not used as a primary Standard? How does its equivalent weight change with medium? (1+2+2=5)
- B. i) What is the formula of Mohr's Salt? Is it a double or Complex Salt?  
ii) Why in permanganometry, no indicator is used? (2+1+2=5)
- C. i) What is Redox indicator?  
ii) How does diphenylamine act as redox indicator. Write down its structure. (2+2+1=5)
- D. i) Why, Starch Should be added towards the end point?  
ii) Why Sodium thiosulphate can not be used as primary standard? (2+3=5)
- E. i) What do you mean by iodometry? How does it differ from iodimetry?  
ii) What are the main sources of error in titrations involving iodine?  
How Can these errors be minimised? (2+3=5)

# Sukanta Mahavidyalaya

3rd Semester practical Examination, 2022

Subject: Organic Chemistry

Time: 2 Hrs Paper : CC6F.M20

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1. Answer the following questions ( Any three) 3×5=15

a) i) Give the confirmative test for phenolic -OH group ?[3+2]

ii) Write down the reaction involve in it?

b) i) How we convert m- Dinitrobenzene to m- Nitroaniline?[2+3]

ii) Write down the requirements and procedure of Selective Reduction ?

c) i) Write down the esterification test and give it Observation and Inference? [3+2]

ii) Write down the reaction of Esterification test?

d) i) Write down the 2,4- Dinitrophenyl Hydrazine Test and give it Observation and Inference?

ii) Write down the reaction involve in 2,4- DNP test ?[3+2]

e) i) How we convert aniline to Benzanilide ?[2+3]

ii) Write down the requirements and procedure of Benzoylation ?

2) Laboratory Note Book.5

# Sukanta Mahavidyalaya

Practical Assessment  
Subject:-CC7 practical  
Physical Chemistry  
2022

Full Marks: 15

Time: 2 Hour

Answer any three questions

$3 \times 5 = 15$

- 1) (i) Distinguish between absorption and adsorption. (ii) Write down the basic principle of adsorption of acetic acid on charcoal. (2 + 3)
- 2) (i) Is adsorption exothermic or endothermic process? Explain it with thermodynamics equation. (ii) Draw a qualitative phase diagram of phenol-water system and write down number of phase and degrees of freedom in different areas of the diagram.( 2 + 3)
- 3) (i) Write down the procedure to determine the critical solution temperature of phenol-water system.(iv) What is the order and molecularity of a reaction? (3+ 2)
- 4) (i) Write down the working principle for the experiment kinetic of acid catalyzed hydrolysis of methyl acetate. (ii) Although three species involved in this reaction (ester, acid and water), why the order of the reaction is one? (iii) What happened to the rate of reaction if you increase temperature? (3 + 1 + 1)
- 5) (i) What happened if you not used acid in hydrolysis of methyl acetate? (ii) Why ice cold water is required in this experiment? (iii) Why some portion of sample required to heat at higher temperature? (iv) Write down an another way of hydrolysis of methyl acetate. (v) For a reaction rate is found to be independent of concentration. Predicts the order of reaction. (1 + 1 + 1 + 1 + 1)

# SukantaMahavidyalaya

3rd Semester Practical Examination, 2022

Subject: Green Chemistry

Time: 2 Hrs Paper: SEC 1 ( Hons/Pass) F.M. 20

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1) Answer the following questions ( **Any three**): 3×5=15

a) i) Convert salicylic acid to aspirin?[2+3]

ii) Write down the chemicals required and procedure of the preparation of aspirin?

b) i) Convert salicylic acid to methyl salicylate?[2+3]

ii) Write down the chemicals required and procedure of the preparation of methyl salicylate?

c) i) What is antacid and give its use?[2+3]

ii) Write down the chemicals required and procedure of the preparation of antacid?

d) i) Write the use of aspirin and methyl salicylate?[2.5+2.5]

ii) Write the use of paracetamol and chloroquine?

e) i) What is Fermentation? [2+3]

ii) Write the Fermentation of Vitamin C?

2) Laboratory Note Book.5

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3<sup>rd</sup> Semester Practical Examination, 2022

Subject: Chemistry (DSC/GE)

Time: 2 Hrs.

F. M. 20

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- A. Answer any three of the following:
1. Why Lassaigne's test is performed before the detection of special elements in qualitative analysis of organic compound? Explain with suitable reactions involved. [2+3]
  2. Which test is performed for the detection of  $-NH_2$  group in an organic compound? How the test is performed? Give the reactions involved. [1+3+1]
  3. Which derivative is to be prepared for an organic compound containing an aldehyde group? Describe the process involved. [1+4]
  4. Draw and describe the nature of the curve obtained from conductometric titration of strong acid vs. Strong base. [2+3]
  5. What are the advantages of potentiometric titration? Why KCl is used in the salt-bridge instead of NaCl? [3+2]
- B. Laboratory Note Book. [5]



# SukantaMahavidyalaya

5th semester practical examination ,2022

Sub : Organic chemistry

Time : 2Hrs

Paper : CC11F.M. 20

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1. Answer the following questions (Any three) 3×5 = 15
- a) i) Write down the principal of Estimation of glycine by Sorensens Formalin Method?
- ii) Write down the Chemicals required and Procedure of this Method? 3+2
- b) i) Write down the principal of Estimation of Saponification Value of Oil ?3+2
- ii) What is the Chemicals required and Procedure of this Method ?
- c) i) what is amino acid and define the isoelectric point of an amino acid?2+3
- ii) Write down the principal of estimation of proteins by Lowry method?
- d) i) What does salivary amylase contain and write the other name of salivary amylase?
- ii) write down the principal of the action of salivary amylase on starch at optimum condition?2+3
- e) i) what is iodine number of an oil? 2+3
- ii) Write the Chemicals require and Procedure of the Determination of iodine number of an oil?
2. Laboratory Note Book.5



# Sukanta Mahavidyalaya

Practical Assessment

Subject:-CC12 practical

Physical Chemistry

2022

Full Marks: 15

Time: 2 Hour

Answer any three questions

$3 \times 5 = 15$

- 1) (i) State the Lambert's and Beer law. (ii) Write down the combine equation of these two laws. (iii) Define Molar Extinction co-efficient of a substance. (iv) What kind of instrument are used to measure the absorption of solute in solution? (2 + 1 + 1 + 1)
- 2) (i) If you measure Molar Extinction co-efficient of a compound in two different wavelengths or two different kind of solvent-whether the Molar Extinction co-efficient will be same? (ii) A compound X has concentration  $2 \times 10^{-6}$  (M) in water. If a 400 nm wavelength of light passes through 1 cm thickness cuvette containing this solution, 25 % of light transmitted. What is the value of Molar Extinction co-efficient? If the thickness of the cuvette is 4 cm, what percentage of light transmits through the cuvette? ( 2 + 3)
- 3) (i) A spectrophotometer cell when filled with liquid A transmits 50 % and when filled with another liquid B only 25 % of the incident light of a certain wavelength. What would be the optical density at this wavelength when the same cell is filled with a mixture of equal volumes of two liquids? (ii) You have a solution which is the mixture of two compounds  $\text{KMnO}_4$  and  $\text{K}_2\text{Cr}_2\text{O}_7$ . Molar extinction coefficients of two compounds are given at two different wavelengths. You have a colorimeter which is able to measure optical density at those two wavelengths. Whether it is possible to determine concentration of two compounds in mixture. (2 + 3)
- 4) (i) Why aqueous solution of  $\text{K}_2\text{Cr}_2\text{O}_7$  does not obey Lambert's and Beer law? (ii) Why Zn-containing compounds has low molar extinction co-efficient than Cu-containing compound? (iii) Why d-d transitions have less

intensity? (2 + 2 + 1)

- 5) (i) How could you determine the  $\lambda_{\max}$  of  $\text{KMnO}_4$  solution in spectrophotometer-describe the procedure? (ii) What kind of information one can obtain from spectrophotometer instrument, if absorption measured in this instrument? (3 + 2 )

# Sukanta Mahavidyalaya

5th Semester Practical Examination, 2022

Subject: Chemistry (DSE 1)

Time: 2 Hrs

F.M. 20.

A. Answer the following questions (Any three)

[3×5 = 15]

1. What is Chromatography Separation? What is  $R_f$  value? Write down the theory of Separation of glucose & fructose present in the given mixture by paper chromatography. 1+1 +3
2. Write down the 'fundamental law' to estimation of concentration by UV-VIS Spectroscopic. Why is it needed the solution calibration for estimation by Spectroscopic. What is  $\lambda_{max}$ ? 2 +2+1
3. What are BOD and COD? What type chemical reaction involved for determination of both? 2 +3
4. Write the basic principle of Solvent Extraction. How Nickel ion is extracted in organic phase by chelation. 3 +2
5. How determination of chemical oxygen demand (COD) in water by spectroscopic. Mention the point of Theory, Principle, reagents, Calibration, and chemical equation. 5

B. Laboratory Note Book.

3

C. Performance in class.

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# Sukanta Mahavidyalaya

5<sup>th</sup> Semester, Practical Examination, 2022

Subject :-DSE2 [Inorganic materials of industrial importance ]

**Full marks: 20**

**Time allotted: 2hrs**

- 1) Laboratory Note Book. (5)
- 2) Answer any **three** questions. (5x3=15)
  - A. i) What is Pigment?
    - ii) Mention any two important methods for the manufacture of zinc oxide. Write down the uses of zinc oxide. (2+2+1=5)
  - B. i) Write down the composition of dolomite.
    - ii) What is Complexometry? Write down the structure of EBT indicator. (2+2+1=5)
  - C. i) Classify Different fertilizers briefly
    - ii) Mention the main steps and reactions involved in the manufacturing process of phosphoric acid from phosphate rock. (3+2=5)
  - D. i) Write down the composition of Cement.
    - ii) What is the role of gypsum in the cement production? (3+2=5)
  - E. i) How can metals be plated on to surface of non-metallic materials like plastics and ceramics? (5)

# Sukanta Mahavidyalaya

5<sup>th</sup> Semester, Practical Examination, 2022

Subject :-DSE program. [Inorganic materials of industrial importance]

**Full marks: 20**

**Time allotted: 2hrs**

- 1) Laboratory Note Book (5)
- 2) Answer any **three** questions. (5×3=15)
  - A. i) What is Pigment?
    - ii) Mention any two important methods for the manufacture of Zinc oxide. Write down the uses of zinc oxide. (2+2+1=5)
  - B. i) Write down the composition of dolomite.
    - ii) What is Complexometry? Write down the structure of EBT indicator. (2+2+1=5)
  - C. i) Classify different fertilizers briefly
    - ii) Mention the main steps and reactions involved in the manufacturing process of phosphoric acid from phosphate rock. (3+2=5)
  - D. i) Write down the composition of Cement.
    - ii) What is the role of gypsum in the cement production ? (3+2=5)
  - E. i) How can metals be plated on to surface of non-metallic materials like plastics and ceramics?  
(5)

# Sukanta Mahavidyalaya

## Chemistry Department

### Practical Assessment -5<sup>th</sup> Sem

Subject:- SEC - 3 [DSC] (Pesticide Chemistry)

Full Marks: 20 Time: 2 Hour

#### A. Answer the following questions (Any three)

[3×5 = 15]

1. What is Pesticide? Write down the differences between natural pesticide and synthetic pesticide. Give example of each pesticide. 2+2+1
2. What is DDT(dichlorodiphenyltrichloroethane) ? How it is prepare in laboratory. 1+4
3. What are Organochlorines and Organophosphates pesticide? Write down the Laboratory synthesis procedure of Gammexene. 1+4
4. How do you prepare the phosphonates and thiophosphates in laboratory? 2.5 +2.5
5. What are alachlor and butachlor. Write down the chemical reaction for the preparation of both pesticide. 2+3

B. Laboratory Note Book.

3

C. Performance in class.

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