

Sukanta Mahavidyalaya

1st Semester Practical Examination, 2020- 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) KMnO_4 solution. 2+1+2
4. What is Primary standard and secondary standard solution? Why KMnO_4 solution is Secondary Standard solution? Which Solution is used for Standardization of KMnO_4 solution? 2+2 +1
5. How estimation of Fe(II) in a solution using standardized KMnO_4 solution. Explain it Redox equation. 3+2

B. Laboratory Note Book. 3

C. Performance in class. 2

Sukanta Mahavidyalaya

Practical Assessment

Subject:-CC2 practical (Physical Chemistry)

Full Marks: 15

Time: 2 Hour

Answer any three questions

3×5 = 15

- 1) (i) Define surface tension and surface energy. (ii) What are the unit of surface tension and surface energy? (iii) Write down the working principle of Stalagmometer. (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) Defined pH of a solution. (ii) Why pH of pure water is 7 at 25° C temperature. (iii) How will you prepare a 0.5 (M), 200 mL buffer having pH = 4 with sodium acetate and acetic acid? pK_a of acetic acid is 4.76. (1 + 1 + 3)
- 5) (i) At 50°C temperature, the pH of pure water is 6.85-explain whether the water is acidic or basic. (ii) Why the normal water found in earth is slightly acidic? (iii) 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? (iv) You can used any kind of indicator in strong acid and strong base titration in titrimetric method-explain. (1 + 1 + 2 + 1)

Sukanta Mahavidyalaya

1st Semester Practical Examination, 2021

Subject: Chemistry (DSC/GE)

Time: 2 Hrs.

F.M. 20

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. Why do we heat oxalic acid solution containing sulphuric acid up to 70^o-80^oC in the permanganate titration? Why high temperature heating is avoided? [2.5+2.5]
 3. In the estimation of oxalic acid by titrating it with KMnO₄ 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 Prussian Blue test for detection of 'N' 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, 2021

Subject: CC 5 [Inorganic chemistry]

Time allowed – 2hrs

F.M -20

-
1. Laboratory Note Book [5]
 2. Answer any **three** questions [5x3=15]
 - A. i) What is primary standard solution?
ii) Why is $KMnO_4$ not used as a primary standard ? How does its equivalent weight change with medium ? [1+2+2=5]
 - B. i) What is Redox indicator ?
ii) How does diphenylamine act as redox indicator ? Write down its structure. [2+2+1=5]
 - C. 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]
 - D. 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]
 - E. i) Why ,starch should be added towards the end point?
ii) Why sodium thiosulphate can not be used as a primary standard? [2+3=5]

Sukanta Mahavidyalaya

3rd Semester practical Examination, 2021

Subject: Organic Chemistry(Hons)

Time: 2 Hrs

Paper : CC6

F.M 20

-
1. Answer the following questions (Any three) 3×5=15
- a) i) Write down the process of Back Dye Test? [3+2]
- ii) Which Functional Group we can find from the Back Dye test and 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) What is Esterification test? 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. 3
- 3) Performance in class. 2

Sukanta Mahavidyalaya

Practical Assessment

Subject:-CC7 practical (Physical Chemistry)

Full Marks: 15

Time: 2 Hour

Answer any three questions

$3 \times 5 = 15$

- 1) (i) What is Nernst's distribution law? (ii) Derive the partition co-efficient for the distribution of I_2 between water and CCl_4 -show that it is constant at constant temperature and pressure. (iii) Is partition coefficient solute concentration dependent? (1 + 3+ 1)
- 2) (i) What is solvent extraction technique? (ii) Using Nernst's distribution law, show that you can extract more solute in multistep process than a single step process when same volume of solvent used in two different techniques. (2 + 3)
- 3) (i) Write down some important application of Nernst's distribution law. (ii) Is partition co-efficient independent of temperature? (iii) Is partition co-efficient will be same when same when solute is associated or dissociated in one of the solvent? (iv) What is the order and molecularity of a reaction? (1 + 1 + 1 + 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)

Sukanta Mahavidyalaya

3rd Semester Practical Examination, 2021

Subject: Chemistry (DSC/GE)

Time: 2 Hrs.

F.M. 20

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 $-\text{NO}_2$ group in presence of $-\text{NH}_2$ 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 weak 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]

Sukanta Mahavidyalaya

3rd Semester Practical Examination, 2021

Subject: Green Chemistry

Time: 2 Hrs

Paper: SEC 1 (Hons/Pass)

F.M. 20

- 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. 3

3) Performance in Class. 2

Sukanta Mahavidyalaya

5th semester Practical Examination, 2021

Subject: DSE2

{Inorganic Materials of Industrial importance}

Time – 2hrs

F.M -20

-
1. laboratory Note Book [5]
 2. Answer any **three** questions [5x3=15]
 - A. i) Write down the composition of dolomite.
ii) What is complexometry? Write down the structure of EBT indicator. [2+2+1=5]
 - B. 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]
 - C. i) Write down the composition of cement.
ii) What is the role of gypsum in the production of cement? [3+2=5]
 - D. 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]
 - E. How can metals be plated on to surface of non-metallic materials like plastics and ceramics ? [5]

Sukanta Mahavidyalaya

5th semester practical examination ,2021

Sub : Organic chemistry (hons)

Time : 2Hrs

Paper : CC11

F.M. 20

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 required and Procedure of the Determination of iodine number of an oil?
2. Laboratory Note Book. 3
3. Performance in class. 2

Sukanta Mahavidyalaya

Practical Assessment

Subject:-CC12 practical (Physical Chemistry)

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 2×10^{-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 compound has Molar Extinction co-efficient $64000 \text{ mol}^{-1} \text{ lit cm}^{-1}$. How much compound is required to prepare 200 mL, having optical density (OD) 0.5 in 1 cm path length cell? Molecular weight of the compound is 480 gm/mol. (ii) Absorption maxima of KMnO_4 in water solution is 570 nm. How much energy associated with absorption peak? (2.5 + 2.5)
- 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 λ_{max} of 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, 2020- March

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 λ_{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.

2