VIDYA SIRI COLLEGE OF PHARMACY
(A Unit of Kasipathi Educational Trust ® 157/2017-18)
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FIRST SESSIONAL EXAM Question Paper (THEORY)

2021-22

Course: D. Pharm | **Year: I. D. Pharm**

Subject & Subject Code: Pharmaceutical Chemistry | **Marks: 40**

Date: 17/03/2022 | **Time: 90 min**

Instruction to Candidates:

1) Attempt All three Sections
2) Draw neatly labeled diagrams wherever necessary.

I. Long Answers (Answer any 3 out of 4 questions) 3 X 5 marks=15 Marks.

1. Write the principle involved in the limit test for Chloride with suitable reaction. Give the procedure, observation, inference and report for pass and fail test.
2. Write a note on sources of impurities.
3. Explain scope and objectives of pharmaceutical chemistry.
4. Add a note on Acid Base titration.

II. Short Answers (Answer any 5 out of 6 questions) 5 X 3 Marks= 15 Marks

1. Write a note importance of Pharmaceutical Chemistry.
2. Define error. Explain the types of errors.
3. Explain the principle involved in non- aqueous titration.
4. Different solvents used in non- aqueous titration with examples.
5. Write the principle involved in the limit test for sulphate with its reaction.
6. Write the atomic mass number for C (carbon), H (Hydrogen) and O (Oxygen)

III. Objective Answers (Answer all 10 out of 10 questions) 10 X 1 Marks = 10 marks

1. Why citric acid is used in limit test for iron
2. Name the standard used in the limit test for iron
3. Define molarity and normality
4. Define primary and secondary standard
5. Define pharmaceutical chemistry
6. What is the titrant and analyte.
7. Explain end point.
8. Give any 2 examples for indicator.
9. What is observation and inference for limit test for Arsenic.
10. Why HCl is used in limit test for Sulphate.

SUBMIT YOUR ANSWERS ON OR BEFORE 4:00PM TODAY to
phchem-2020@vidyasiricop.edu.in

I.2. Source of impurities:-

i) Raw materials used in manufacture.
ii) Reagent used in manufacturing process
iii) Method / Process used in manufacture on method manufacture
iv) Chemical process used in the manufacture
v) Atmospheric contamination during the manufacturing process
vi) Intermediate products in the manufacturing process.
vii) Defects in the manufacturing process.
viii) Manufacturing Hazards.
ix) Inadequate storage condition.
x) Decomposition of the product during storage.
xi) Accidental substitution on deliberate adulteration with supurious materials.

I.3. Scop of Pharmaceutical Chemistry:-

It is designe to important basic knowledge on the chemical structure, storage conditions and medicinal uses of organic and inorganic chemical substances used as drugs and pharmaceuticals.

Also its discusses the impurities, quality control aspects of chemical substances used in pharmaceuticals.

Scope of Pharmaceutical chemistry is majorly in the research and development of new medicines for pharmaceutical companies or government agencies.

Pharmaceutical chemistry is focusson quality aspects of medicine and aims to assure fitness for purpose of medicinal products by analyzing & evaluating them as per the quality control standards.

Objective :- It will discuss the following aspects of the chemical substances used as drug and pharmaceuticals for various desease conditions.

i) Chemical classification, chemical name, chemical structure.
ii) Pharmacological uses, doses, stability and storage conditions
iii) Different type of formulation / dosages form available and their brand names
iv) Impurity testing basic quality control test.

I. 4. Acid Base titration:-

An acid-base titration is a procedure used in quantitave chemical analysis to determine the concentration of either acid or a base.

The equivalence of an acid-base titration is the point at which there are equal amounts (in moles) of H_3O^+ and OH^- in titration flask.

$$H_3O^+ + OH^- \longrightarrow H_2O$$

End point of titration: the point in the titration at which the indicator change colour.

The indicator should be change the colour sharply at the equivalance point.

At the end point of the titration, all the acids has been neutralised by the alkali. the solution in the conical flask contain salt and water only.

II. 1. Important of Pharmaceutical chemistry:-

- Now a days compounds of various metals like iron, arsenic, lead, mercury & copper were used for medicinal purpose.

Hence, a sound knowledge of chemistry is required - for understanding and following the recent developments in medicine and pharmacy - Pharmaceutical chemistry thus plays an important role in deciding the physiochemical properties, conditions for the storage and dispensing of drugs.

II. 2. Deviation from the absolute value or from the true average of a large number of results.

The ~~error~~ errors are of 2 types:

1. Indeterminate or accidental errors.
2. Determinate or constant errors.

* Determinate errors can be combated by use of calibrated apparatus, use of blanks and controls, several analytical procedures, by eliminating impurities, by carrying out the experiment under various condition.

Indeterminate errors:

* Result from extending a system of measurements to its maximum.

* Neither identify the sources of these errors nor predict the magnitude of individual errors.

II.3. Non-aqueous titration :-

The main principal involved in the non-aqueous titration method is the samples are dissolved in the non-aqueous solvents.

The need for non-aqueous titration arises because water can behave as a week base and a weak acid as well, and can hence compete in proton acceptance or proton donation with other weak acids and bases dissolved in it.

II.4. Solvent used in non-aqueous titration are as follows.

i) Aprotic solvent ⇒ This solvent are chemically inert. This are neither acidic nor basic The have low dielectric constant and do not react with either acid or base and therefore do not favour ionization.

ii) Protogenic solvent ⇒ This solvent are acidic in nature and they can donate the proton. Ex- Glacial acetic acid, formic acid, propanic acid.

iii) Protophilic solvent ⇒ This solvent are basic in nature which possess a high affinity for proton. used to dissolved acidic analytes. Ex- Amines and ketone, pyridine, ethylenediamine, DMF.

iv) Amphiprotic solvent ⇒ This are those solvent those work as both mean protogenic or protophilic. It means Amphiprotic solvent are acidic and basic in nature. And they are accept the proton and donate the proton.

For ex. Alcohols and weak organic acids.

II. 5. Limit test for sulphate :-

- The limit test for sulphate is based on the reaction between barium chloride and soluble sulphates in presense of dilute hydrochloric acid. Then the turbidity produced in the test is compared with the turbidity produced a standard containing a knaw quantity of sulphate and similary treated. Barium Sulfate sulphate reagent which contains barium chloride, sulphate-free ~~alcoh~~ alcohol and small quantity of potassium sulphate is used the reagent.

III. 1. Citric acid is used in limit test because it helps precipitation of iron by smelling salts like ammonia as catalized the reaction in limit test of iron.

III. 2. i) 40 ml distilled water
ii) 2 ml of 20% w/v solution of iron free citric acid.
iii) Mix and make alkaline with iron free ammonia solution and ~~dis~~ dilute to 50 ml with water.

III. 3. Molarity ⇒ It is the most commonly used measure of concentration and it is expressed as the number of moles of solute per liter of solution.
Normality ⇒ It is a measure of concentration that is equal to the gram equivalent weight per liter of solution.

III. 4. Primary standards ⇒ Measurment are made with refference to standards. It should 100% pure or with known purity.
Secondary standards ⇒ This are used for the standardization and whose concentration has been determined by comparison with the primary standard.

III. 5. Pharmaceutical Chemistry deals with the structure, chemichal nature, composition, preparation, studies of physical and chemical properties, method and quality control and condition of their uses.

III. 6. Titrant is a solution of known concentration that is added to an another solution. The Analyte is the "unknown" solution for which you would like to know either the concentration on the equilibrium constant.

III. 7. End point the point during titration when an indicator shows the the amount of reactant necessary for a complete reaction has been added to a solution.

III. 8. Indicator derived from natural sources like. Limus, red cabbage, turmic, china rose petals.

III. 9. Limit test for Arsenic :-

If is stain produced by test is no deeper than standard stain, then sample complies limit test arsenic.

III. 10. HCL is used in limit test for sulphate because it is an acid and it contains chloride $BaCl_2$ - solution.