

PHARMACEUTICS-I (BP103T)

UNIT: 2 (Pharmaceutical calculations, Powders, Liquid dosage forms)

CLASS:1

TOPIC: **Pharmaceutical calculations****INTRODUCTION**

To have a complete understanding of various types of calculations, which are involved in dispensing, it is desirable that the pharmacist should have a thorough knowledge regarding weights and measures which are used in calculations.

There are two systems of weights and measures.

1. The Imperial system 2. The Metric system

IMPERIAL SYSTEM

Imperial system is an old system of weight and measures. Imperial system: Avoirdupois system, Apothecaries system

Avoirdupois system: In this system the pound is the standard unit for weighing and all measures of mass are derived from the Imperial standard pound (lb).

Apothecaries' system: This system is also known as Troy system. The grain is the standard unit in this system and all other weights are derived from it.

CONVERSION TABLE**FROM APOTHECARIES TO AVOIRDUPOIS**

1 Lb = 16 oz (avoir)

1 Lb = 7000 grains

1 oz (avoir) = $7000/16 = 437.5$ grains

20 grains (gr) = 1 scruple

60 grains = 1 drachm

480 grains = 1 ounce (apoth)

12 ounces = 1 pound (Lb) (apoth)

5760 grains = 1 pound (apoth)

Measurement of capacity in imperial system: The standard units for capacity is same for both the avoirdupois and the apothecaries' systems. The gallon is the standard unit and other measures of capacity are derived from it.

1gallon (c) = 160 fluid ounces

1/4th of gallon = 1 Quart

1/8th of gallon = 1 pint(O)

1/160th of gallon = 1 flounce

1 quart = 40 flounces

1 pint = 20 flounces

1 flounce = 480 minims

1 fl drachm = 60 minims

METRIC SYSTEM Metric system is used in the Indian pharmacopeia for the measurement of weights and capacity. It was implemented in India from 1st April, 1964 in pharmacy profession.

Measurement of weight in metric system: A kilogram is the standard unit for measurement of weight and all other measures are derived from it.

1 kilogram = 1000g

1 hectogram = 100 g

1 decagram = 10 g

1 decigram = 0.1 g

1 centigram = 0.01 g

1 milligram = 0.001 g

1 microgram = 0.000,001 g

Measurement of capacity in Metric System

A litre is the standard unit for measurement of capacity and all measures of capacity are derived from it.

1 litre (lt) = 1000 milliliters (ml)

The pharmacopeia of India uses only the metric system in formulae, But the prescription are still written in the imperial system by many old time physicians. So a conversion tables is used by the pharmacists.

Metric system Imperial system

1 kilogram (kg) = 2.2 lb (pound)

30g = 1 ounce

450g = 1 pound (avoirdupois)

1g = 15 grains

60mg = 1 grain

1000 ml = 1 Quart

500 ml = 1 pint

30 ml = 1 fluid ounce

4 ml = 1 fluid drachm

1 ml = 15 minims

0.06 ml = 1 minim

Conversion table for Domestic Measures

Domestic Measure Metric system Imperial system

1 drop = 0.06 ml = 1 minim

1 tea spoonful = 4.00 ml = 1 fluid drachm

1 desert spoonful = 8.00 ml = 2 fluid drachm

1 tablespoonful = 15.00 ml = 4 fluid drachm

2 tablespoonful = 30.00 ml = 1 fluid ounce

1 wine glassful = 60.00 ml = 2 fluid ounce

1 tumblerful = 240.00 ml = 8 fluid ounce

Example problem For Alcoholic Dilutions

Calculate the amount of 95% alcohol required to prepare 400ml of 45% alcohol

volume required = 400ml

percentage of alcohol required = 45

percentage of alcohol used = 95

Volume of strong alcohol to be used = 184.47 ml

2 MARKS QUESTIONS

1. Write about Imperial system.

5 MARKS QUESTIONS

1. Write about imperial system of weights and measures