Graphic Era
HILL UNIVERSITY
Established by an Act of the State Legislature of Uttarakhand (Adhiniyam Sankhya 12 of 2011)
University under section 2(f) of UGC Act, 1956

Sessional II (Odd) Semester Examination, October 2025

Roll no.....

Name of the Course: B. Pharm
Semester: III
Name of the Paper: Physical Pharmaceutics-I
Paper Code: BP302T
Time: 1.5-hour Maximum Marks: 30

Note:
(i) This question paper contains three sections.
(ii) All the questions are compulsory.

Section-A

Q1. Multiple Choice Questions – Attempt all questions (10 X 1 = 10 Marks)

a. The unit of surface tension in SI system is: CO3
a) dyne/cm
b) N/m
c) erg/cm^2
d) J/m^2

b. Which isotherm represents multilayer adsorption? CO3
a) Freundlich isotherm
b) Langmuir isotherm
c) BET isotherm
d) Henry's law

c. Contact angle is used to determine: CO3
a) Surface area
b) Wetting properties
c) Density
d) Adsorption

d. In Langmuir adsorption isotherm, adsorption occurs as: CO3
a) Monolayer
b) Multilayer
c) Bulk adsorption
d) Physical absorption

e. The device used in the ring detachment method is called: CO3
a) Tensiometer

b) Manometer
c) Colorimeter
d) Potentiometer

f. **Complexation involves:** **CO4**
a) Covalent bonding
b) Coordination or non-covalent interaction
c) Ionic bonding only
d) Non-ionic bonds

g. **Chelates are formed when:** **CO4**
a) A ligand forms multiple bonds with a metal ion
b) A single bond is formed with a metal ion
c) The metal ion is neutral
d) The ligand is non-polar

h. **Which of the following interactions are mainly involved in complex formation? CO4**
a) Hydrogen bonding and van der Waals forces
b) Covalent bonding
c) Metallic bonding
d) Ionic lattice formation

i. **EDTA is an example of ligand type:** **CO4**
a) Bidentate
b) Hexadentate
c) Tetradentate
d) Unidentate

j. **Inclusion complexes are formed by:** **CO4**
a) Cyclodextrins
b) EDTA
c) Polysorbates
d) Gelatin

Section B

Q. 2 Short Questions: Attempt any two questions **(2X 5 = 10 Marks)**

a. Define surface free energy and explain along with its experimental diagram and derivation. **CO3**
b. What is surface tension and explain any one method for its determination? **CO3**
c. Define complexation and explain their pharmaceutical applications. **CO4**

Section C

Q. 3 Long questions: Attempt any one question **(1X10 = 10 Marks)**

a. Explain different types of Adsorption Isotherms involved in adsorption of gases on solids. **CO3**
b. What is Protein binding and explain its kinetics along with derivation? **CO4**