

**B. PHARM.
FOURTH SEMESTER
PHYSICAL PHARMACEUTICS - II
BP403T**

(USE SEPARATE ANSWER SCRIPTS FOR OBJECTIVE & DESCRIPTIVE)

Duration: 3 hrs.

Full Marks: 75

Time: 20 min.

Marks: 20

Choose the correct answer from the following:

$$1 \times 20 = 20$$

- Reduced viscosity is the ratio of the specific viscosity to the _____.
 - Weight of liquid.
 - Density of liquid
 - Unit time
 - Concentration of liquid
 - The unit for the specific rate constant for a second order reaction are:
 - Liter/moles. sec
 - Liter. sec/moles
 - Moles/liter. sec
 - Moles. sec/liter
 - Which of the following dosage forms exhibits faster rate of reaction under normal conditions?
 - Emulsions
 - Ointments
 - Solutions
 - Suspensions
 - In chemical reaction, the rate constant is independent of the initial concentration. Which one of them is the order?
 - First
 - Second
 - Pseudo first
 - Zero
 - The accelerated stability studies are primarily used to determine:
 - Energy of the activation of the reaction
 - k value at elevated temperatures
 - k value at the room temperature
 - Shelf life of the product
 - During storage, crystal growth is observed in a suspension due to:
 - Absorption of water
 - Presence of suspending agent
 - Fluctuations in the ambient temperatures
 - Volatilization of solids
 - In practice, an acceptable suspension should have particles:
 - of nearly 0.1 micrometer
 - which can be readily re-dispersible after they settle
 - which should form a cake after settling
 - should not settle
 - The true density of talc is 2.7 g/cc, the bulk density (g/cc) of talc will be:
 - equal to 2.7
 - greater than 2.7
 - less than 2.7
 - unrelated
 - Sieving method is used for size distribution analysis of powders. The disadvantage of this method is:
 - agglomerates can be identified
 - attrition of powder is possible
 - large number of sieves are required
 - tedious and time consuming

10. A sample of Newtonian fluid is analyzed by applying a shear stress of 315 N/m^2 . The rate of shear is found to be 150 sec^{-1} . Calculate the coefficient of viscosity. ($1 \text{ Pa.s} = 1 \text{ N.s/m}^2$)
a. 2.0 Pa.s b. 2.1 Pa.s
c. 1.9 Pa.s d. 2.4 Pa.s
11. Brookfield viscometer is an example of type:
a. Cone and plate b. Cup and bob
c. Falling sphere d. Capillary
12. One of the following is a single point viscometer
a. Stormer b. Ferranti shirley
c. Hoeppler d. MacMicheal
13. Kinematic viscosity is the absolute viscosity divided by the _____ at specific temperature
a. Density of liquid b. Unit time
c. Weight of liquid d. None of above
14. In Stokes' relationship, a parameter that greatly changes the velocity of settling is:
a. density of the liquid b. density of particle
c. radius of the particle d. viscosity of the medium
15. The HLB range of an emulsifier employed in the preparation of water-in oil emulsion is
a. 3 to 6 b. 9 to 12
c. 13 to 15 d. all the above
16. High repose angle of the granules indicated:
a. bulk density of the granules b. porosity of the granules
c. roughness of the granule surface d. smoothness of the granule surface
17. In the formulation development of emulsions and suspensions, what type of diameter is important?
a. length number b. projected
c. sieve d. stokes
18. For an ideal suspension, the suspension volume should always be:
a. Equal to one b. Less than one
c. More than one d. All the above
19. Dilatant flow is characterized as a reverse phenomenon of:
a. Newtonian flow b. Plastic flow
c. Pseudoplastic flow d. Rheopexy
20. A first order reaction is found to have a rate constant, $k = 5.5 \times 10^{-14} \text{ s}^{-1}$. Find the half-life of the reaction.
a. $1.51 \times 10^{13} \text{ s}$ b. $1.26 \times 10^{13} \text{ s}$
c. $1.15 \times 10^{13} \text{ s}$ d. $1.35 \times 10^{13} \text{ s}$

PART-B : Descriptive

Time: 1 hr. 40 minutes

Marks : 35

[Answer any seven (7)]

1. The following data were collected by means of an optical microscope. 5

Size group(μm)	10-15	16-20	21-25	26-30
Number (n) of Particles	15	20	25	35

Compute the Mean volume-surface diameter.

2. Derive the zero-order kinetic reaction equation. 5
3. Draw the schematic diagram about the formulation of flocculated and deflocculated of suspension. 5
4. What is deformation of solids? Explain the different types of elastic modulus. 1+4=5
5. Write any three of the theories of emulsification. 5
6. Discuss briefly about the different types of Non-Newtonian flow. 5
7. Explain the angle of repose, dispersibility, compressibility index and Hausner's ratio. 5
8. Write details about the bulk density, true density and porosity of powders. 5
9. What is rheology? Write about the derivation of viscosity. 1+4=5

Time : 1 Hr.

Marks : 20

[Answer any two (2)]

1. Derive the first order reaction, their half-life and shelf-life equation. 10
2. Explain the causes for the instability of an emulsion. 10
3. Write about the kinetic properties of colloidal dispersion. 10

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