

2. Short answer type questions (answer any *five*):
(5 × 5 = 25)

- (a) Briefly discuss theories of mucoadhesion.
- (b) What are the challenges associated with designing drug delivery through ocular route?
- (c) Write a note on permeation enhancer for transdermal drug delivery system.
- (d) What are the instability factors to be considered for delivery of protein and peptide drugs?
- (e) Enlist applications of 3D printing in drug delivery systems.
- (f) What are the advantages and disadvantages of controlled and sustained release drug delivery systems?
- (g) Briefly discuss about various post-formulation evaluation tests performed for transdermal patches.

3. Descriptive answer type questions (answer any *two*):
(2 × 15 = 30)

- (a) What are the ideal properties of drug candidates for controlled release drug delivery systems? Discuss the approaches for designing controlled and sustained release drug delivery systems.
- (b) What are the advantages and disadvantages of mucoadhesive drug delivery systems? Discuss physicochemical properties influence selection of polymers for mucoadhesive gastro-retentive systems.
- (c) What are the non-parenteral approaches for systemic delivery of protein and peptide drugs? Discuss the roles of adjuvants in the delivery of vaccines.

