Maximum Marks : 320

Q1. How does periodicity in phase transfer processes
(10+10) help in (a) numerical simulations (b) experiments?

(10) **Q2.** How does one find the periodicity in simulations?

(10) **Q3.** Why does periodicity occur in phase transfer processes?

Q4. Which forces are balanced to give critical size
(10+10+10) in (a) spontaneous phase transfer (b) nucleated
phase transfer? Why is the critical size different
in (a) and (b)?

Q5. Why are systems smaller than a given size
(20) are stable?

Q6. What is the dominant wavelength? Is it greater
(10+10) than the critical wavelength, explain?

Q7. Why is it easier to analyze (a) early stages
(20+20) of phase transfer and (b) late stages of
phase transfer?

Q8. What is the middle stage in phase transfer
(20+20) and why is it difficult to analyse?

Q9. How do nonlinearity in the force-field affect
(20+20) the lengthscales and timescales of the
phase transfer processes?

Q10. Explain at least 4 stages of evolution
in modelling to describe any physical
(4×10) phenomena. What is the possible course of
action if none of the models are able to
explain the phenomena?

Q11. list at least ~~six~~ five changes which should
be made in the liquid-liquid unmixing
(50) example to explain unmixing of soft materials