SECTION D — (2 × 10 = 20 marks)

Answer ALL questions.

21. (a) Using Kronig–Penny model, give a detailed account on periodic potential.

Or

(b) Using perturbation theory, discuss the problem of first excited state of hydrogen atom in stark effect. Calculate energy values.

22. (a) Discuss the transition probability for harmonic perturbation using time dependent perturbation theory.

Or

(b) Obtain the eigen values of angular momentum operator $\hat{J}^2$ when operated over an eigen function ψ_{jm}.