1. Answer **any five** questions of the following :   [5×3]
   a) What is Fermi Level?
   b) Justify the differences between Conductor, Semi Conductor & Insulator.
   c) Define forbidden energy gap.
   d) 'Diode works in forward bias condition' —Explain.
   e) Define cut-in voltage of a ordinary PN junction diode.
   f) What is dynamic resistance of a diode.

2. A halfwave rectifier supplies power to a 1KΩ load. The input supply voltage is 220V rms. Neglecting forward resistance of the diode, Calculate—
   a) V_{dc}
   b) I_{dc}
   c) ripple voltage (rms value)   [10]

Or,

A sinusoidal voltage of amplitude 25 volts and frequency 50Hz is applied to a halfwave rectifier using PN diode. No filter is used and the load resistor is 1000Ω. The forward resistance R_f of ideal diode is 10Ω. Calculate—
   a) dc power output
   b) ac power input
   c) rectifier efficiency.   [10]

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