These are the subjects and fields to study for the Core company:

**Hardware Topics**

**1. Electronic Notations and Unit  
- Voltage, Current, Power, Energy, Resistor, Capacitor, Inductor, Battery rating**

**2. Circuit Theory  
- Resistor  
- Solving Series network, Parallel network, Series / Parallel combination, Stress for resistor (Power)  
calculation, Frequency response, Power dissipation  
- Capacitor  
- Impedance, Frequency Vs Impedance, Reactance, Series effect, Parallel effect, Stress for capacitor  
(Voltage) calculation, Frequency response, Energy at capacitor  
- Inductor  
- Impedance, Frequency Vs Impedance, Reactance, Series effect, Parallel effect, Stress for Inductor  
(Current) calculation, Frequency response, Energy at inductor  
- Element combination  
- RC circuit, RLC circuit, LC circuit response funciton / curve  
- Circuit rule / law  
- Kirchhoff theory, Ohms law, Norton theory, Thevenin circuit, Maximum power transfer theory, Super  
position theory  
- Voltage division  
- Current division  
- Power dissipation  
- Voltage source in series and parallel  
- Current source in series and parallel  
- Battery, Parallel and series effect**

**3. Analog Circuit  
- Opamp  
- Opamp basic, Voltage follower, Inverting amplifier, Non-Inverting amplifier, positive loop back, negative  
loop back, open loop, close loop, summing amplifier, differential amplifier, differentiator, integrator, low  
pass filter, high pass filter  
- Transistor  
- CE, CB, CC, voltage follower, current amplifier, ON/OFF control, V-I curve  
- Instrumentation amplifier  
- Usage / benifits of instrumentation amplifier  
- Diode, Zener Diode, Transient Voltage Suppressor  
- Leads, Characteristics, Difference between each, V-I Curve, function   
- FET, MOSFET  
- Leads, Characteristics, Function   
- Rectifiers, Type of rectifiers  
- Filters, Type of filters, Characteristics, Application requirement, Active filter and passive filter**

**4. Digital Electronics  
- Logic Gates, Comination of Logic Gates, Truth Table and Function  
- Flip flops, Type, Truth Table  
- Multiplexer, DeMultiplexer  
- Encoder, Decoder  
- Digital Function theory / rules  
- Micro Controller basics  
- Micro Processor basics  
- Memory types, Memory addressing and interface details  
- Communication interfaces - UART (RS232, RS422), SPI, I2C**

**5. Electrical  
- Motor, Type of Motor, Connection diagram, Application requirement  
- Transformer, Type of transformer, Connection diagram, Application requirement  
- Law - Magnetic pickup, Electromagnetic principle  
- DC, AC characteritics, Power factor  
- Star, Delta connections**