

BASIC OF ELECTRICAL POWER SYSTEM

BRANCH:- EE / EEE

SEMESTER – FIRST

These important questions have been prepared using your previous exam papers (PYQs), verified concepts, and additional reference from trusted online academic sources. For deeper understanding, please refer to your class notes as well.

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1 HIGH & LONG IMPORTANT QUESTIONS

- **Unit-I: Hydroelectric & Thermal Plants**
 - Explain the working principle and general layout of a **Hydroelectric Power Plant** with a neat diagram.
 - Discuss the factors to be considered for the **selection of a site** for a Hydroelectric power plant.
 - Draw the schematic diagram of a **Thermal (Steam) Power Plant** and explain the function of major components (Boiler, Turbine, Condenser, Economizer).
 - **Unit-II: Nuclear & Gas Power Plants**
 - Draw the layout of a **Nuclear Power Plant** and explain the role of the reactor, moderator, control rods, and coolant.
 - Compare the **Thermal and Nuclear power plants** on the basis of cost, efficiency, and environmental impact.
 - **Unit-V: Economics of Generation**
 - Define and explain the significance of **Load Factor, Diversity Factor, Demand Factor, and Plant Capacity Factor**.
 - Explain **Load Curve** and **Load Duration Curve**. Discuss how they help in determining the capacity of a power plant.
 - Solve a simple numerical problem on calculating the **cost of generation** per unit using given factors.
 - **Unit-VI: Transmission & Distribution**
 - Draw a typical **Single Line Diagram (SLD)** of an AC power system from the generating station to the consumer.
 - Explain the different types of **Distribution Systems**: Radial, Ring Main, and Interconnected systems with their merits.
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2 IMPORTANT & SHORT QUESTIONS (50–70% Probability)

- Define **Conventional and Non-conventional** sources of energy with examples.

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- What is the "**Water Hammer**" effect in a penstock, and how does a **Surge Tank** help?
 - Explain the working of a **Solar PV system** (Stand-alone and Grid-interactive) with a block diagram.
 - Discuss the importance and function of the **Load Dispatch Centre (LDC)**.
 - What do you mean by "**Black Start Restoration**"? List the steps involved after a total blackout.
 - Briefly explain the difference between the **National Grid and State Grid**.
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3 "AA BHI SAKTA HAI" QUESTIONS

- Factors affecting the distribution of **wind energy** on the earth's surface and site selection for wind farms.
 - Draw the block diagram of a **PV-Wind hybrid system** or a **PV-Fuel Cell hybrid system**.
 - Describe the working of **Fuel Cells** and their applications in the power sector.
 - Define **Base Load** and **Peak Load** plants. Which plants are suitable for each category?
 - Define **Connected Load, Firm Power, and Spinning Reserve** in the context of power economics.
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Advice for first semester students :

1. **Diagram Focus:** In JUT exams, a neat and labeled diagram (SLD or Layout) carries nearly **50% of the marks** for long questions. Practice the Thermal and Hydro layouts multiple times.
2. **Economics Unit:** This is a scoring unit. If you memorize the definitions of the 5-6 key factors (Load factor, etc.), you can easily tackle the numerical part which is generally straightforward.
3. **Compulsory MCQ:** Expect MCQs on units (kWh), power plant components (e.g., "What is the fuel in Thermal plants?"), and non-renewable sources.

Also solve the sample papers (Download it from Diplom wallah website)

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