SESSION TRANSACTION PLAN FOR TWO-DAY CAPACITY BUILDING PROGRAMME FOR

WATER RESOURCES AND MINOR IRRIGATION DEPARTMENTS

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| **SESSION NUMBER** | **SESSION TITLE AND DURATION** | **OBJECTIVE** | **SESSION TRANSACTION PLAN** | **EXPECTED OUTCOME AND FOLLOW-UP****RESOURCES** |
| SESSION 1 | **Session Title:** "Flowing Forward: Mastering Canals and Cross Drainage Works"**Duration:**1.5 Hours | To provide participants with knowledge of the design principles, operational strategies, and maintenance practices for canals and cross drainage works, ensuring effective water conveyance and sustainability. | **Session Breakdown**1. **Introduction (10 minutes)**
* **Objective:** Set the context for canal and drainage design.
* **Content:** Importance of effective water management systems, challenges in canal operations, and role of BIS standards.
* **Methodology:** Presentation with an overview and key objectives.
1. **Design Principles (20 minutes)**
* **Objective:** Explain the technical aspects of canal and cross-drainage design.
* **Content:** Hydraulic principles, canal sections, types of drainage works, and design examples.
* **Methodology:** Lecture with design diagrams and case studies.
1. **Operational Strategies (20 minutes)**
* **Objective:** Highlight best practices in canal operations.
* **Content:** Water flow management, sediment control, and monitoring.
* **Methodology:** Interactive discussion with real-world examples.
1. **Maintenance Practices (30 minutes)**
* **Objective:** Outline key aspects of maintenance for longevity.
* **Content:** Inspection techniques, repair methods, and common issues.
* **Methodology:** Demonstration using visual aids.
1. **Conclusion and Q&A (10 minutes)**
* **Objective:** Recap key takeaways and address questions.
* **Methodology:** Facilitator-led summary and Q&A.
 | **Expected Outcomes:*** Improved understanding of canal and drainage systems.
* Familiarity with BIS standards for water management.

**Follow-up Resources:*** Access to BIS documents and standards.
* Contact information for further queries or guidance.
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| SESSION 2 | **Session Title:** "Beneath the Surface: Geological Investigations in River Valley Projects"**Duration:**1.5 Hours | To provide a comprehensive understanding of geotechnical investigation and design principles, emphasizing BIS standards, methodologies, and best practices. | 1. **Introduction (10 minutes)**
* **Objective:** Introduce the importance of geological studies.
* **Content:** Basics of geological investigation and its role in project safety.
* **Methodology:** Presentation with case examples.
1. **Techniques and Tools (30 minutes)**
* **Objective:** Provide an overview of investigation methods.
* **Content:** Drilling, sampling, and in-situ testing methods.
* **Methodology:** Presentation with visual aids and videos.
1. **Data Interpretation (30 minutes)**
* **Objective:** Explain how to analyze and use geological data.
* **Content:** Report preparation, risk assessment, and decision-making.
* **Methodology:** Interactive discussion with examples.
1. **Conclusion and Q&A (10 minutes)**
* **Objective:** Summarize and clarify doubts.
* **Methodology:** Facilitator-led recap and Q&A.
 | **Expected Outcomes:*** Comprehensive understanding of geological processes in water projects.
* Familiarity with BIS guidelines on geological studies.

**Follow-up Resources:*** Access to BIS documents and standards.
* Contact information for further queries or guidance.
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| SESSION 3 | **Session Title: "**Precision in Practice: Instrumentation for Hydraulic Structures**"****Duration:**1.5 Hours | To familiarize participants with instrumentation techniques and their role in monitoring and maintaining hydraulic structures. | 1. **Introduction (10 minutes)**
* **Objective:** Highlight the importance of instrumentation.
* **Content:** Role of sensors, monitoring, and maintenance.
* **Methodology:** Presentation with examples.
1. **Instrumentation Techniques (40 minutes)**
* **Objective:** Explain tools and methodologies.
* **Content:** Types of instruments, installation, and data collection.
* **Methodology:** Case studies and demonstrations.
1. **Data Utilization (30 minutes)**
* **Objective:** Use monitoring data for decision-making.
* **Content:** Case examples of failure prevention.
* **Methodology:** Interactive activity and discussion.
1. **Conclusion and Q&A (10 minutes)**
* **Objective:** Recap and address participant questions.
* **Methodology:** Facilitator-led summary.
 | **Expected Outcomes:*** Improved knowledge of hydraulic structure monitoring.
* Practical understanding of instrumentation and BIS standards.

**Follow-up Resources:*** Access to BIS documents and standards.
* Contact information for further queries or guidance.
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| SESSION 4 | **Session Title:****"**Sustaining Strength: Maintenance and Repair of Dams**"****Duration:** 1.5 Hours | To provide participants with insights into maintenance strategies, repair techniques, and standards for enhancing the safety and longevity of dams. | 1. **Introduction (10 minutes)**
* **Objective:** Highlight the importance of dam maintenance.
* **Content:** Overview of dam structures, common issues, and risks.
* **Methodology:** Presentation with examples of dam failures and their consequences.
1. **Inspection Techniques (30 minutes)**
* **Objective:** Explain methods for assessing dam health.
* **Content:** Visual inspections, instrumentation, and non-destructive testing methods.
* **Methodology:** Lecture with case studies and practical examples.
1. **Repair Methods (40 minutes)**
* **Objective:** Outline strategies for dam repair and rehabilitation.
* **Content:** Grouting, crack sealing, and structural strengthening techniques.
* **Methodology:** Slide presentation and video demonstrations.
1. **Conclusion and Q&A (10 minutes)**
* **Objective:** Summarize key takeaways and answer questions.
* **Methodology:** Facilitator-led summary and Q&A session.
 | **Expected Outcomes:*** Enhanced understanding of dam maintenance practices.
* Familiarity with BIS standards for dam safety.

**Follow-up Resources:*** Access to BIS documents and standards.
* Contact information for further queries or guidance.
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| SESSION 5 | **Session Title:** "Rising Above: Flood Control and Diversion Strategies"**Duration:**1.5 Hours | To equip participants with knowledge of flood control strategies, diversion works, and BIS standards to mitigate flood risks effectively. | 1. **Introduction (10 minutes)**
* **Objective:** Set the context for flood management.
* **Content:** Overview of flood control challenges and objectives.
* **Methodology:** Presentation with statistics and case examples.
1. **Flood Control Structures (40 minutes)**
* **Objective:** Explain structural measures for flood management.
* **Content:** Design and operation of levees, spillways, and detention basins.
* **Methodology:** Interactive discussion with design examples.
1. **Diversion Techniques (30 minutes)**
* **Objective:** Highlight the role of diversion works in flood mitigation.
* **Content:** Channels, tunnels, and storage solutions.
* **Methodology:** Case studies and visual aids.
1. **Conclusion and Q&A (10 minutes)**
* **Objective:** Recap and address participant questions.
* **Methodology:** Facilitator-led summary and Q&A.
 | **Expected Outcomes:*** Improved understanding of flood control measures.
* Practical knowledge of designing and implementing diversion works.

**Follow-up Resources:*** Access to BIS documents and standards.
* Contact information for further queries or guidance.
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| SESSION 6 | **Session Title:** "Tapping Reserves: Groundwater Investigations and Recharge Techniques"**Duration:**1.5 Hours | To provide participants with knowledge of groundwater investigations and recharge techniques for sustainable water management. | 1. **Introduction (10 minutes)**
* **Objective:** Emphasize the significance of groundwater management.
* **Content:** Overview of groundwater resources, challenges, and potential.
* **Methodology:** Presentation with case studies.
1. **Investigation Techniques (30 minutes)**
* **Objective:** Explain methods for groundwater assessment.
* **Content:** Geophysical surveys, well logging, and aquifer modeling.
* **Methodology:** Lecture with visual aids and real-world examples.
1. **Recharge Techniques (40 minutes)**
* **Objective:** Discuss strategies for groundwater recharge.
* **Content:** Artificial recharge methods, site selection, and BIS standards.
* **Methodology:** Interactive discussion with examples and videos.
1. **Conclusion and Q&A (10 minutes)**
* **Objective:** Summarize key takeaways and provide clarity.
* **Methodology:** Facilitator-led summary and Q&A session.
 | **Expected Outcomes:*** Enhanced understanding of groundwater investigations.
* Practical skills for implementing recharge techniques.

**Follow-up Resources:*** Access to BIS documents and standards.
* Contact information for further queries or guidance.
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| SESSION 7 | **Session Title:** "Micro Irrigation Systems: Understanding the Essentials of Drip and Sprinkler Irrigation Components"**Duration:**1.5 Hours | To provide participants with knowledge of components of micro irrigation systems for. efficient and sustainable water management. | **Introduction (15 minutes)****Objective:** Emphasize the significance of water management in agriculture.**Content:** Overview of Irrigation, Micro Irrigation, Factors Affecting, Today’s Scenario.**Methodology:** Presentation with an overview of session objectives and key terms. **Drip Irrigation Systems (30 minutes)****Objective:** Familiarize participants with importance of Drip Irrigation and key standards on Drip Irrigation Systems.**Content:** Detail of IS 12786, IS 13488, IS 13487 Types of Pipes, Emitting Pipes, Emitters, their applicability, important requirements.**Methodology:** Lecture with presentations and real-world examples. **Sprinkler Irrigation System (30 minutes)****Objective:** Familiarize participants with importance of Sprinkler Irrigation and key standards on Sprinkler Irrigation Systems.* + **Content:**

Detail of IS 17425, IS 12232 (Part 1 & 2), IS 14605 and IS 18286 Types of Pipes, Sprinklers, Valves, their applicability, important requirments.**Methodology:** Lecture with presentations and real-world examples.. **Conclusion and Q&A (15 minutes)****Objective:** Summarize key takeaways and provide clarity.**Methodology:** Facilitator-led summary and Q&A session. | **Expected Outcomes:*** Enhanced understanding of Indian Standards on Micro Irrigation Systems.
* Applicability of these standards.

**Follow-up Resources:*** Access to BIS documents and standards.
* Contact information for further queries or guidance.
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| SESSION 8 | **Session Title:** "Micro Irrigation Systems: Fertigation, Filters, Installation, Operation and Maintenance’**Duration:**1.5 Hours | To provide participants with comprehensive knowledge of filters and fertigation unit used in Micro Irrigation. Installation, Operation and Maintenance of Micro Irrigation Systems. | * + **Introduction (20 minutes)**
* **Objective:** Familiarize participants with importance of usage of certified filters in Micro Irrigation Systems
* **Content:** Overview of Filters, Types of Filters Used, Strainer Filter, Media Filter, Hydrocyclone Filter, Their Applicability, Important Requirments
* **Methodology:** Presentation with an overview of session objectives and key terms.

 * + **Fertigation (20 minutes)**
* **Objective:** Familiarize participants with concept and importance of Fertigation and relevant Indian Standards
* **Content:**

About Fertigation, methods and equipment for fertigation.Detail of Venturi Injector, Chemical Injector Pump, Fertilizer Tank Their Types, Their Applicability, Important Requirements.* **Methodology:** Lecture with presentations and examples.

 * + **Preventive Maintenance of DIS (20 minutes)**
* **Objective:** Familiarize participants with importance of Preventative Maintenance of Drip Irrigation Systems.
* **Content:**

Problems of Clogging in Drip Irrigation Maintenance and PreventionDetail of IS 14791 * **Methodology:** Lecture with presentations and real-world examples.
	+ **Design, Installation and Operation of Sprinkler Irrigation System (20 minutes)**
* **Objective:** Familiarize the participants with guidelines for Design, Installation and Operation of Sprinkler Irrigation System
* **Content:** Details of IS 14792
* **Methodology:** Lecture with presentations and real-world examples
	+ **Conclusion and Q&A (0 minutes)**
* **Objective:** Summarize key takeaways and provide clarity.
* **Methodology:** Facilitator-led summary and Q&A session.
 | **Expected Outcomes:*** Enhanced understanding of Indian Standards on Micro Irrigation Systems.
* Applicability of these standards.

**Follow-up Resources:*** Access to BIS documents and standards.
* Contact information for further queries or guidance.
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