

REVISED SYNOPSIS, SESSION PLAN & SYLLABUS OF IRSEE BATCH PROBATIONARS - PHASE - I of 8 Weeks**(Total 8 Weeks = 6 Sessions/Day x 40 Days = 240 Sessions)****(As per revised Work Distribution of IRIEEN Faculty Members issued on January-2021)**

w.e.f.IRSEE-2019 Batch

Updated on - 18.01.2021

REVISED FACULTY DESIGN. With NAME (S/Shri)	SUBJECTS & TOPICS	Revised (240 Session)				
		Nos. of Sessions (1:00 Hrs Plan)				
		Classroom	Outside Visits	LABs @ IRIEEN	Sub.Exam.	TOTAL
Shri Mohit Sonakiya, SP/M Subject - TRS (Conv.Loco + 3 Phase Loco)	Traction Rolling Stock - TRS (Conventional Locomotives + 3 Phase Locomotive) 1. Organizational Structure & Types of Locomotives. 2. General Working of Electric Loco Shed. 3. Power, Auxiliary & Brake Circuit (IRAVB2, E-70 & CCB) of AC Locos. 4. Control Circuit including DJ & SMGR Circuit for Conventional Locomotive. 5. Vehicle Control Electronics for 3 Phase Locomotives 6. Loco Equipments at roof, body, cabs & under-frame, in detail for Conventional & 3 Phase Locos (Both GTO & IGBT). 7. Bogie Suspension System and Drives of all types of Locos. 8. Maintenance Schedules (Minor & Major Schedules excluding POH/MTR). 9. Condition Monitoring Methods for Loco Maintenance. 10. Video Films related to above topics + Case Studies + Quizzes.	35	6	12	6	59
Total Sessions for TRS (Conv.Loco + 3 Phase Loco) Outside Visit will be planned for ELS(TRS)KYN or ELS(TRS)BSL / ELW(POH)BSL Workshop LABs @ IRIEEN - Conv.Loco- 04 Sessions, 3 Phase Loco- 04 Sessions & Condition Monitoring- 04 Sessions Subject Exam will be planned in 02 Session and remaining 04 Sessions will be planned for Subject Exam. Preparation		35	6	12	6	59
Shri Peeyoosh Gupta, P/TRD Subject - TRD (Traction Distribution)	Traction Distribution -TRD 1. Introduction : Electrified vs Non-Electrified Territory. 2. Organizational Structure and Duties of officers & staff. 3. Basic Principles of OHE Design. 4. Sectioning Principles of OHE. 5. Description of Over Head Equipments like Bonds, Foundations, Structures, Cantilevers, Jumpers, Turnouts & Crossovers, ATD etc. 6. Description of Power Supply Installations. 7. Description of Supervisory Remote Control (SCADA). 8. Working of TPC, Maintenance Depot & Tower-Wagon. 9. Video Films related to above topics + Case Studies + Quizzes.	28	6	8	6	48
Total Sessions for TRD Outside Visit will be planned for TSS/ SP/ SSP/ TRD Depot LABs @ IRIEEN - TRD- 04 Session & Condition Monitoring- 04 Session Subject Exam will be planned in 02 Session and remaining 04 Sessions will be planned for Exam. Preparation		28	6	8	6	48
Shri H.K.Singh, P/EL Subject - Coaching (ICF + LHB Coaches Topics)	Coaching (ICF + LHB Coaches Topics) 1. Organizational Structure & Duties. 2. Introduction to various systems of Train Lighting system. 3. Types of Coaches, Coach Wiring, Lighting and Fans and Pantry items. 4. Drive-System & Belts, Alternators & Regulators. 5. Batteries, Different Types & Maintenance. 6. Fundamentals of Air Conditioning, Definition of different terms, TR, COP, BTU etc. 7. Air Conditioning Systems on Coaches, Heat Load Calculations, Pre-Cooling and Pull Down Tests 8. Parallel Operation Test (Dyno-drive). 9. End-on-Generation and Head on Generation systems. 10. Coaching depot working, Pit occupation chart, Sick line attention, Primary and Secondary maintenance. 11. Maintenance Schedules: Trip, Monthly, Quarterly and IOH. 12. Rake Links, Requirement of Coaches, Staff benchmarking and Manpower Ratio. 13. Duties of AC coach in-charge and AC coach attendant. 14. Power Car, Pantry Car, Mini/sub pantry equipment. 15. Technical Films on above topics. 16. Video Films related to above topics + Case Studies + Quizzes.	24	6	4	6	40
Shri H.K. Singh, P/EL Subject - PE (Power Electronics)	Power Electronics - PE 1. Characteristics of Power Semi-Conductor Devices - BJT, MOSFET, Thyristors, GTO & IGBT. 2. Rectifiers - Uncontrolled, Semi-controlled & Fully Controlled. 3. Switched mode power supplies, Back Convertors, Boost Converters & Back-Boost Converters. 4. Fundamentals of DC Drives and AC Drives. 5. Four quadrant operation of Induction Motor using VVVF Drives, Braking & Regeneration. 6. PWM, Firing Control Circuits, and Filters. 7. Application Specific Integrated Circuits(ASIC), Introduction to VLSI & VHDL. 8. Video Films related to above topics + Case Studies + Quizzes.	8	0	2	0	10
Total Sessions for Coaching (ICF+LHB Coaches Topics) + Power Electronics Outside Visit will be planned for Coaching at Mumbai LABs @ IRIEEN - Coaching- 04 Sessions & Power Electronics- 02 Sessions Subject Exam for Coaching including Power Electronics Questions will be planned in 02 Session and remaining 04 Sessions will be planned for Exam. Preparation		32	6	6	6	50

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		Nos. of Sessions (1:00 Hrs Plan)				
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Shri S.K.Verma, SP/Admin Subject - EMU/MEMU (Conv. & 3 Phase EMU/MEMU)	<u>EMU/MEMU (Conventional & 3 Phase) -</u> 1. Introduction & Types of Conventional and 3 Phase EMU/MEMU. 2. Layout and Working of EMU Car Shed. 3. Power, Auxiliary Circuit and Brake System of AC EMU/MEMU-Conventional & 3 Phase. 4. Reliability and performance of EMU & MEMU. 5. Facilities for Passengers Comfort. 6. Metro Railway Systems. 7. Video Films related to above topics + Case Studies + Quizzes.	10	6	0	0	16
<p align="center">Total Sessions for EMU/MEMU Outside Visit will be planned for EMU Car Shed at MB LABs @ IRIEEN - No LABs for TRO Subject Exam will be taken for EMU/MEMU with TRO Subject Exam.</p>		10	6	0	0	16
Shri C.M.Rawat, Lecturer Subject - TRO (Traction Operations)	<u>Traction Operations - TRO</u> 1. Organizational Structure & Duties of Persons in TRO Org. 2. Manpower & Motive Power Planning - Crew Link & Loco Link for Coaching. 3. Crew Management - Training, Monitoring and Counseling of Drivers. Safety Category, Road Learning, Personal Stores. 4. Rest & Mileage Rules, HOER & Steps to reduce over hours of working. 5. CREW Utilisation & ways to improve it. 6. Traction Mechanics-Adhesion, Tractive effort etc. 7. Safety, G & SR pertaining to Loco & Running Staff. 8. Trip Shed Activities & Management & Statistical Data, Statement 4-A. 9. Foot Plate Inspection by TRO Officer. Details of Running Rooms. 10. Miscellaneous Topics (GDR, Paper Line Clear, BPC etc.). 11. Sequential Procedure for charging the Electric Locomotives. 12. Video Films related to above topics + Case Studies + Quizzes.	20	6	0	6	32
<p align="center">Total Sessions for TRO Outside Visit will be planned for TRO at Mumbai CREW Lobby & Trip Shed at Igatpuri LABs @ IRIEEN - No LABs for TRO TRO Subject Exam including EMU/MEMU Subject Questions will be planned in 02 Session and remaining 04 Sessions will be planned for Exam. Preparation</p>		20	6	0	6	32
Shri N.D.Turkar, P/Loco Subject - GS (General Service)	<u>General Services - GS</u> 1. Organizational Structure. 2. Power Supply Systems, Substation Equipments, Power Factor Improvement. 3. General Concepts of Earthling, Earth Resistance Measurement. 4. Essentials of Lighting & Pumps, Motors & Energy Conservation. 5. Water Supply Pumping Installations, Automation of Pumps, Lighting, Air Conditioners etc. 6. Window/Package AC Units, Central Air Conditioning Plants, Cooling Towers, Water Heaters, Water Coolers and Refrigerators. 7. Maintenance Schedules and Practices for Sub-Stations, Service Buildings, Transformers, CBs, Isolators, Fuses etc. 8. Tariff, Billing, Maximum Demand, Load Factor, Diversity Factor etc. 9. Video Films related to above topics + Case Studies + Quizzes.	20	0	4	6	30
<p align="center">Total Sessions for General Service No Outside Visit for General Service LABs @ IRIEEN - General Service- 04 Sessions Subject Exam will be planned in 02 Session and remaining 04 Sessions will be planned for Exam. Preparation</p>		20	0	4	6	30
Shri Himanshu Sharma, SP/PO Gen.Topics	<u>General Topics -</u> 1. General Introduction and outline including Probationers Training Details. 2. Introduction to Indian Railways and Railway Working system of each stream of Electrical Department. 3. Brief about Field Training. 4. Project allotment and discussion. 5. Miscellaneous issues including Demands of Revenue Heads & Capital Expenditure pertaining to Electrical Department. 6. IRIEEN Documentary Video Films.	5	0	0	0	5
YOGA CLASSES	Weekly One Class of One Hour will be planned for Yoga. Not counted in Session counting since planned from 16:30 hrs to 17:30 hrs in Misc Session Timings. (Total 8 Sessions for 8 Weeks of Phase-II)	0	0	0	0	0
LIBRARY	Library Sessions for issuing of Books and miscellaneous issues - Daily Last Session as Misc Session.	0	0	0	0	0
GRAND TOTAL OF SESSIONS INCLUDING EXAM.		150	30	30	30	240

NOTE :- 1) Session Plan as per Latest Work Distribution of IRIEEN Faculty Members issued on 07.07.2020 and Syllabus, Session Plan including Exam Pattern has been revised on 20.07.2020.

2) In case of Holidays during the above period of Phase-I, session plan will be adjusted accordingly.

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Faculty Wise Summary						
Name of Faculty & Desination	Total Session Subject Wise	Classroom	Outside Visits	LABs @ IRIEEN	Sub.Exam.	TOTAL
Shri Mohit Sonakiya, Sr.Prof./M	Total Sessions TRS (Conv.Loco + 3 Phase Loco)	35	6	12	6	59
Shri Peeyoosh Gupta, Prof./TRD	Total Sessions for TRD	28	6	8	6	48
Shri Himanshu Kumar Singh, Prof./EL	Total Sessions for Coaching(ICF+LHB Coaches Topics) & Power Electronics	32	6	6	6	50
Shri S.K.Verma, SP/Admin.	Total Sessions for EMU/MEMU(Conv. + 3 Phase)	10	6	0	0	16
Shri C.M.Rawat, Lecturer	Total Sessions for TRO	20	6	0	6	32
Shri N.D.Turkar, P/Loco	Total Sessions for General Service	20	0	4	6	30
Shri Himanshu Sharma Sr.Prof.(PO)	Total Sessions for Other General Topics	5	0	0	0	5
GRAND TOTAL OF SESSIONS FOR PHASE-I		150	30	30	30	240
<p>After Revision - Only Five Subject Examination will be taken in Phase-I for 40 Marks each and in total 200 Marks, hence further no conversion of marks is required for Final Marks Calculation Sheet</p> <p align="center">1) Traction Rolling Stock-TRS (Conv.+3 PH Loco), 2) Traction Distribution-TRD, 3) Traction Operations-TRO + EMU/MEMU, 4) Coaching + Power Electronics-PE & 5) General Service-GS</p>						