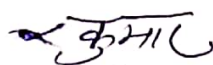


**Day wise Proposed revised training module for Initial Course for App. ALP (PE-1).**  
Duration – 27 Days

| Day | First Half  | Second Half   | Duration |
|-----|---|---|----------|
| 1.  | Reporting of class. General information about Indian Railways. Fire fighting  | . Definition of Current, Voltage, Resistance, Inductance & Capacitance and their measuring instruments, Precaution to be taken with various voltages of Electricity.  | 01 Day   |
| 2.  | Electrical symbols, conductors, semiconductors (Diode, GTO, and IGBT), and insulator. Ohm's law, series and parallel connections.   | Electrical circuits, open circuits & close circuits, short Circuits. Protective devices – fuses, relays, contactors.  | 01 Day   |
| 3.  | AC/DC motor working principle, Motor in series/parallel, speed control, Generators/Alternators working principle. Batteries, Convertor/Rectifier and invertors.   | General information about Locomotives, types of Loco's, Technical Data. WAG-5(layout) with general description of all fitted equipments. Contactors & relay with practical demonstration of wedging them.   | 01 day   |
| 4.  | Difference between power and control circuits in Locos. Battery charging & Auxiliary compressor control circuit, checking of BA & CHBA voltage. MCPA troubleshooting  | Troubleshooting of RS/PR pressure not building up. Description of feeding power circuit .Pneumatic circuit of auxiliary compressor and raising pantograph, Parts of pantograph. Action taken if pantograph not raising, Pantograph testing method, action taken if pantograph broken. | 01 day   |
| 5.  | HPT link, Roof bar, ET-1, ET-2, QLM, HOM. Action taken during QLM dropping. Main transformer, GR, GR safety, PHGR, CGR-1, 2, 3, RGR, RPGR.  | Description of traction power circuit-RSI, SL. Line contactor, Reverser, Manual setting of Reverser. Shunting Notch and shunting contactor.Q-20, QD, ammeter, Voltmeter.  | 01 day   |
| 6.  | Troubleshooting regarding QOP and QRSI dropping. Pilot lamp control circuit –signalling relay, action to be taken during CCLS melting. Description of auxiliary power circuit-TFA, Auxiliary motors chart, Q-30, C-118, R-118, QCVAR. Action taken during QOA & QLA dropping. | Description of auxiliary control circuit, working of various auxiliary motors, control switches, isolation of auxiliary motors. Safety of ARNO convertor. RTPR, Twin beam headlight, DC to DC convertor, battery charger, action taken during CCA fuse melting.                       | 01 day   |
| 7.  | Air & Vacuum Circuit breaker DJ control circuit, preparation of opening & closing DJ. Manual DJ closing by Q-118, Q-44, Q-45, precautions to be taken after wedging of Q-118 AND Q-44.  | Tripping via different relays auxiliaries through DJ closing circuit. Trouble shooting of ICDJ, operation- A, B, C, and D-1 & D-2.  | 01Day    |
| 8.  | Line contactor control circuit, switch position of HMCS-1 and 2, control circuit of Q-50, Q-51 and SMGR. MP/EEC/Manual operation. Auto Regression circuit (QD). Demonstration of Manual control of GR.  | Reason to avoid Electrical braking, dead Loco movement. Hand brake with demonstration.  | 01 day   |
| 9.  | Description of MR charging circuit, MR pressure not built up, compressor efficiency test. FP charging circuit. Description of BP charging circuit. Charging & discharging of BP pressure.   | BP pressure not built up, BP continuity test. BP leak test of Loco and train, action to be taken during front BP angle cock broken. Description of Independent & Synchronizing Loco brake system, Loco brake test.  | 01 day   |
| 10. | VCD, Air dryer, Auto flasher light, BPEMS, Speedometer, ESMON,. Direct drive, Checks before energizing a Locomotive.  | Introduction of SIV Loco. Types of SIV and Its working. Benefits of SIV in comparison with ARNO , Equipments removed/provided.  | 01 day   |

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|-------|--|--|---------|
| 11.   | Tripping and troubleshooting of External & Internal Faults. Troubleshooting regarding SIV not working, compressor and Blower not working.                                      | Microprocessor Loco and its benefits. Tripping & Troubleshooting of MPCS Version – 3.0, Modification in conventional loco. Various schedule inspection of Loco-IA, IB, IC etc.   | 01 day  |
| 12.   | Energizing multiple Locomotives. Procedure of cab changing. Different types of COC's and Switches- Position in Trailing & Leading Loco, Tripping & Troubleshooting of MU Loco. | Operating Instructions. Duties of ALP during – Take over charge, Run, Halting at station & Hand over charge. Safety precaution before entering in HT compartment. Train parting (causes and steps for avoiding train parting), wheel slipping. Procedure for stopping a train on a rising gradient, Controlling of heavy loaded Train on Down gradients. | 01 day  |
| 13.   | Troubleshooting in Tripping car.   |  | 01 Days |
| 14.   | Safety Items To Be Checked & Location at GZB out-pit.  |  | 02 Days |
| 15.   |  |  |         |
| 16.   | Working during abnormal conditions-Flooded Tracks, Foggy weather, floating Wheel. Fire smoke in Loco, Head light defective and horn not working.                               | Examination (1 <sup>st</sup> Paper)  | 01 Days |
| 17.   | Technical Data, Abbreviation, characteristics of three phase Locomotives. Lay Out (General Idea of working).   | Description of Cab and A, B, C, D panel. Description of pneumatic panel.   | 01 Days |
| 18.   | SB-1, SB-2, HB-1, HB-2. Battery. Auxiliaries compressor, Types of MCB's.   | Traction Power circuit.  | 01 Days |
| 19.   | Auxiliary Power circuit and Load distributions/sharing of three phase 415 v Auxiliaries. Single phase-415/110 Volt Auxiliaries, Harmonic Filter and Regenerative braking.      | Main Compressor & reservoir, BP charging and brake system. Parking brake, Memotal, fire alarm. Flasher light. Operation of- constant speed controller, emergency STOP push button.   | 01 Days |
| 20.   | Miscellaneous-Over current relay, catenary voltage out of limit. Sanding, working function inactive cab, alarm chain pulling, Train parting.                                   | Educating & provide hands on training for reading DDS kept in Model Room.  | 01 Days |
| 21.   | Procedure to energize three phases Loco. Dead Loco attachment. IGBT, Hotel Load, maintenance schedule chart.   | Banking mode, Procedure of passing neutral section. Modified Three phase Loco.Knorr-Bremse Loco fitted with CCB. How to activate PTDC.   | 01 Days |
| 22.   | Location of Three Phase Loco.  |  | 01 Days |
| 23.   | Studies of Various OHE components- catenary/contact wire, cantilever assembly, droppers. Insulator, Bonding, Implantation.   | ATD assembly, Display boards, Precaution to be followed on electrified territory..   | 01Days  |
| 24.   | Taking over charge from incoming crew, operating instructions. Troubleshooting of Three Phase Loco.  |  | 01 Days |
| 25.   | Three Phase multiple Loco. Push Pull system of Three Phase Loco. Loco grounding.   | Vigilance control device. How to isolate a bogie by using switch 154. How to operate switch 160, switch 237.1 & switch 152.  | 01 Days |
| 26.   | Control Electronics on/off, cooling mode, Types of faults and code. Reading of DDS.  | Modifications- VCU, ECPSW. SOAEB, RTIS, TPSW & DPWCS etc.  | 01 Days |
| 27.   | Exam (2nd paper) & Release   |  | 01 Days |
| Total |  |  | 27 Days |

  
 C1/ETC