

I. Entry Level Examination (Self Knowledge Based)

(M.M.=100)

(Min. Pass Marks=50)

Training Module for P.P. HC(R) to ASI(R)

S.No.	Topic	Topic details
1	A.C. theory & Networks analysis	<u>Brief introduction only</u> 1. Brief theory of Alternating Current. 2. Concept of Power, voltage, current, impedance & power factor etc. 3. Basic R,L,C components, resonance, & basic circuit idea. (filter, coils & coupling etc.)
2	Power electronics	2. Definitions and specifications of basic electronic circuitry. Voltage regulator, Power supply, SMPS and different batteries(Li-ion, Li-polymer & VRLA Battery)
3	Electronic devices and circuits	3. Semi conductors, Diode, Transistors/MOSFET, Opto-electronic devices, Amplifier, Oscillator & MODEM definitions, properties & specifications.
4	Digital electronics	4. Introduction to multiplexer, Flip flops, resistors and micro processor application in radio sets.
5	Radio communication technique	5. Modulation techniques (AM, FM, PM, FDMA TDMA, & PCM,) Transmitter & Receiver
6	Transmission line, antenna and wave propagation	6. Types of transmission line, antenna and brief introduction of wave propagation SWR, impedance match, types of regular cables in use.
7	Brief Introduction of Radio Operating Procedure on following points.	1. Pro sign, Authorized abbreviation. Operating signals. 2. Types of message, Section and component of formal message, Component used in procedure message, Service message. 3. General instruction on message writing. Use of priorities, security. 4. Out message, In message, Through message, N.R slip, delay memo. 5. Call and call sign, preliminary calling and answering, establishing communication, discipline to be exercised when calling and answering, offering message. 6. Transmitting message, Reception of message. Identification, Checks, Repetitions and correction check, repetition and correction of group count, control working break in working. Time signal, Emergency silence, Authentication. 7. "F" method, "G" method, Broadcast method (B.C.) difficult communication method (D.C.) 8. Operating rules, Radio log, Recording of message, Handing and taking over charge the watch. 9. Abbreviated procedure. 10. Distress signal, Alarm signal, Urgency signal, Safety signal. 11. General types of R/T communication, How to speak, Preliminary calling and answering, Control working, initiating R/T conversation, Transmitting and receiving formal message, Abbreviated R/T procedure, Security. 12. Q code and P code. 13. D.S.R. 14. Basic knowledge of communication security, PWCC. 15. Duties of OIC (R) watch and S.S.O. Signal security. 16. Handling of CSD/Cipher document.
8	Message receiving/sending by e-mail.	Message receiving/sending by e-mail. (each 5 message practice)

## II. Technical Knowledge (Theory)

### Training Module for P.P. HC(R) to ASI(R)

(Duration 04 Week)

S.No	Topic	Topic details	No. of Period (50)
1	Basic Radio Operating	1. Messaging - Receiving & Sending Skills, message drafting, Dictation, correction & brief report preparations. 2. Message priority, message clarity, message keeping and Record handling. 3. DSR preparation- VHF R/T messaging at control station, maintenance of call signs for destination stations, DSR preparation & time bound distribution. 4. E-mail messaging - Creation of E-mail account, maintenance & updation of address directory, composition of brief messages, attaching files, folders, images, pdf, jpeg etc. download attachment & save records procedures.	02
2	Radio Procedure (PWCC)	Complete new wireless procedure (D.C.P.W. addition) Duties of OIC (R) watch and S.S.O., Signal security.	04
3	Basic Radio Theory	1. Wireless Communication Sets- Brief introduction to VHF Sets like GP 338/328, & GM 300, kenwood manpack TK 2317, 2170 and digital sets, UHF trunking sets, study of specifications, signal flow diagram, Theory of LOS, losses in communication and ways to minimize them. 2. HF Sets, Specifications of common HF sets, Digital HF system, choice of day and night frequencies, installation of dipole antenna and matching unit 3. Communication devices - Antenna, Transmission line, different cables, SWR theory and measuring. 4. Test equipments- Theory of operations- VSWR meter, Radio Test Set equipment, A.V.O. Meter, S.S.G. and S.W.R. meter, RF Watt meter, Through Line Watt Meter. 5. Basic communication networking - VHF and HF networking in MP, allotted frequency to districts, frequency reuse, networking during special duties, Types of Repeater, Simplex, Semi duplex, Full duplex, parallel, serial repeaters. Patch unit, 1DIR, SIMOCO Repeater etc. General maintenance of Repeaters and their importance.	09
4	Digital Trunking System	1.1- Introduction to Trunking concept & System Operations. 1.2- Field operation, talk group management, Fail- soft status. 1.3- Working function of main components and handling precautions. 1.4- System advantages over conventional systems, Introduction to TETRA system, Specifications & features.	02
5	Dial-100 :- System architecture & System operations	(A) Define objective role of officer incharge Dial-100. 1. Introduction to Dial-100 system & system architecture. 2. Job description- Duties & responsibilities of Call Taker, Dispatcher, SPOC. 3. Detailed study of SOP 1 & 2 of Dial-100. (B) Role in execution of Dial-100 1. Role & responsibilities of Supervisor in Dial-100. 2. FRV management in district (2.1) Control room Dial-100 management. (2.2) Tools & Instruments of FRV. (2.3) Staff training for Net viewer/Desktop/FRV 3. MDT- Introduction & use of MPS software. (C) GIS Mapping 1. Introduction, importance & utility of P.O.I. in mapping. 2. Collection of P.O.I. in field. 3. Precautions during field data collection.	02

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		<p>(D) General Operations (on dashboard)</p> <ol style="list-style-type: none"> <li>1. Complaint ticket generation.</li> <li>2. Helpdesk operation &amp; uses.</li> <li>3. E-ticket generation.</li> <li>4. Data analysis &amp; report generation.</li> </ol> <p>(E) Operation on dash board.</p> <ol style="list-style-type: none"> <li>1. Introduction of AWAYA phone system of Dial-100 call center.</li> <li>2. Introduction of I-call center &amp; I-Dispatcher software.</li> <li>3. Use of dashboard for report generation.</li> </ol> <p>(F) Feedback &amp; public response.</p> <ol style="list-style-type: none"> <li>1. Feedback</li> <li>2. Whatsapp Desk</li> <li>3. Social Media- Facebook &amp; Twitter handling.</li> <li>4. Cyber security precautions.</li> </ol>	
6	Communication Networking 6.1 VHF Network :-	<ol style="list-style-type: none"> <li>1. Introduction to VHF Networks, installation process, Site Selection, Height of Antenna. Repeaters &amp; Patch units.</li> <li>2. Frequency programming in VHF sets/ repeaters.</li> </ol>	04
	6.2. Practical approach to field operation & communication management.	<ol style="list-style-type: none"> <li>1. Frequency allotment in VHF network &amp; frequency monitoring.</li> <li>2. Wireless frequency spectrum licensing &amp; Indian wireless telegraphy act 1893.</li> <li>3. Geographical maps, radio mobile software &amp; installation of radio station/tower.</li> <li>4. Power Source - Battery &amp; Generator management.</li> <li>5. Active lightening arrester, types &amp; specifications.</li> </ol>	
	6.3 HF Network	<ol style="list-style-type: none"> <li>1. HF installation, networking &amp; tuning.</li> <li>2. Types of HF sets and specifications.</li> <li>3. Introduction of digital HF installation, programme of set as per encryption key, with the help of programming software.</li> </ol>	
7	CCTV	<p>(A) City surveillance system –</p> <ol style="list-style-type: none"> <li>1- CCTV System introduction, network architecture, operation and uses.</li> <li>2- CCTV System implementation in cities of M.P. 1st and 2nd phase in brief.</li> <li>3- Types of cameras used in CCTV system specification and working.</li> <li>4- CCTV field unit / outdoor equipment and maintenance.</li> <li>5- CCTV indoor/Control room equipment, maintenance &amp; system software.</li> <li>6- District/City CCTV police control room working.</li> <li>7- SCMRC control room monitoring and working.</li> <li>8- VMS, NMS, Command &amp; Control, Helpdesk working, CCTV Networking basics and SOP.</li> <li>9- ANPR system.</li> <li>10- Location, Equipment and system etc. checking before &amp; after installation of CCTV system.</li> <li>11- RLVD system.</li> <li>12- Mobile surveillance vehicle viewing and retrieving video.</li> </ol> <p>(B) PS CCTV System – system features, network architecture, working and operation.</p>	02
8	8.1 Introduction of Video Conferencing	<ol style="list-style-type: none"> <li>1. Introduction</li> <li>2. Parts of video conferencing</li> <li>3. Modes of video conferencing</li> <li>4. Video conferencing component &amp; equipments.</li> <li>5. Component functions</li> <li>6. Remote control button &amp; there use</li> <li>7. Installation procedure of video conferencing</li> <li>8. Benefits of video conferencing</li> </ol>	02
	8.2 UAV	<ol style="list-style-type: none"> <li>1. Introduction to UAV.</li> <li>2. Main features &amp; Benefits</li> <li>3. Performance parameters</li> <li>4. Specifications</li> <li>5. Surveillance tool</li> <li>6. Application areas</li> </ol>	02

	7. Deployment method 8. Precautions before, after & during UAV flight 9. Govt. regulations regarding UAV flight. 10. Handling of UAV & precautions. 11. Parts of UAV 12. Software introduction. 13. Anti Drone Technology	
8.3 Biometric	1. Overview 2. Working Procedure 3. BAS use in organization 4. Registration method 5. Requirements for BAS 6. Precautions in installation of BAS Machine 7. Types of report and there analysis.	02
8.4 ROIP	1. Overview 2. Working procedure 3. ROIP use in organization 4. Components of ROIP, Advantages of ROIP System. 5. Common frequent problems & there Solution methods for ROIP System.	02
Computer	(A) Computer hardware and networking, data centre hardware introduction, working and data centre network architecture. Description of computer architecture, Input and Output devices. Introduction with computer language and volatile and Non volatile memories. (B) MS Office (Word/Excel/Powerpoint) Basic	04
Social Media	Computer.Operation of Social networking like Whatsapp, Twitter, Facebook , SMS & Cyber Security. 1. Whatsapp - Installation, Profile updating, Privacy settings, 2-.Twitter - Installation, Profile updating, Privacy settings. 3. SMS - Message sending procedure. 4. Facebook - ID creation, Profile settings, Privacy settings	03
Communication Network	VHF and HF networking. Way of transmission (Simplex, Half Duplex and Full Duplex). Need of repeater and its importance in VHF networking, Squelch voltage and importance in fabrication of repeater/patch unit. Advantage s of repeater and limitations. Trouble shooting in repeater, fault finding and remedy. Integration Techniques of digital trunking/tetra system with VHF Network.	02
Solar System	Working principle of Solar PV cell. How to install solar PV panel working of intelligent BTY. Charger and role of MPPT charging. Designing of a power pack.	02
Behavioral Science	Telephone talk, Wireless talk and their etiquettes.	02
Digital Mobile Radio (DMR)	Introduction, modes of DMR, Dispatcher, and Microwave link Advantages and disadvantages. Introduction of LTE based radio	03
APCO-25	Introduction , Operation and Advantages	01



**III. Professional/Official Approach (Administrative Role)**  
**Training Module for P.P. HCR (R) to ASI(R)**

S.No	Topic	Topic details	No. of Period (20)
1	Disaster Management	Definition of Natural calamities & disaster, Role of NDRF and SDRF, Role of police during disaster.	02
2	Administrative function of district (radio) incharge	Administrative set up of MP Police, Role of workshop, Store, Office, PRC in Zonal and State Head Quarters, function of various branches, DCPW.	02
3	Store & Purchase Rules	Introduction to GOP 126/07, sanctioning authority of officers in police, procedure of keeping store ledgers. Condemnation and write off of store items, recovery of losses, Inventory Portal and Purchase Rules	03
4	Handling of Cipher documents and communication	Introduction & definition of security, Types of message, Security destruction maintenance of records etc. General idea of wireless operating license procedure, scrabbling techniques, communication breaches, cipher software.	03
5	Office Administration	Role of department in changing telecom scenario, Official correspondence and filling Proper way of documentation in PC, leave rules, TA rule, Medical rules, Orderly Rooms, Police organization, Police regulation, Maintenance, Maintenance of registers in admin, duties of OIC(R) watch, record keeping.	02
6	Role & Functions of MTO	Maintenance of vehicles and vehicle records.	01
7	Project handling	Short term task management (POI, SPOC Data, Major Technical Installations etc.)	01
8	Communication skills	Brief media reporting, Social Media - Brief messaging and event report writing.	01
9	Role of SRC	Record maintenance of service book, OB & compilation	01
10	Operating functional skills	General ability to receive, sending, cipher message code/decoding.	04
		1. Skills in Computer typing & moderate speed. 2. E-mail message composition, message downloading, save records files & mail forwarding operations. Introduction to Radio Procedure 1. Familiarize with type of messages, section component of formal message. 2. General instructions regarding message writing. (use of priorities & securities) 3. Call signs, establishing communication, communication discipline. 4. Operating rules, Radio log, recording of message, H/O of charge during shift change. 5. DSR preparation & distribution. 6. Basic knowledge of communication security, handling of CSD/cipher documents. 7. Type of classified messages to encoded for transmission. 8. Introduction to computer based automated Cipher system. 9. Security classification of classified message. 10. Security of classified files, papers, message and other materials. 11. Security of equipments/installation. 12. Importance of secrecy devices in communication security. 13. Communication procedure for classified message, prevention of compromise. 14. Maintenance of records of destruction/disposal.	



**IV. Practical approach and innovation**  
**Practical Training Module for P.P. HC(R) to ASI(R)**

S.No	Module Categories	Practical Topic	No. of Period
1	Instruments	1.1 Radio test set - parameter testing's & specifications.	05
		1.2 Specification & operation of various types of radio sets.	
		1.3 Study of block diagram of VHF radio sets.	
		1.4 Parameter testing of radio sets.	
		1.5 Solar system- auto switch/PCB/MPPT charge controller/ intelligent charge controller, Battery charging system.	
2	Software uses	2.1 Working of GPS.	03
		2.2 To locate line of sight using radio mobile.	
		2.3 Frequency programming in radio sets	
3	Fault finding	3.1 General fault in radio sets.	08
		3.2 Tracing & fault finding in radio circuitry .	
4	Demonstration/ Visits	4.1 Study the connectivity of repeater with radio set.	08
		4.2 Introduction, operation of Dial- 100, Technical visit of Dial-100 control room/ CCTV control room.	
		4.3 Operation & handling of U.A.V. – Exposure level introducing idea.	
		4.4 Operation of VC system.	
5	Fabrication	5.1 Elementary knowledge of light, Fan and power wiring.	04
		5.2 Earthing and cable jointing, graded fuse.	
		5.3 Transistor, Transformer, Relay, Diode & Bridge testing.	
6	Procedural	6.1 (A)Wireless frequency spectrum licensing related rules and regulations and relevant legal provisions regarding wireless act. Indian telegraphic act. (B) Proposal request form no. 11 send to WPC. Letter of intent, submission of license fees and royalty charge as spectrum charge, decision letter/agreement in principal SACFA-citing clearance, wireless operating license	04
		6.2 Legal instructions and related provisions in UAV operations.(active searching regarding related topics)	
7	Communication Network Installation	7.1 Installation of 60 ft. and 80 ft. Mast/hydraulic Mast for VHF antenna.	05
		7.2 Installation temporary DMR/VHF/ HF radio set for VIP/ VVIP duty.	
		7.3 VHF networking. Integration of Trunking/Tetra with VHF Network	
		7.4 Installation &operation of CCTV, P.S. CCTV system, Operation of ANPR camera.	
		7.5 Installation & operation of biometric.	
8	Practical Demonstration	8.1 Cyber Security - Precautions to be taken while working on Internet/ using pen drive / Do's & Don'ts for E-mail.	08
		8.2 Integrated Control Room	
		8.3 CCTNS	
		8.4 ROIP – (A) General description ROIP interface box, software, installation and configuration. (B) Radio configuration.	
		8.5 CUG Portal – Updation of database	
		8.6 Installation & operation of MDT.	
		8.7 Operation of net viewer	
		8.8 Operation of Biometric attendance system(BAS)	
9	Social Media Handling	9.1 Social media – Legal aspects and instructions of Information technology (IT), Precautions on handling of Internet use. Brief messaging and summary report writing in 50-150 words	05
		9.2 Identification of resource persons in districts as a pool of expertise regarding specialized trainings/TOT.	
		9.3 Active searching of advanced technical topics and its relevant presentation.	

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## उप निरीक्षक(रेडियो) का कार्य विवरण एवं उत्तरदायित्व

1. जिला कन्ट्रोल रूम/डायल-100/सीसीटीवी सर्विलेन्स/जिला रेडियो प्रभारी से संबंधित अन्य सभी कार्यों का ज्ञान।
2. एम.एस.वर्ड, एक्सेल, पावर पाइन्ट एवं कम्प्यूटर नेटवर्किंग का ज्ञान।
3. विशिष्ट एवं अति विशिष्ट व्यक्तियों एवं चुनाव ड्यूटी व अन्य महत्वपूर्ण आयोजनों के समय की जाने वाली संचार व्यवस्था का ज्ञान।
4. वरिष्ठ पुलिस अधिकारियों एवं प्रशासनिक अधिकारियों से समन्वय स्थापित करना।
5. पदानुसार निर्णय लेने की क्षमता, वरिष्ठ अधिकारियों से पत्र व्यवहार एवं दस्तावेजों का संधारण करने का ज्ञान।
6. निर्वाध रूप से संचार व्यवस्था बनाये रखने हेतु संचार उपकरणों का रिपेयरिंग, मेंटेनेन्स का पर्यवेक्षण कार्य।
7. अधीनस्थ स्टॉफ से समन्वय/समस्याओं का निदान एवं वरिष्ठ अधिकारियों को अवगत कराना।
8. कानून-व्यवस्था ड्यूटी एवं आपदा के समय संचार योजना व व्यवस्था लगाना।
9. प्राथमिक जांच करना एवं विभागीय जांच में प्रस्तुतकर्ता अधिकारी के दायित्वों का ज्ञान।
10. स्टाफ को व्यवहारिक प्रशिक्षण, कल्याणकारी गतिविधियों का संचालन एवं प्रोत्साहन।
11. जिला प्रभारी (रेडियो) के दायित्वों एवं कार्यों के कार्यकारी निर्वहन का ज्ञान।