

(I) Charpoy Raft

SECTION-6

USE OF EXPLOSIVES AND IMPROVISED EXPLOSIVE DEVICE (IED)

Ques. 1 – What are the main components of IED (improvised explosive device)?

- Ans - (a) Explosive.
(b) Detonator.
(c) Initiating Mechanism.
(d) Power Source.

Ques. 2 – Where all the IED can be planted?

- Ans - (a) Public areas (railway stations, bus stands and airports).
(b) Public Transport (bus, train, aero plane and ship).
(c) Public Utilities (library, offices and Industries).
(d) Military Installations (ammunition dump, fuel oil and lubrication dump and supply depot).
(e) VIP vehicle.
(f) Along road / tracks, where VIP / security forces are likely to move.
(g) Places where large congregations are likely to take place.
(h) Places of religious worship.
(j) Important buildings e.g. Schools, colleges, hospitals and business centre, government offices etc.
(k) Important bridges.
(l) Historical monuments.

Ques 3 - What are the indications of IED?

- Ans - (a) Any unattended item.
(b) Unclaimed attractive items like cell phones, transistor, tape recorder etc.
(c) Any object out of place.

- (d) Loose electric wire.
- (e) Any antenna wire.
- (f) Freshly dug earth.
- (g) Dry grass / leaves, cow dung / garbage etc for camouflage.
- (h) Broken road or freshly repaired road.
- (j) Fresh plaster or painting.

Ques 4 - What are the Do's with IED?

- Ans -
- (a) Remain away from suspected object.
 - (b) Be aware of booby traps.
 - (c) Warn the people about the suspected objects.
 - (d) Inform police / bomb disposal squad.
 - (e) Help police in crowd management and traffic control.
 - (f) Evacuate local population to a safe place.

Ques 5 - What are the Don'ts with IED?

- Ans -
- (a) Do not believe unattended object to be safe.
 - (b) Do not handle suspected object.
 - (c) Do not panic on detection of IED.
 - (d) Do not think only one IED has been placed.
 - (e) Do not immerse suspected object in water.
 - (f) Do not spread rumours.
 - (g) Do not bunch up near the suspected object.
 - (h) Do not cut any wire.
 - (j) Do not make loud sounds near the IED.
 - (k) Do not light a fire near IED.
 - (l) Do not be in a hurry and try to become a dead hero.

SECTION-7

CAMOUFLAGE AND CONCEALMENT

Ques 1 - What is the aim of camouflage?

Ans - It is the concealment of man and equipment from enemy's direct and indirect observation.

Ques 2 - What are the various factors which aids recognition?

- Ans -
- (a) Shape
 - (b) Shadow
 - (c) Silhouette
 - (d) Surface
 - (e) Spacing
 - (f) Movement
 - (g) Shine
 - (h) Position
 - (i) Contrast
 - (j) Noise, sound and activity.

Ques 3 - What are the fundamental ways of concealing activities?

Ans - These are as under:-

- (a) Hiding. It is complete concealment of an object by placing a screen between the object and the observers.
- (b) Blending. It is the arrangement of camouflage materials on, over and around the object so that it appears to be part of the surroundings. The aim is to prevent detection of the object by a change in natural appearance of the position.
- (c) Deceiving. Deceiving simulates an object or disguises it so that it appears to be different.

SECTION-8

TYPES OF MINE FIELDS

Ques 1 - What are the main functions of mine fields?

- Ans.
- (a) Delay and disorganize enemy attack and discourage his entering into our defended positions.
 - (b) Force the attacker to select certain approaches or routes thereby luring him into a place where he can be killed.
 - (c) Separate infantry from tanks.
 - (d) Deny close observation of main defences.

Ques 2 - What are the type of mine fields as per technical considerations?

- Ans - (a) Anti Personnel. Containing only anti personnel mines and providing protection only against an infantry attack.
- (b) Anti Tank. Containing only anti tank mines and providing protection only against an armoured attack.
- (c) Mixed. Containing both anti tank and anti personnel mines and providing protection against both infantry and armoured attack.

Ques - 3. - What are the tactical classification of the mine fields?

- Ans - (a) Protective.
- (b) Defensive.
- (c) Tactical.
- (e) Nuisance.
- (f) Dummy.

SECTION-9

FIELD DEFENCE

Ques 1 - What points should be borne in mind while constructing field defences?

- Ans - (a) Fire trenches should be close enough for the section commanders orders to be heard during battle.
- (b) Reverse slopes are a great aid to concealment and surprise, provided the field of fire is sufficient.
- (c) With the increasing efficiency of airburst missiles overhead protection is important but needs good concealment and sound construction.
- (d) In open country, crawl trenches may have to be dug to allow movement between fire trenches.

Ques 2 - What are the various field fortifications?

- Ans - (a) Bunker
- (b) Communication Trench.
- (c) Fire Trench.
- (d) Pill Box.
- (e) Shelter Trench
- (f) Slit Trench
- (g) Weapon Pit

CHAPTER-IV

FIELD CRAFT AND BATTLE CRAFT

SECTION-1

INTRODUCTION TO FIELD CRAFT
AND
BATTLE CRAFT

Ques-1 - Define Field craft?

Ans. - Field Craft is an art of using the ground and the weapon available to the best of one's own advantages.

Ques 2 – What all subjects are included in Field craft?

- Ans. - (a) Description of Ground.
(b) Observation and concealment.
(c) Judging distance.
(d) Recognition and description of targets.
(e) Movement with and without Arms

Ques 3 – What are the advantages of battle craft?

Ans - Useful in tackling minor tactical problems without confusion but the basic knowledge of field signals, section & platoon formations is essential.

Ques- 4 What all subjects are included in Battle Craft?

- Ans - (a) Field signals.
(b) Section formation
(c) Fire control orders.
(d) Fire and movements.
(e) Section battle drill.

FIELD CRAFTSECTION-2DESCRIPTION OF GROUND

Ques 1 - What are the various type of grounds?

- Ans - (a) Broken Ground. It is uneven and is generally interspersed with nullahs, bumps and field in the ground. It is suitable for move of infantry and hinders observation of activities.
- (b) Flat and Open Ground. It is even ground with little cover e.g. bushes, hedges and similar foliage. It is not suitable for move of Infantry by day.
- (c) High Ground. Ground far above the general level of the area e.g. hill. It facilitates domination of area around it by observation or fire or both.
- (d) Dead Ground. Ground that is hidden from an observer's view. It can not be covered by flat.

Ques 2 - What is the procedure for description of ground?

- Ans - (a) Fore Ground Up to 300 yards
- (b) Middle Distance From 300 yards to 500 yards
- (c) Distance Beyond 500 yards

Ques 3 - What is the procedure for indication of ground?

Ans - (a) General Line of Direction. Start by giving the general line of direction by pointing out a centrally located, if possible, prominent land mark, e.g. No 1 section 500 RED HOUSE,

(b) Boundaries. After giving general line of direction give LEFT and RIGHT boundaries of your area e.g.

(i) No. 1 section - Aadha baen 600 PILI JHONPRI nam JHONPRI section ke baen wale jawan se JHONPRI tak ki line baen had.

(ii) Similarly indicate right boundary.

(iii) Dived the ground into fore ground, middle and distance. Having done so start from LEFT to RIGHT systematically and describe.

(iv) In attack describe the ground nearest to you first i.e. foreground, then middle and then distance, in defence reverse the procedure.

SECTION-3OBSERVATION AND CONCEALMENT

Ques 1 - What is the importance of observation and concealment?

- Ans -
- (a) A soldier who is trained in both can locate and kill his enemy without being seen himself.
 - (b) Ground observation of enemy provides one of the most valuable sources of information on which the plans of higher commanders are based.
 - (c) In defence good concealment enables a defender to mystify and deceive the enemy and in the event of an attack repel the enemy by producing fire at close range from an unexpected quarter.

Ques 2 - What are the fundamentals for correct use of cover?

- Ans -
- (a) Whenever possible look through the cover and not over it.
 - (b) If it is not possible to look through the cover, look round it rather than over it.
 - (c) It is necessary to look over the cover, avoid breaking straight line.
 - (d) The sky-line is the worst background you could choose, but if you can not avoid observing over the cover and against the sky line, use something to break your silhouette.
 - (e) When firing from inside a building keep well back making use of the shadow.
 - (f) A rough, dark and irregular background which matches your clothing, provides considerable cover from view.
 - (g) Isolated cover is dangerous because it will attract attention of the enemy and can be easily indicated in a fire order.
 - (h) Avoid sky line.
 - (i) Avoid regular spacing.
 - (k) Avoid gaps for fire position.
 - (l) Cross gaps as a body and at irregular interval at the double.

SECTION 4JUDGING DISTANCE

Ques 1 - What are the various methods of judging distance?

- Ans - (a) Unit of measure.
 (b) Appearance method.
 (c) Section average.
 (d) Key ranges.
 (e) Halving.
 (f) Bracketing

Ques 2 - When the distances are over-estimated?

- Ans - (a) Light is bad.
 (b) The sun is in the observer's eye.
 (c) The object is small in relation to its surroundings.
 (d) Looking through a valley of narrow lane e.g. street.
 (e) Lying down.

Ques 3 - When the distances are under-estimated?

- Ans - (a) The light is bright or the sun is shining from behind the observer.
 (b) The object is large in relation to its surrounding.
 (c) There is some dead ground between observer and the object.
 (d) Looking up hill.

SECTION-5RECOGNITION, DESCRIPTION AND
INDICATION OF TARGETS

Ques 1 - Define target and land mark?

- Ans - (a) Target. It is an object which is indicated with a view to bring down fire on it, whenever required.

(b) Landmarks. Landmark is an object which is indicated and used in the embodiment of operation orders.

Ques 2 - Describe method of indication of easy target?

Ans - (a) Indication by Description. An obvious target can often be described directly. For example 'No. 1 Section BRIDGE' Here BRIDGE is so obvious that no body can make a mistake in recognizing it.

(b) Indication by Direction or Range or Both. In slightly less obvious cases other aids should be used e.g. direction or range or both. An example of each is given below:-

(i) Indication by Direction. No 1 Section BAEN BGHICHA.

(ii) Indication by Range. No 1 Section 600 BAGHICHA.

(iii) Direction and Range. When indicting a landmark indicate direction first and than range e.g. BAEN-600, BAGHICHA.

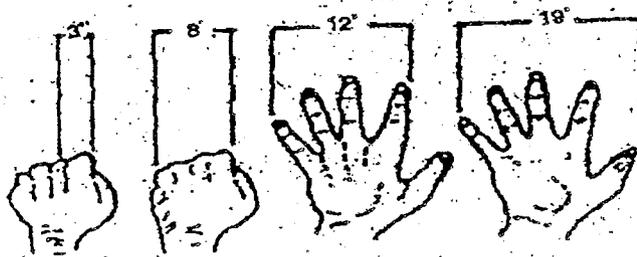
Ques 3 - What is the sequence of targets?

Ans - The easy way to remember this sequence is to remember the word 'GRAD'. The sequence is as follows:-

- (a) Designation of Group.
- (b) Range.
- (c) Aid.
- (d) Description

Ques 4 - How to measure degree with hand?

Ans - Hand Angles. This is a rough method which is sufficiently accurate for practical purposes. The various degree measurements are given in the diagrams below. Remember to keep the left (LEFT) hand fully stretched and tilt it in the required direction. As the size of hand varies considerably the figures given below are approximate only. Each person should with the help of a degree scale check his hand for degrees.



Hand Angles

SECTION-6MOVEMENT WITH & WITHOUT ARMS
(ONLY FOR SW)

Ques 1 - What is the various methods of movement by Rifle and LMG?

Ans - (a) Crawling by Day with Rifle

- (i) Monkey run.
- (ii) Leopard crawl.
- (iii) Walk.
- (iv) Roll.

(b) Crawling by Day with LMG

- (i) Knee crawl.
- (ii) Side crawl.
- (iii) Leopard crawl.

(c) Crawling by Night

- (i) Ghost walk.
- (ii) Cat walk.
- (iii) Kitten crawl.

Ques 2 - What all points must be remembered while making movements?

Ans - (a) Move from cover to cover and make use of natural camouflage. Stop, observe and listen from bound to bound and do not keep moving forward the whole time.

(b) Watch your front and flanks.

(c) Crawl slows the movement and hinders observation, therefore crawl only when you must. After crawling for some distance stop, listen and observe and then crawl further.

(d) Weapons must always be kept ready for use.

(e) Look carefully and all round for enemy.

- (f) Double across small gaps.
- (g) If shot at, drop and crawl away to a side.
- (h) Check equipment for noise.
- (j) Always consider an alternative route.
- (k) Do not disturb the birds, if this can be helped.

BATTLE CRAFT

SECTION-7

FIELD SIGNAL

Ques 1 - Describe various Hand signals?

Ans - These are tabulated as under :-

Ser No	Action	Signal
(a)	Deploy	Right arm fully extended above head and waved from side to side, palm open.
(b)	Advance	Right arm swung from rear to front in 'under arm blowing' fashion
(c)	Halt	Right arm raised to full extent above head
(d)	Turn about	Right arm raised and bent above head.
(e)	Change Direction	Right arm raised to front in line with shoulder. Body then turned in required direction.
(f)	Close	Right hand place on top of head, elbow to the right.
(g)	Quick Time	Right hand raised to line of shoulder, elbow close to the side.
(h)	Double March	Right fist clenched, moved up and down between thigh and shoulder several times.
(i)	Follow me	Right arm swung from rear to front above the shoulder, in 'over arm bowling' fashion.
(k)	Last order completed	Right hand to salute, then arm raised in air finger extended.
(l)	Last order Not understood	Both hands, cupped behind the ears.
(m)	Commander to close	Right arm to the side at 45 degrees to the body, first clenched.
(n)	Enemy in sight specific numbers	Both arms waved on sides 'Bird fashion' followed by number, indicated by number of fingers held up.
(o)	Enemy Approaching	Both hands open, palm inwards at waist level, with inwards scooping motion.

(p)	Enemy position suspected	Both hands, first clenched, raised to shoulder level, followed by indication of direction.
(q)	Enemy LMG firing	Right hand thumb down signal.
(r)	Engage Target by Fire	Both hands clasped above the head (boxer fashion).
(s)	Attack	Punching motion with Right or Left hand according to direction of attack.
(t)	Closed to Rendezvous	Close sign followed by both hands clasped in front of body at waist level.
(u)	Infantry obstacle ahead	Both hands crossed in front of body at the waist, palm open downwards.

Ques 1 – Describe various signals with weapon and whistle?

Ans:

Signals With Weapons

- (a) Enemy in Sight in small number Rifle held above the head parallel to the ground, muzzle in the direction of the enemy.
- (b) Enemy in Sight in large number As per (a) above, but arm moved up and down several times.
- (c) Advance Both arms raised to form the letter 'U'.

Signals With Whistle

- (a) Cautionary Blast A short blast to draw attention to a signal or order about to be given.
- (b) The Alarm Blast A succession of alternate long and short whistle.
- (c) Enemy Aircraft A succession of short blasts.
- (d) Enemy Aircraft departed Two long blasts repeated at interval of five second.

SECTION- 8

SECTION FORMATION

Ques 1 -What are the tactical groups of section?

- Ans --(a) LMG group
(b) Rifle group.

Ques 2 - Describe various section formations along with advantages and disadvantages?

Ans -

Ser No	Formation	Advantage	Disadvantage
(a)	Single File	Good for control, not vulnerable to enfilade fire, useful for moving along ditches, narrow defiles and so on.	Bad for fire production, vulnerable to frontal fire.
(b)	File.	Good for control. Useful for moving along broad roads, wide nullahs and so on.	Not good for fire production, vulnerable to frontal fire.
(c)	Diamond.	Good for control, not vulnerable to enfilade fire, good for all round fire production and observation.	Present a good target to frontal fire. Not very good for fire production to the front.
(d)	Arrow-head	Good depth, not vulnerable to frontal fire, good for fire production; probably the best formation for crossing open ground.	Control more difficult than in diamond.
(e)	Spread-head	Good depth, less vulnerable to enfilade fire than arrow head, LMG group not committed immediately on contact.	Control difficult. Delay in fire production.
(f)	Extended Line	The formation used in the final assault. Very good for fire production (from the hip) and bayonet fighting.	Control difficult. Very vulnerable to enfilade fire, no depth.

SECTION-9

FIRE AND MOVEMENT

Ques 1 - What are the basic considerations for fire and movement?

- Ans -
- (a) There should be no exposed ground without covering fire.
 - (b) Control by the commander.
 - (c) The angle of covering fire from direct firing weapons should be as wide as possible without loss of control or time.
 - (d) Full use should be made of all available cover. When cover is lacking the use of smoke (smoke grenade) should be considered.
 - (e) Full use should be made of all available weapons for covering fire.

Ques 2 - How the ground should be appreciated?

Ans - It should be appreciated under the following headings:-

- (a) Fire positions.
- (b) Observation positions.
- (c) Cover from fire.
- (d) Cover from view.
- (e) Obstacles.

Ques 3 - What are the common mistakes in the use of ground?

- Ans -
- (a) Carelessness by troops while making a reconnaissance, such as unfolding a map in the open or not using a covered approach to an OP.
 - (b) Unnecessary movement in a position overlooked by the enemy.
 - (c) Using conspicuous landmarks such as isolated trees, bushes or cottages.
 - (d) Halting troops near road or track junctions or other mapped features which are always registered as targets by the enemy.
 - (e) Bad track discipline.

(f) Failure to guard against enemy air observation.

Ques 4 - What are the ideal points for selection of Fire positions?

- Ans -
- (a) Provide cover from fire.
 - (b) Provide cover from view.
 - (c) Afford a good view of the ground to be watched or target to be engaged.
 - (d) Provide room in which to use the weapon freely.
 - (e) Have a covered approach.
 - (f) Be easy to advance from.

SECTION-10

SECTION BATTLE DRILL

Ques 1 - What are the stages of section battle drill?

Ans - The Section Battle Drill is divided into 4 stages.

- (a) Stage - I - Action on coming under effective fire.
- (b) Stage - II - Locating and neutralizing the enemy.
- (c) Stage - III - Attack.
- (d) Stage - IV - Re-organization

Ques 2 - What drill will be followed for locating and neutralizing the enemy?

Ans - (a) By Observation. Look in the area from which the 'thump' came. The time between the 'crack' and the 'thump' gives an indication of the range. If nothing is seen after about 30 seconds or so, it is very unlikely that enemy will be located by looking.

(b) By Fire. The section commander will give a fire control order to a couple of rifleman to fire two shots each into likely cover. The rest of the section will observe their area of observation carefully. If there is no answer to fire, then the section commander should try another couple of rifleman at some other target. If there is still no enemy fire, either they are well trained or they have withdrawn.

(c) By Movement. The section commander will order one or two men to get up and double forward about 10 yards to a different cover. He might do this again if it draws no fire. If the enemy troops are there, they must be extremely well trained not to fall for these tricks and start firing at such poor targets. (A man getting up and moving fast for about 10 yards is a very difficult target to hit). If

there is still no enemy reaction then the section commander must continue the advance.

Ques 3 - What are the important points during assault of section?

Ans - (a) The section commander will lead the rifle group in person, he is normally in the centre.

(b) Covering fire will be provided for all movements in the open. The angle of the fire should be as wide as possible.

(c) When the rifle group gets down into fire position after a bound, the LMG group must move forward into a new fire position automatically. Once the LMG group is in a position from which it can support the assault from a good angle, the rifle group will move in one bound. Before the assault goes in, the rifleman armed with the grenade discharger cup and the projector strim grenade should be ordered to remove these from their rifle, if necessary.

(d) Normally the assault will start at the 'walk' with firing being carried out from the shoulder or the hip (marching fire). The section doubles only during last 100 to 50 yards when the section commander gives order 'CHARGE'.

(e) No 1 and No 2 of the LMG group must carry sufficient magazines to support a normal section attack.

(f) As the assault goes in, the LMG group will fire as long as possible and then switch its fire across the objective just in front of the rifle group.

Ques 4 - What are the important points during Reorganisation?

Ans - (a) The LMG group will rejoin the rifle group 'at the double' immediately it sees the rifle group take cover after the assault.

(b) The section commander will organize a search of the area of the objective for any enemy hiding or wounded. Rifle numbers detailed to search will be covered by other rifleman.

(c) The section commander will check positions of rifleman and LMG group, allot arcs of observation and detail reference points.

(d) The section commander will check:-

(i) Casualties,

(ii) Ammunition expenditure, and

(iii) Refilling of LMG magazine.

(e) The section commander will await the platoon commander for further orders.

SECTION-11FIRE CONTROL ORDERS

Ques 1 - What are the important terms used in Fire control orders?

Ans - (a) Fire Unit. Any number of men firing under the command of one man, usually, a section. The person responsible for giving the executive order of fire, is the fire unit commander.

(b) Fire Direction Orders. These are the orders which the fire unit commander receives from his superior, telling him when, at what target and with what intensity to open fire. A section commander will receive fire direction orders from his platoon commander. They include special directions about opening and withholding fire.

(c) Fire Control Orders. These are orders given by the fire unit commander to direct and control the fire of the section. Emphasis should be on control and supervision. These orders are the final with complete instructions after all factors have been considered and before fire is actually opened.

(d) Arc of Fire. This denotes the area of ground for which the fire unit is responsible and within which it will engage targets. An arc of fire, must not be confused with field of fire which is the area upon which it will be possible to fire effectively in any direction.

Ques 2 - What are the important points which section commander must remember before giving fire control orders?

Ans - (a) Indication. No fire control order can be effective unless the target is clearly indicated and can be easily recognized by the men of the fire unit.

(b) Range Visibility and Vulnerability. It should be considered if the range, visibility and vulnerability of the target justify fire at all. Would it be better to wait and get a more vulnerable or more complete surprise?

(c) Best Weapon to Use. What is the best weapon to use, although the LMG is the main weapon of the section, the target may be more suitable for the fire of the riflemen only or for a combination of both weapons.

(d) Single Round or Burst. Should the fire be in single rounds or in burst. Should it be rapid or at the normal rate? Rapid rate is justified only on a comparatively few occasions when it allows the maximum effect to be gained from surprise when an especially vulnerable target presents itself or to cover move in the final phase of an assault.

Ques 3 - What are the important rules for giving out fire control orders?

Ans - (a) The orders should be given clearly, calmly and consciously.

- (b) It should be given loudly, so as to be heard over the noise of battle but should not be louder than required.
- (c) It must be given as an order, and obeyed as such.
- (d) It must be given with adequate pauses, so that those being addressed may have time to take the correct action, for example, there must be time for sight adjustment after the range is ordered. No 1 Section (Pause) 300 (Pause) fire when you see a target.

Ques 4.- What is the sequence of fire order?

Ans - The suggested code work is 'GRIT', each letter of which signifies stage in fire orders as follows:-

G -The Group of the section which is addressed, that is the LMG group or the whole section. An order starting with "No 1 Section" indicates that the whole of No. 1 Section will fire. "LMG-Group or Rifles Group" means that the group named only will fire.

R -The Range to the target. To ensure accuracy of fire and to concentrate attention on a limited area of ground.

I - The Indication of the point of aim by its description.

T -The type of fire to be employed.

SECTION-12

TYPES AND CONDUCT OF PATROLS

(ONLY FOR SD CADETS)

Ques 1 - What are the essential qualities in fighting men developed by patrolling?

Ans - Patrolling develops four essential qualities of the fighting man:-

- (a) Discipline
- (b) Comradeship
- (c) Aggressiveness.
- (d) Alertness.

Ques 2 - What are the type of patrols?

Ans - (a) Reconnaissance Patrols (Recce Patrols)
(b) Protective Patrols.

Ques 3- What are the tasks of Recce of patrols?

- Ans -
- (a) Location and details of enemy position.
 - (b) Location of obstacles laid by enemy and constant plotting of features.
 - (c) Study enemy habits.
 - (d) Any other specific information asked.

Ques 4- What are the tasks of Protective patrols?

- Ans -
- (a) To deny approaches to enemy patrols and obtain earliest possible information of the approach of the enemy.
 - (b) To gain and confirm topographical information including that of artificial obstacles.
 - (c) To give early warning of the enemy's intentions.
 - (a) To deny information to enemy patrols.
 - (b) To dominate "No Man's Land".
 - (c) To protect flanks by aggressive patrolling.

Ques 5 - What are the important points to be remembered by scouts?

- Ans -
- (a) Scouts should move from cover to cover using the correct methods of observation around cover.
 - (b) Scouts should move by short bound in area where enemy is suspected.
 - (c) A pair of scouts should move one behind another and should keep each other within easy voice control. The leading scout should often look over his shoulder to ensure that he has the second scout in visual contact. However, it is for the second scout to keep up.
 - (d) Scouts must always be alert.
 - (e) Scouts must protect each other by placing themselves in such a way that they can cover each other by fire.
 - (f) Scouts move as individuals making use of ground and cover.
 - (d) Scouts must always remain in contact with the unit through the sub-units commander.
 - (e) Communication are from front to rear. Contact is visual.
 - (j) Scouts must so move on ground and take cover in such a way that they do not give away each others position.
 - (k) Scouts must not bunch together on bounds.

CHAPTER-V

MILITARY HISTORY

Note – Cadets are advised to read relevant chapters of précis to get a thorough knowledge of Military history.

CHAPTER-VICOMMUNICATIONSECTION-1IMPORTANCE OF COMMUNICATION IN ARMY

Ques 1 – Why the efficient signal; communication is important for the Defence Forces?

- Ans - (a) Communicating between deployed troops and commanders.
- (b) Convey the details of enemy troop movements and their activities.
- (c) To change the mode of battle activities.
- (d) To implement emergency instruction in battle field.
- (e) To convey specific orders in terrain and snow bound area.
- (f) For effective operational changes in battle field.
- (g) To acquire and decipher the information and misinformation of enemy.
- (h) To prepare the troops for further operational activities.
- (j) To assess grounds level effect of operational activities.
- (k) To improve infrastructure facilities in battle field.
- (l) To carry out secure and effective communications with precaution and privacy.
- (m) Communication supply of food and evacuation of casualties.

SECTION-2METHOD OF COMMUNICATION

Ques 1 – What are the various methods of communication?

- Ans - (a) Sign Language
- (b) Voice Medium
- (c) Written script
- (d) Runners and message bearers

- (e) Line and cable
- (f) Wireless

SECTION-3

TYPES OF COMMUNICATIONS, ADVANTAGES/DISADVANTAGES

Ques 1 – What are the advantages and disadvantages of Line communication?

Ans - These are as under :-

Advantages

- (a) Reliable and practically free from electrical interference.
- (b) Relatively secure.
- (c) Number of circuits and message carrying capacity is more but limited only by availability of material and manpower.

Disadvantages

- (a) Vulnerable to physical interference and enemy interception along the entire length of the route.
- (b) Takes time to construct.
- (c) Inflexible once it is laid.
- (d) Expensive in men and material.

Ques 2 - What are the advantages and disadvantages of Net Radio?

Ans - Advantages.

- (a) Is vulnerable only at terminal and is therefore reasonably protected from enemy action except by a direct hit.
- (b) Is very flexible, can be rapidly re-arranged in the event of regrouping.
- (c) Is rapid in establishing communication.
- (d) Can work on the move although range obtained will be much less than when stationary.
- (e) Is economical in personnel and equipment.

Disadvantages.

- (a) Is inherently insecure and susceptible to enemy interception which necessitates the use of codes and ciphers with a consequent delay in clearing traffic and overall increase in operating personnel.
- (b) Net radio being inherently insecure demands a considerable degree of security consciousness on the part of the users. This means adherence to standard procedure and security codes.

Ques 3 - What are the advantages and disadvantages of Radio Relay?

Ans - Advantages

- (a) Replace line with considerable economy of manpower and stores.
- (b) It can be operated over area where for reasons of ground or enemy activity use of line may not be possible.
- (c) Provides greater flexibility than line.
- (d) Quick to set up and move except in mountainous country.
- (e) Is vulnerable physically only at terminal.
- (f) By its ability to employ multichannel equipment radio relay provides more teleprinter circuits over one link than can normally be provided over the average field cable. Thus it has much greater traffic handling capacity.

Disadvantage

- (a) Liable to interception and hence insecure. Has relatively greater security than net radio, depending upon the siting and direction of the beams.
- (b) Liable to interference from enemy jamming although not as much as in the case of net radio.
- (c) Terrain between stations must be reasonable suitable to get a 'quasi optical path', this presents difficulty in siting.
- (d) Location of terminal and intermediate stations may not suit tactical layout and may, therefore, create additional protection requirements.
- (e) Can not work on the move.
- (f) Slightly more expensive in men and material than in the case of net radio.

- (g) Needs critical siting.

SECTION-4

COMMUNICATION MEDIA

Ques 1 - What are the various transmission lines?

- Ans - (a) Parallel Wire type
(b) Coaxial type
(c) Wave Guide type.

Ques 2 -What are the various types of propagation of waves and explain each in brief?

Ans - (a) Ground Wave Propagation. Used for long and medium waves; limited range is 30 Kms.

(b) Sky Wave Propagation. Used for HF range up to 30 MHz communication, range is 100 km to 1000 Kms. These make use of ionosphere layer existing to a height of 150 -200 kms from the surface of earth.

(c) Space Wave Propagation. The propagation of VHF and UHF frequency takes place in straight lines. The range is limited by curvature of earth and so distance between two neighboring station is approx 50 Kms.

(d) Tropospheric Scatter Propagation. Also known as tropo scatter or fwd scatter propagation; extended height up to 8-10 Kms from the surface of earth.

SECTION-5

RS ANPRC-25

Ques 1 - What are the special feature and facilities available in Radio Set ANPRC-25?

- Ans - (a) It is a portable set.
(b) It has RT communication facilities.
(c) Can be used on ground and man pack.
(d) Facilities of remote operating and re-broadcasting is available.
(e) Power supply can be increased with booster unit to increase the communication range.
(f) Protection from Heat and Moisture.
(g) VHF is pre-tuned.

- (h) Suitable for Para Dropping.
- (j) Compatible with RS VA and VA Mk II and VC.
- (k) Range will be doubled when it is used with GPA.
- (l) Can be used in all type of geographical areas.

Ques 2 - What is the weight and frequency range of Radio set ANPRC -25?

Ans - (a) Weight

- (i) Radio Set - 6.10 Kg.
- (ii) Battery - 1.60 Kg.
- (iii) Accessories - 3.08 Kg.
- (iv) Complete Station - 10.78 Kg.

(b) Frequency Range

(i) Frequency range of this set is 30 MHz to 75.95 MHz which is fixed with two bands.

(aa) Band I - 30 MHz to 52.95 MHz

(ab) Band II - 53 MHz to 75.95 MHz

(ii) Its frequency range is connected with 920 channels. Channel spacing from one channel to another channel is 50 KHz.

Ques 3 - What is communication range and power supply of Radio set ANPRC -25?

Ans - (a) Communication Range

- (i) With antenna AT 892 - 8 Km.
- (ii) With Antenna AT 271 - 8 Km.
- (iii) With booster Unit - 25 Km
- (iv) With GPA with Booster - Range becomes double.

(b) Power Supply Consumption

Battery Dry HT/LT 15/3 V IA. Life of this battery is in the ratio of 1:9 for 20 hrs, in which transmission can be done for one hour and message can be receive for 9 hrs.

SECTION -6CHARACTERISTIC OF WALKIE TALKIERADIO SET GP 338 MOTOROLA

Ques. 1 - What are the facilities available in RADIO SET GP 338 MOTOROLA?

- Ans. -
- (a) It is portable and light in weight.
 - (b) Can be operated easily.
 - (c) It can be operated in VHF/UHF and 2 way simplex mode.
 - (d) 128 channel of this radio set can be preset into 8 zone.
 - (e) 16 channels can be preset into single zone.
 - (f) Frequency of this radio set can be programmed in 25 KHz channel space with the range of 12.5 to 20 KHz.
 - (g) Option of selective call facilities available.
 - (h) Call alert can be given to receiver station.
 - (i) Can select required zone.
 - (k) Start/stop facilities of scan operation available.
 - (l) Add/Delete from scan list facilities available.
 - (m) Menu key facilities are available.
 - (n) Provision of receiving signal strength indicator (RSSI) are available.
 - (o) Provision of name/Tone Tagging facility available.
 - (p) Provision of talk around indicator facility available.
 - (q) Provision of 14 character Alfa numerical display LCD facility available.
 - (r) Provision of clock/reminder alarm facility available.
 - (s) Audible alert tone indicator is provided.
 - (t) Seven programmable buttons are provided.
 - (u) Facility of emergency siren top button is provided.