

KEY: ANSWERS
'C' CERTIFICATE EXAM 2020
COMMON & AIRWING SUBJECTS (SET-I)

Max Marks-375

PAPER—I: DRILL (20 Marks)

FILL IN THE BLANKS

(5)

- (a) The angle of feet in Position Savdhan is **30° Degrees**.
- (b) Guard mounting is inspected by **Orderly** Officer.
- (c) In Guard mounting the guard falls in **two** ranks.
- (d) Blank file will always be kept on? Ans: **Left side of the flight**
- (e) To give a small break in Parade the command given is **LineTod**.

QN-1.WRITE TRUE OR FALSE.

(10)

- i) In Savdhan position the angle made by both toes is 45 degrees. **TRUE**
- ii) In Vishram position legs are 12 inches apart. **TRUE**
- iii) Maximum Four Steps can be taken to forward & back. **TRUE**
- iv) Right leg heel is used for Right turn on halt. **TRUE**
- v) On the command "Tej Chal" the left foot is to be advanced to complete a pace of 30 inches. **TRUE**
- vi) "THAM" command is to be given as the right foot is forward and on the ground. **TRUE**
- vii) Slow march cadence is 60 paces per minute. **TRUE**
- viii) Marking time cadence is 126 beats per minute. **TRUE**
- ix) Salami Shastra is carried out in four parts. **FALSE**
- x) For President Guard of Honour strength is 150. **TRUE**

ANSWER THE FOLLOWING QUESTIONS**a) Describe Salami Shastra Movement? (5)**

Ans : On the command ' GINTI SE SALAMI SHASTRA EK" rifle will be thrown upward with right hand and grip with left hand at lower hand guard and right hand on small of the butt. Rifle close to the body on the command DO bring rifle front and center of the body and same time tap the rifle with left hand. Rifle should be in the perpendicular position. On the command TEEN lower the rifle and extend the left hand and hold the rifle at lower hand guard. Simultaneously raise the right hand upward and place the hollow of the right foot just behind the left heel. Both knees straight and weight of rifle is to be supported by the left hand.

PAPER—I: WEAPON(30 Marks)**FILL IN THE BLANKS (5)**

- 1) 1 x 1 Target is used for Grouping and zeroing.
- 2) Size of the Muslin cloth used for cleaning Rifle with oil is 4 x 1"
- 3) Line mein bayen mud order will be given on Left foot.
- 4) Guard mounting is done at Quarter Guard/ during VIP visit /at the residence of General officer.
- 5) There are three types of cleaning of Rifle.

TRUE OR FALSE (5)

- 1) The caliber of point 22 ammunition is Point 23. (false)
- 2) The INSAS Rifle is made up of fifteen major accessories. (false)
- 3) The normal rate of fire of Rifle point 22 Deluxe BA is five rds per minute. (True)
- 4) During Grouping different Point of aim is selected. (True)
- 5) Stop Butt is located inside markers gallery. (false)

ANSWER THE FOLLOWING QUESTIONS (20)**a) Write the loading, aiming and firing procedure of rifle .22 No. 2 MK IV? (10)**

Ans: **Loading Procedure**:-In the lying position of firing, take the gun on shoulder, put the safety catch forward, open the bolt with right hand. Take one round and put it in the chamber, close the bolt. The gun is loaded. Put the safety catch back.

Aiming Procedure:- Keep the Rifle in line with the target. Close the left eye, look through the Back sight 'U' cut mark, and align tip of the Foresight blade and center of the bull in one line.

Firing Procedure: - After aiming do not shake the weapon, when you feel that aiming is correct, hold the Breath for a while and take second pressure on the trigger with index finger. Follow through till bullet strike to the target .Declare, where the bullet has hit on the target for further adjustment.

b) Write the dismantling and cleaning Procedure of 12 bore shot gun after firing? (10)

Ans: After firing of 12 bore gun, dismantle the gun as follows:-

Open the wooden strip from the barrel of the gun with the fingers. Turn the opening lock to the right and break open the barrel, separate the body from the barrel. Keep all the parts on the table in sequence. Do not mix the parts of the gun with parts of other guns.

Hold the barrel horizontally, Put the cleaning rod with wire brush and clean the barrel. Put some cleaning oil in the barrel and with the help of the pull through and flennet clean the barrel fully .Remove all the carbon from the barrel and body of the gun. Apply thin layer of the cleaning oil in the barrel and body of the gun. Assemble the gun in reverse order.

PART-III MISCELLENEOUS

240 MARKS

NATIONAL INTEGRATION (30 Marks)

Fill in the Blanks. (10)

- a. Satyameva Jayathe slogan was given by Pandit **Madan Mohan Malviya.**
- b. Swaraj Mera Janam Siddh Adhikar Hain was the slogan adopted by **Bal Gangadhar Tilak.**
- c. Gandhi Jayanti on 02 Oct is also celebrated as International Day for **Non Violence.**
- d. Teachers Day is celebrated on **05 Sep.**
- e. Civil Disobedience movement was launched in the year **1929.**
- f. National Youth day is celebrated on **12 January.**
- g. Children day is celebrated on **14 November.**
- h. Jallianwala Bagh massacre took place in the year **1919.**
- i. The national tree banyan symbolizes **immortality.**
- j. Non-cooperative movement was started under the leadership of **Mahatma Gandhi.**

ANSWER THE FOLLOWING QUESTIONS**(20)****1. Explain the importance of national integration in detail ?****(6)**

Ans:- National integration has assumed greater importance in the recent years due to the fast changing ethos and moral values in the society. The need for national integration was probably never felt before as is felt today. The turbulent atmosphere and the deteriorating law and order situation in the country due to various religious, social and political factors have led to the realization of the necessity of national integration.

The realization of its importance in itself is a step in the desired direction. The Government having appreciated the urgency and seriousness of the subject is taking positive steps towards achieving the national integration. NCC, one of the prime organizations of the country training the youth, the future of this great nation, makes the ideal ground to start with. National integration has been made part and parcel of NCC training. Lot of emphasis is laid on national integration by conducting national level camps and number of other activities where cadets from all over the country participate.

2. Write any five advantages of national integration ?**(6)**

Ans:- The following are the advantages of national integration

- (a) Maintenance of sovereignty and territorial integrity of the nation.
- (b) Maintenance of peace and harmony.
- (c) Growth and development of the nation.
- (d) Eradication of poverty and illiteracy.
- (e) Internal security and law and order.

3 Explain the following terms**(8)**

Ans:- (a) **Sovereignty.** Foremost interest of the nation is to be autonomous and remain independent.

(b) **Integrity.** The nation should be full, indivisible and have a well-defined territory.

(c) **Unity.** The nation should be a secular union of states with political power belonging to a central confederate authority, with united and undivided goals without factional, sectarian or fanatical prejudices. It should be tolerant towards caste, colour, creed, religion and language of each other.

(d) **Security.** The nation must ensure safety, territorial integrity and protection of the state against external threat or subversion.

Q-03. **The NCC (5Marks)**

- (a) **When did the present NCC came into existence?** (2)

Ans: 16 Apr 1948

- (b) **Write any three objectives of NCC?** (3)

Ans: Objectives of the NCC are:-

- (a) Reach out to the maximum youths through various institutions.
- (b) Make NCC as an important part of the society.
- (c) Teach positive thinking and attitude to the youths.

Q-05. **PERSONALITY DEVELOPMENT & LEADERSHIP (65 Marks)**

- (a) **Define duty.** (6)

Ans: Duty may be defined as a moral or legal obligation binding force of what is right and good behaviors towards superior colleagues and subordinate.

- (b) **What are the types of leadership?** (6)

Ans:- (i) Born Leader- Nehru,Alexander
 (ii) Trained Leader- Napoleon,Sivaji
 (iii) Assumed Leader- Hitler,Mussolini.

- (c) **Write any six qualities of a good leader?** (6)

Ans:- (i) Bearing (ii) Courage (iii) Loyalty (iv) Sacrifice (V) Motivation
 (vi) Good Command and Control (Vii) Justice (viii) Enthusiasm

- (d) **Explain the following** (18)

ANS:- Hereditary. Your personality can be influenced by the genes you may have inherited from either your mother's or your father's side or a combination of both. Apart from inheriting physical attributes, like height, weight and skin/hair colour, psychologists have ascertained that our mental aptitudes and temperaments which have the potential for influencing our personality, are to a certain extent, hereditary.

Self-Development. Of the other factors, self-development is the most important factor that can influence one's personality. Self-awareness is the key; it entails believing in oneself and one's capabilities. It implies that despite one's family and environmental background or one's current circumstance, one remains in control/charge of molding his/her personality. Such a person is aware that personality is a changing, evolving process and does everything possible to enhance his/her personality.

Life-situations. Our situations in life are constantly changing and these can affect our personality in varying degrees. Some have greater opportunities in life like better amenities, better schools and greater advantages than others. Learning skills, life skills, communicative skills and language skills although partially latent in some, can only be acquired through personal effort and gained through practice and experience. Hence it is our competence in handling life-situations that can positively influence our personality.

(e) **Write steps to be followed to tackle poor body image** (10)

Ans:- Steps to be remembered for tackling poor Body Image.

- (a) **Enhance Self-Esteem.** This can be done by peers, teachers, family and friends. The positive points of the adolescent should be highlighted to him/her. He/she should be motivated to concentrate on personal strength not related to physique, e.g. hard work, determination, patience, courage.
- (b) **Build Up Critical Thinking.** —Is physical beauty the only criteria for success / popularity? Even film stars have to work very hard to make a movie successful. Many successful and famous people may not be very good looking.
- (c) **Build up Positive Qualities.** Everyone has some positive qualities. These should be identified and highlighted e.g. caring, confident, hardworking etc.
- (d) **Understand Cultural Variation.** The colour of skin and shape of body and facial features vary from country to country and even within a country from state to state. The definition of —beautyll also varies from region to region.
- (e) **Dispel Myths Like.** —Being thin is inll, fair & lovelyll, —fair & handsomell.
- (f) **Utilise Life Skills.** Life skills like critical thinking and self-awareness can be utilized to promote or develop a positive body image.

(f) **What are the best ways to maintain relationship between friends?(6)**

Ans: Relationship Between Friends.

- (a) Friends must be honest to each other.
- (b) Stand by your friends at times of need.
- (c) Avoid leg pulling, criticism and making fun of your friends.
- (d) Try not to mix friendship with love as it creates problems and misunderstandings.

(g) **Explain two ways of communication?** (7)

Ans: Two ways of communication are as follows

- (a) **One Way Communication.** Communication from a single channel. There is no opportunity for clarifying doubts. For example, Principal announces- Saturday is a working day and student can wear colored dresses.
- (b) **Two Way Communication.** Communication between two channels. Opportunity for clarifying doubts. For example, parents deciding on the duration of the vacation to a hill station after discussion with the children.

(h) **What do you mean by following ?** (6)

- (I) **Integrity:** The uprightness of character, soundness of morale principle Quality of absolute truthfulness and honesty.
- (II) **Endurance:** The mental and physical stamina, measured by the ability to withstand pain, fatigue, stress and hardship.

Q-06. **DISASTER MANAGEMENT (15 Marks)**

(a). **What is Civil Defence?** (3)

Ans: It is a measure adopted by the civilian population, Govt., local self bodies and voluntary organizations etc. during the war to minimize the effects of enemy action on men and material. In short it is the defence of the citizen by the citizen.

(b) **What are the problems of Civil Defence?** (6)

Ans: (i) Persons dead or injured (ii) Damaged building (iii) Fires (iv) People buried under debris (v) Homeless people (vi) Panic and rumors (vii) Law and order problem (viii) Unexploded enemy bombs

(c) **What is the role of NCC cadets during Natural disaster?** (6)

Ans: (i) Traffic Management under supervision.
 (ii) Search and Rescue.
 (iii) First Aid and evacuation of affected people.
 (iv) Helping in setting up an administration of relief camps.
 (v) Collection, loading and dispatch of medical aid, material, food and other articles of relief.

Q-07. **SOCIAL AWARENESS & COMMUNITY DEVELOPMENT (30 Marks)**

(a) **Write a short note on MGNREGA ?** (6)

Ans :- On 2nd Feb, 2006 'National Rural Employment Guarantee Act' 2005 (NREGA) was launched and in 2010 it was renamed as the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA). It was the first ever law internationally, that guarantees wage employment in an un-precedented scale. MGNREGA aims at enhancing livelihood security of households in rural areas of the country, by providing at least one hundred days of guaranteed wage employment in a financial year, to every household whose adult members volunteer to do unskilled manual work. To start with, 200 selected districts of the country were brought under it and within three years of its launch, MGNREGA was extended to all the districts of the country from 1st April 2008.

(c) **How many types of NGO's are there ? Expand them? (6)**

ANS:- There are four types of types of NGOs in our society. They are:-

- (a) **INGO**. It stands for International NGOs.
- (b) **BINGO**. Business oriented International NGOs.
- (c) **RINGO**. Religious International NGOs.
- (d) **ENGO**. Enviornmental NGO.

(d) **Write some examples of Social Service ctivities and explain them? (12)**

Ans:- Types of Social Service Activities. The various types of social service activities which can be undertaken are as under:-

- (a) Education.
- (b) Family Welfare, Medical Care, Family Planning and Nutrition.
- (c) Provision of Water and Cooking Fuel, Roads, Electricity and Sanitation.
- (d) Old Age Support Systems.
- (e) Employment.
- (f) Social Assistance, Social Security and Care & Protection.
- (g) Housing and Rehabilitation.
- (h) Recreation, Sports and Social activities.

(f) **How a cadet can help to solve social problems? (6)**

Ans: The following are the methods through which cadet can solve social problems:-

- (i) He can educate the people about better social living and different scheme launched by the govt.
- (ii) He can teach the people about the hygiene, sanitation and family planning.

Q-08 **HEALTH AND HYGIENE (25 Marks)**

A WRITE TRUE OR FALSE (10)

- (i) Human body has 207 bones **False**
- (ii) Femur is the largest bone in human body **True**
- (iii) Average weight of male heart is 250 gms **False**
- (iv) Arteries carries pure blood to the body **True**
- (v) Lung is the most important organ for blood circulation **False**
- (vi) Maintenance of personal hygiene is very important in preventing disease. **True**
- (vii) Maintain good muscle strength is personal hygiene. **False**
- (viii) Wells are source surface water. **False**
- (ix) Sterilization of water is done by adding alum. **True**
- (x) Milk handlers should be free from any communicable disease. **True**

B ANSWER THE FOLLOWING**(15)****a) What are voluntary muscles?**

Ans Voluntary muscles or skeletal muscles are attached to the surface of bones. These muscles form about 47% of the body weight and are either fiber type or striated type. Most of the skeletal muscles span from one bone to another across a joint and by contracting, they act upon the joints and produce movements.

(b) What is the procedure to be adopted while dressing of wounds?(6)

Ans:- the procedure to be adopted while dressing of wounds is as follows :-

- (a) Reassure the patient and place him in a comfortable position.
- (b) Stop the bleeding, remove the foreign body and clean the wound with A/S lotion and cotton.
- (c) Apply A/S ointment or powder and cover it with gauze. Select suitable bandage. Start bandaging clock wise from outer aspect to inner aspect by covering 1/3 of previous lining.
- (d) Put the knot away from the wound.
- (e) Bandaging should not be either too tight or loose.

(c) What are the causes of Unconsciousness or Coma? (6)

Ans: The causes of unconsciousness are:-

- (a) Head injury. Hemorrhage from brain.
- (b) Heart failure.
- (c) Physical agents such as heat strokes, electric shocks.
- (d) Epilepsy.
- (e) Hypoglycemia

Q-09. ADVENTURE TRAINING (15 Marks)**(a) Write short note on Trekking? (5)**

Ans: Trekking is a long, adventurous journey undertaken on foot, in areas where common means of transport are generally not available. Trekking is not necessarily mountaineering. It is walking for a number of days, usually on uncharted paths, in challenging environments which are likely to be hilly or mountainous. The Himalayan routes are famous for attracting a large number of trekkers.

(b) Write a short note on Fast Rope Insertion Extraction System (FRIES). (6)

Ans **Fast Rope Insertion Extraction System (FRIES)**, is a technique for descending a thick rope. It is useful for deploying troops from a helicopter in places where the helicopter itself cannot touch down. First developed by the British with UK rope manufacturer Marlow Ropes, its first combat use was during the Falkland War. The original rope was a thick nylon that could be used in a manner akin to a Firepole. The special ropes used today are braided (plaited), which results in pattern on the outer circumference that is not smooth and so is easier to grip. Originally, each person would hold the rope for the next person; however this has been phased out.

- (c) **Describe any adventure activity, which you have ever done** (4)

Ans: As per choice of cadet

Q-10 **ENVIRONMENT AWARENESS & CONSERVATION** **(10)**

- a) Write a short notes on Renewable and Non- Renewable resources?(6)**

Ans: Renewable Resources. These are resources which can be replenished naturally. Some of these resources, like sunlight, air, wind, water etc, are continuously available and their quantity is not noticeably affected by human consumption.

(b) Non-Renewable Resources. These are resources which are formed extremely slowly and those which do not naturally form in the environment. Minerals and Fossil Fuels are the most common resources included in this category.

- (b). What is Ozone depletion?** (4)

Ans It is a process by which the total volume of ozone in the Earth's atmosphere decreases. The major reason for this ozone layer depletion is the production of man-made refrigerants (CFCs, Freon, Halons). Since the ozone layer prevents most harmful UVB wavelengths (280–315 nm) of ultraviolet light (UV light) from passing through the Earth's atmosphere, depletion of the ozone layer has serious damaging effects.

Q-11. OBSTACLE TRAINING (05 Marks)

- (a) What is aim of obstacle training?** (5)

Ans : Obstacle training is imparted to the cadets or soldiers in defence to overcome obstacles coming in the way as hindrance while moving in the jungle/ forest. It also creates endurance, stamina, team spirits and confidence amongst the cadets.

PAPER IV : SPECIALISED SUBJECTS (110 Marks)

Q-12. PRINCIPLE OF FLIGHT (16 MARKS)

(a) What are the factors covering lift. (4)

Ans- The factors covering lift are (1) shape and size of an aero-foil. (2) The angle at which incoming airflow is coming. (3) Velocity of incoming air. (3) Viscosity of air.

(b) State True or False (6)

(i) The temperature increases with height in the region of troposphere.

(False)

(ii) Ailerons operate opposite to each other

(True)

(iii) Aileron is a lift Augmentation device.

(False)

(iv) Movement about lateral axis is called rolling.

(False)

(v) Angle of incidence is the angle between the chord line and the longitudinal axis.

(True)

(vi) Streamline flow is the smooth un-interrupted flow of air around an object.

(True)

(c) What are the types of flaps? Write the advantages of flaps over slats (6)

Ans: (i) Variable camber or simple flaps (ii) Slotted
(iii) Split (iv) Zap (v) Fowler (vi) Jet
Advantages of flaps over slats

- a. Flaps reduce the stalling speed without having a nose up attitude.
- b. Pilots visibility on landing is not decreased
- c. Flaps can be put up when not required and as such do not give unnecessary drag during normal flight.

Q-13. **AIR FRAME (9 Marks)**

Q.1 Write the various types of material used in construction of aircraft. (4)

Ans:- The various types of materials used can be classified as follows:

- (a) Wood (b) Metals (c) Composites

Q.2 Write the various types of structures used in construction of fuselage.(5)

Ans:-The various types of structures that are commonly used are as follows:

- (a) Stressed skin
(b) Monocoque
(a) D-spar construction
(e) Box-spar

Q-14. **AIRMANSHIP (18 Marks)** **(8)**

- (a) Define the following?

Ans:-Aircraft Classification Number (ACN) is a number expressing the relative effect of an ac load on a pavement for specified sub-grade strength.

Air Defence Identification Zone.

Airspace of defined dimensions within which the ready identification, location and control of ac is required is known as Air Defence Identification Zone.

Air Report. It is a report passed during the course of a flight in conformity with requirements for position, operational, or meteorological reporting in the AIREP or POMAR forms is known as Air Report.

Air Route. The navigable airspace between **two** points, identified to the extent necessary for the application of flight rules is known as **Air Route**.

TRUE & FALSE **(5)**

1. Airmanship is a study of rules and regulations which must not be followed both on the ground and in air to ensure safety and proper discipline in flying. **(False)**
2. Airmanship does not helps to inculcate the sense of discipline amongst pilots and other crew members. **(False)**
3. Airmanship helps to inculcate the sense of discipline amongst pilots and other crew members. **(True)**
4. Airmanship helps the pilot to know the standard procedures laid down for the airfield on which he is operating. **(True)**
5. Good airmanship ensures a pilot at his best, when the situation is at its worst. **(True)**

(d) **Define the following** (5)

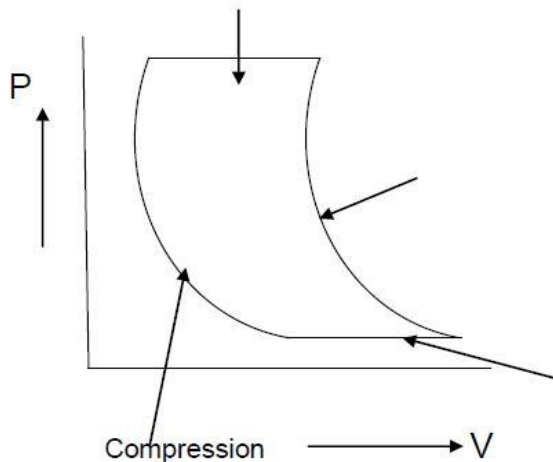
(i) **Aerodrome**:-An aerodrome is defined area of land or water including buildings and installations normally used for takeoff and landing of aircraft.

(ii) **Airfield**. The airfields refers to an area of land used for takeoff and landing of aircraft and excludes building and installations.

Q-15. **AERO ENGINE (12 Marks)**

a) **Explain Brayton's cycle.** (6)

Ans- Brayton's cycle is basic thermodynamic cycle of a jet engine which shows the variation of pressure and volume.



(iv) **What are the main components of an aero engine ?** (6)

Ans. Main components of engine are:-

- (a) Air intake
- (b) Compressor
- (c) Combustion Chamber
- (d) Turbine assembly
- (e) Exhaust Assembly

Q-16. **GENERAL SERVICE SUBJECT (9 MARKS)**

(a) What is the role of IAF during War? (3)

Ans

1. To destroy or neutralize enemy Air Force.
2. To destroy enemy vital installations and 'establishment.
3. To protect own vital installations and establishments from enemy air attack.
4. To protect own fighting ground troops from enemy air attack.
5. To assist own Army and Navy in combined amphibious operations.
6. To drop own troops and ammunitions in high altitude.

(b) Where is Air Headquarters located? (2)

Ans: New Delhi

(c) Write the different branches of IAF. (4)

Ans:-

- Flying Branch
- Technical Branch
- Administrative Branch
- Logistic Branch
- Meteorological Branch
- Medical Branch
- Account Branch
- Education Branch

Q-17. **AIR CRAFT RECOGNITION (8)**

(a) Explain classification of aircraft as per its role in IAF. (4)

Ans: Fighter, Bomber, Transport, Helicopter, Photographic & Reconnaissance.

(b) Write down the name of four Helicopter used in IAF. (4)

Ans: MI-17, MI-35, MI-26, MI-25, Chetak/Cheetah

Q-18. **AEROMODELLING (9)**

(a) What are the various types of aero models? (2)

Ans: Unpowered and powered models.

(b) **Why Balsa & Japonica woods are considered to be the best wood for Aero Modeling?** (3)

Ans: Balsa & Japonica woods are considered to be the best wood for Aero modeling because these woods are very light and can be easily worked for almost every purpose in aeromodelling.

(b) **Write true or false:** (4)

- | | |
|---|--------------|
| (a) Composition of glues and cements are called as Adhesives. | TRUE |
| (b) UP & Down movement of aero model is done by Rudder | FALSE |
| (c) Normal axis is also known as Lateral axis | FALSE |
| (d) Engine capable of producing very high power is Jetex | TRUE |

Q-19. **AIR CRAFT PARTICULARS (3)**

MULTIPLE CHOICE QUESTIONS (3)

- "Kiran" Aircraft is-
a. (a) **Trainer AC** (b) Glider (c) Helicopter (d) Fighter-bomber
- One of the purposes of aircraft recognition is to
a. (a) Shoot the aircraft (b) **Identify the nationality** (c) To all the aircraft to land (d) to beautify the aircraft.
- Fighter aircrafts are those which provided with .
a. (a) Propellers (b) **Jet engine** (c) Piston engine (d) None

Q- 20. **AIR CAMPAIGN (5 Marks)**

(1) Explain Operation Vijay? (5)

Ans. The **Kargil War**, also known as the **Kargil conflict**, was an armed conflict between India and Pakistan that took place between May and July 1999 in the Kargil district of Kashmir and elsewhere along (LOC). In India, the conflict is also referred to as **Operation Vijay** which was the name of the Indian operation to clear the Kargil sector.

Q- 21. **INSTRUMENTS (12 Marks)**

- (a) **Expand the term RADAR and write down types of RADAR? (4)**

Ans: The expanded form of RADAR is Radio Detection and Ranging. There are three types of RADAR as

- (i) Primary Radar
- (ii) Secondary Radar
- (iii) Continuous wave Radar

- (b) **Define flight instrument altimeter?**

Ans. An altimeter is an instrument used to measure the altitude of an object above a fixed level usually the sea level. The altimeter shows the aircraft's altitude above mean sea-level. Altitude can be determined based on the measurement of atmospheric pressure.

- (c) **What are the basic Flight Instruments? (3)**

Ans The basic flight instruments are as follows

1. Air speed indicator
2. Altimeter
3. Compass
4. Artificial Horizon
5. Vertical speed indicator

True or False (2)

(i) In Continuous wave Radar both the transmission and the reception takes place continuously. **True**

(ii) Artificial Horizon shows the aircraft's altitude from mean sea level. **False**

Q-22. **NAVIGATION (7 Marks)**

Q.1 What are the techniques used for air navigation? (7)

Ans:- Techniques used for air navigation in the air can be broadly classified into two groups.

(a) **Visual Flight Rules (VFR):-** The pilot largely navigates using dead reckoning combined with Visual observations with reference to appropriate maps. This may be supplemented by radio navigation aids.

(b) **Instrument Flight Rules (IFR):-** Under these rules the pilot will navigate exclusively using instruments and radio nav aids such as beacons, or as directed under radar control by a controlling air traffic controller.

Q- 23. **METEOROLOGY (2 Marks)**

- a) **Write short notes on Troposphere ? (2)**

Ans: **Troposphere:** The troposphere is the region nearest to the earth and is generally the region of weather. It has a more or less uniform decrease of temperature with height. The lapse rate is roughly $6.5^{\circ}\text{C}/\text{km}$ ($1.98^{\circ}\text{C}/1000\text{feet}$).