

KEY: ANSWERS
'C' CERTIFICATE EXAM 2020
AIR WING SUBJECTS (SET-II)

Max Marks-375

PAPER—I: DRILL (30 Marks)

- Q-01. (a) Who all are entitled to General salute? (2)**
Ans: Vice-president, Prime Minister, Chief ministers, Dignitaries in the rank of Air Commodore and above.
- (b) What is the strength of guard of honor for the president? (2)**
Ans: 150
- (c) What are types of drill? (2)**
Ans: Open drill and Close drill
- (d) What is the aim of Drill? (6)**
Ans: To inculcate a sense of discipline, improve bearing, smartness in appearance and turnout Create self-confidence and to develop the quality of immediate and implicit obedience to orders
- (e) What do you mean by Drill? (6)**
Ans: Drill is the means where by a body of men is controlled and directed effectively through the executive command of one man to attain an Aim.
- (f) What is meant by “Line tor” and ‘Visarjan’? (6)**
Ans: Line tor: A Word of command for a short break in parade. Salute is given when Officer is on parade.
Visarjan: A word of command for closing the parade. Salute is given when Officer is on parade.
- (g) Describe shoulder arms with SLR? (6)**
Ans: On the command Bagal Sastra Rifle is to be thrown perpendicularly upwards and brought to the shoulder. Left hand is to be brought across the body to hold the rifle at point of balance. Rifle is to be closed to the hollow of the shoulder and with right hand, pistol grip is to be held. After observing a pause equal to two beats. Left hand is to be brought smartly to the side.

PAPER — II: WEAPON TRAINING AND FIRING (35 Marks)

- Q-02. (a) What is caliber of No. 2 MK IV Rifle? (2)**
Ans: .22"
- (b) What is effective range of no 2 MK IV Rifle? (2)**
Ans: 150 yds
- (c) What is Muzzle velocity of no 2 MK IV Rifle? (2)**
Ans: 1000 FPS
- (d) Why the lying position is considered the best position for rifle firing? (5)**
Ans: (i) it is the most stable position
(ii) it gets good grip to the ground
(iii) Provides less target to the enemy
(IV) Less likely to disturb aiming
- (e) What are the basic essentials of good shooting (6)**
Ans: (i) Comfortable position and firm hold (ii) Correct aiming
(iii) Correct trigger operation
- (f) Name the various parts of the rifle. (6)**
Ans: (a) Bayonet (b) Upper sling carrier (c) Fore sight (d) Back sight
(e) Bolt Lever (f) Magazine (g) Butt plate
- (g) What are the Points to be kept in mind while assembling the bolt of No II MK IV Rifle ? (6)**
Ans: (i) Rifle Nos and bolt nos should be same (ii) Bolt head and solid rib of the bolt should be in one line. (iii) Bolt head should be fully screwed.
- (h) What do you understand by Half Cock? Write down its remedy. (6)**
Ans: Half cock is a position in the rifle, where neither trigger can be pressed nor Knob of the bolt can be raised. It occurs during firing due to following reasons
(i) Safety catch is not fully forward when trigger is pressed
(ii) Knob of the bolt is not fully lowered when trigger is pressed

Remedy : Pull the cocking piece backward, rectify the cause and continue the firing.

PAPER — III: MISCELLANEOUS (200 Marks)

Q-03. The NCC (5Marks)

- (a) **Who is supreme commander of Armed forces in India?** (2)

Ans: President of India. (Ram Nath Kovind)

- (b) **How many Groups are there in your Directorate? Name it.** (3)

Ans: Madras'A', Madras'B', Trichy, Coimbatore, Madurai and Pondicherry.

Q-04. NATIONAL INTEGRATION & AWARENESS (30Marks)

- (a) **Write about government initiative on National Integration** (10)

Ans: Government Takes initiative at every state level to teach atleast one language of a state to which they don't belong, on the same principle an All India Educational service should be organized so that teachers of one state may serve in another at popular, in this way national integration is achieved through Governments initiative.

- (b) **Write down the motto of national integration.** (2)

Ans: Unity in Diversity

- (c) **Define National Integration and write its importance.** (6)

Ans: It is an emotional and mental sentiments, which binds the all People together irrespective of caste, creed, colors, race and Religions.

Importance: Unity gives strength, peace, prosperity and happiness.

- (d) **What do you understand by "Unity in Diversity"?** (6)

Ans: We are one though deferent caste, creed, colors, race and religions.

- (e) **What are the Dravidian languages?** (6)

Ans. Dravidian languages are those languages which are spoken in southern part of country. They are Tamil, Telugu, Malayalam, Kannada.

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

- (a) **Define Effective Communication & critical Thinking, Problem Solving and Decision Making. (6)**

Ans: Effective Communication. Verbal and non-verbal communication within and between teams.

Critical Thinking, Problem Solving and Decision Making. When someone did not play as per team's requirement to decide to change the strategy immediately.

- (b) **Explain Interpersonal Relationship (6)**

Ans:- Interpersonal Relationship :- Ability to establish positive relationships helps us to relate in positive ways with the people we interact with. This means being able to make and maintain friendly relationships, which can be of great importance to our mental and social well being. It may also mean being able to end relationships constructively. Positive relationships help in the growth of the individuals involved.

- (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) **Define the following (18)**

(i) Discipline:

Ans:- Discipline is the individual or group attitude which ensures prompt obedience to orders and invocation of appropriate action in the absence of the order.

(ii) Motivation:

Ans: The ability to make the subordinates to do the given works willingly.

(iii) Morale:

ANS: Morale is the state of mind which influence a group of people to give their best.

- (e) **What are the factors that affect Morale? (6)**

Ans: 1.State of mind.
2. Spiritual aspect
3. Intellectual aspect
4. Material aspect

- (f) **Write down the factors that contribute to develop the high morale. (5)**

Ans: (i) Faith in leader (ii) Good discipline (iii) Obeying Orders
(iv) Good Training (v) intellectual integrity (vi) Good administration
(vii) Sense of duty (viii) Self-Confidence (ix) Courage.

(g) **What are the factors that affect Management?** (6)

Ans: (i) Spread of literacy (ii) Materialistic desire
(iii) Welfare state concept (iv) Inflation

(h) **What are the suggested ways of good management?** (6)

Ans: i) Address a man by his name
ii) Take care of their welfare
iii) Recognize good work and merit
iv) Maintain discipline
v) Award punishment for defaulter
vi) Give promotion on pure merit
vii) Help in solving their problem.

(j) **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). **Write any six services that in which volunteers are trained along with Civil Defence Corps** (9)

Ans: (a) **Headquarters Service.** This service works under control of Civil Defence.

(b) **Warden's Service.** It is a link between the public and the authorities. This service is responsible for organizing self-help parties, fire parties and to check light restrictions, report damages and guide homeless to the Rest Centres.

(c) **Fire Fighting Service.** They detect small fires and put out the same.

(d) **Casualty Services.** The functions of this service are:-

- (i) Rendering first aid on the spot.
- (ii) Providing transport to casualties for short distances.
- (iii) To send various casualties for further treatment.

(e) **Communication Services.** This service is responsible for:-

- (i) Receipt and dissemination of air raid warning.
- (ii) Provision of co-ordination and control facilities.
- (iii) Provision of communication between warden posts, control centres through messengers or telephone etc.

(f) **Rescue Services.** Their duty is to rescue the injured and personnel trapped under the debris.

(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) Define Social Service. (3)

Ans. The term social service is broadly defined as the provisions made by governmental or voluntary efforts to meet income maintenance, medical care, housing and recreational needs and provisions for the care and protection of recognized special groups.

(b) Give the name of the some Social Service organization. (3)

Ans: Lions Club, Rotary Club, Red Cross Society

(c) What are the problems of weaker section of the community? (6)

Ans:- Ill health
 Lack of Sanitation
 Lack of drinking water
 Illiteracy
 Ignorance of their right and duties.

(d) Write some examples of Social Services? (6)

Ans:- Tree Plantation,
 Adult education,
 Blood Donation,
 Area Cleaning,
 Eye donation,
 Temple cleaning

(e) What are the scheme under taken by Govt to eradicate social problem? (6)

Ans (i) Adult education (ii) Rozgar programme
 (iii) Immunisation Programme (iv) Blood Donation
 (v) Tree plantation

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

Ans: (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) **What is motto of first Aider?** (3)

Ans: Look, Think and Act.

(b) **Explain Contact Diseases.** (2)

Ans: The germs move or pass from the sick to the healthy by actual body contact. Ventral diseases i.e. syphilis, gonorrhea and skin infection are common examples. Complete segregation of patient can prevent the spreading of the diseases.

(c) **Expand the following.** (2)

(i) **AIDS:** Acquired Immuno Deficiency Syndrome

(ii) **HIV:** Human Immune Deficiency Virus

(d) **Classify communicable diseases.** (6)

Ans: Communicable diseases can be classified as follows:

- (a) Excremental Diseases
- (b) Droplet infection
- (c) Contact Diseases
- (d) Insect Borne Diseases

(e) **Give the two examples of following diseases.** (6)

(i) **Water borne disease** : Diahoerrea and Jaundice

(ii) **Animal borne disease** : Tuberculosis and Rabies

(iii) **Contact disease** : Syphilis and Gonohorreas

(f) **What are the method of purification of drinking water?** (6)

Ans:- Sedimentation
Filtration
Sterilisastion
Chlorination
Boiling

Q-09. ADVENTURE TRAINING (15 Marks)**(a) What are the aims of Adventure Training? (6)**

Ans:- (i) To create confidence and endurance.
 (ii) To develop team spirit and cooperation among the cadets
 (iii) To develop leadership quality.

(b) Write any five types of Adventures Activities? (5)

Ans: (i) Mountaineering
 (ii) Para jumping
 (iii) Sky diving
 (IV) Para sailing
 (v) Trekking

(c) Describe any Adventure Activity, which you have ever done (4)

Ans: As per choice of cadet

Q-10 ENVIRONMENT AWARENESS & CONSERVATION (10 Marks)**(a). Define the pollution. (2)**

Ans: The contamination of environments causing hazard to living organism and other materials is called pollution

(b). What are the agents of Air Pollution? (4)

Ans:- (i) Factory chimney , Gases
 (ii) Automobile Smokes

(c) What are the components of Ecology? (4)

Ans:- (i) Forest (ii) Wild Life (iii) Atmosphere (iv)Ground water
 (v) River, Lake & Pound

Q-11. .OBSTACLE TRAINING (05 Marks)**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

- i. Flaps reduce the stalling speed without having a nose up attitude.
- ii. Pilots visibility on landing is not decreased
- iii. 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)

- (a) What are the positions of Tail plane? (2)**

Ans: (i) Low position (ii) Middle position (iii) High position
(iv) Conventional position

(b) State True or False (3)

- (i) Micro light a/c is a multi-engine aircraft. **(False)**
- (ii) Jet aircraft have no propellers. **(True)**
- (iii) Bi plane is an aircraft with two sets of wings. **(True)**

(c) Write the types of Landing Gear and explain them? (4)

Ans: A landing gear can be classified into two types as follows:

- (i) A fixed landing gear always remains extended and has the advantage of simplicity combined with low maintenance. It produces parasitic drag in flight since it is not flush with the surface.
- (ii) To decrease drag in flight, some undercarriages retract into wings or fuselage with wheels flush against the surface or concealed behind doors. This is called retractable gear. A retractable gear is designed to streamline the airplane by allowing the landing gear to be stowed inside the surface during cruising flight

Q-14. AIRMANSHIP (18 Marks)**(a). What is Airmanship? (4)**

Ans: It is study of rules and regulations which must be followed both on the ground and in air to ensure safety and proper discipline in flying. It includes all air traffic control procedures and other actions laid down to deal with any type of aircraft emergencies and other contingencies

(c) Write the order of the aircraft to give way to each other. (4)

- Ans:**
- (i) Aero planes
 - (ii) Helicopters.
 - (iii) Airships.
 - (iv) Tug and Glider combinations.
 - (v) Gliders.
 - (vi) Balloons.

(d) Define the following (6)

(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.

(e) Define Hypoxia and what are its effects? (4)

Ans:- Hypoxia can be defined as a lack of sufficient oxygen in the body cells or tissues. The progress from euphoria to reduced vision, confusions, inability to concentrate, impaired judgment, and slowed reflexes to eventual loss of consciousness is known as **effects of Hypoxia.**

Q-15. AERO ENGINE (12 Marks)

(a) Name the various types of engine. (2)

Ans. Types of engines are:-

- i) Heat engine eg. Steam engine ,piston engine ,rockets etc.
- ii) Electric Motors and Generators.
- iii) Hydro electric Turbines.
- iv) Windmills

(b) What are the types of lubrication system? (2)

Ans: Wet Sump and Dry Sump.

(b) Fill in the blanks:- (8)

(i) A mixture of petrol and air is burnt inside the cylinder in **Ans. Internal combustion engine**

(ii) The internal friction of a fluid is known as **Ans. Viscosity**

(iii) The point of the spark plug are usually set to a gap of.....
Ans..012" - .015"

(iv) Railway locomotive Steam Engine is _____
Ans: External Combustion

(v) The most efficient system of lubrication is _____
Ans: Dry sump

(vi) The abbreviation BDC stands for _____
Ans: Bottom Dead Centre

(vii) The two methods of cooling are _____
Ans: Air cooling and Liquid cooling

(viii) Engines used in cars are _____
Ans: Internal Combustion

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) Write the equivalent ranks of Rear Admiral in other two services. (2)

Ans: (i) Major General (ii) Air Vice Marshal

(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)

- (a) **What is the role and particulars of IL-76 aircraft?** (3)

Ans. Role: Heavy Duty, Long range Transport

Particulars:

- (i) Cruise speed-850Kmph
- (ii) Range-65000Km
- (iii) Four turbo-fans (12000kg each)

Q- 20. AIR COMPAIN (5 Marks)

- (1) **Explain operation Safed Sagar** (5)

Ans. The operation safed sagar is the code name military campaign assigned to IAF to support ground troops during kargil war 1999. Its aim was to flush out regular and irregular troops of pak army from Indian territories at LOC.

Q- 21. INSTRUMENTS (12 Marks)

- (a) **Write down the full form of ASI and AH?** (2)

Ans. Air speed Indicator and Artificial Horizon.

- (b) **Write down the purpose and working principle of ASI?** (6)

Ans. Air Speed Indicator is used to indicate the speed at which the aircraft is moving through the air. Air Speed Indicator Work's On the Principle Of "Differential Pressure Between Dynamic And Static Pressure"

- (c) **How many pointers are used in altimeter and write down the scale of indication of each pointer.** (4)

Ans. Three pointers are used in altimeter to indicate height in 100s, 1000s and 10,000 feet.

Q-22. NAVIGATION (7 Marks)

- (a) **What is Air Navigation?** (3)

Ans: Air Navigation is the art of guiding of an aircraft through the air, so that it arrives at a desired position at a pre calculated time.

- (b) **Define the following:-** (4)

Ans (i) Prime Meridian: The meridian passing through Greenwich village of England which is the datum for record.

(ii) VFR and IFR: Visual flight rules and Instrument flight rules.

Q- 23. METEOROLOGY (2 Marks)

- (a) **What is fog?** (2)

Ans. It is the condition when visibility deteriorates to less than one Kilometer due to condensed water vapor and relative humidity 75% or more.