

NCC DIRECTORATE (TN, P & AN) CHENNAI
CERTIFICATE 'C' EXAMINATION AIR WING: YR 2020
AIR WING SPECIALISED SUBJECTS (SD/SW) KEY

Subject	General Service Subjects	Air campaigns	Aero-engines	Aero Modelling	Total
Marks Allotted	35	35	15	20	105
Marks Obtained					

General Instructions: -

Index No _____

1. Please write your personal particulars only in the space provided (Index slip only)
2. Total time allotted for common syllabus question paper and specialized paper is 3 hrs
3. Answers to be written in the space provided. No separate answer sheet will be given
4. Answers to be given in point form as per Marks given against each

QUESTION	1	2	3	4	5	6	7	8	9
MARKS OBTAINED									
QUESTION	10	11	12	13	14	15	16	17	18
MARKS OBTAINED									
QUESTION	19	20	21	22	23	24	25	26	27
MARKS OBTAINED									

GRAND TOTAL =
 (TO BE CUT BY BOO ONLY FOR INDEXING)

INDEX SLIP

Regt No _____ Rank _____ Index No _____
 (To be filled by examiner after completion of Exam)

Name _____ Unit _____ Gp HQ _____

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CERTIFICATE 'C' EXAMINATION AIR WING: 2020
AIR WING SPECIALISED SUBJECTS (SD/SW) KEY (TOTAL -105 MARKS)

GENERAL SERVICE SUBJECTS (35 MARKS)

1. **Fill in the Blanks: -**

(10x1=10 Marks)

- (a) Warrant Officer's equivalent rank in Army is **subedar**.
- (b) The initial period of engagement of airmen is **20** years.
- (c) VSM stands for **Vayu Sena Medal**.
- (d) Eastern Air Command is located at **Shillong**.
- (e) **President** is the supreme commander of the Armed forces.
- (f) Air HQ is located in **New Delhi**.
- (g) Marshal of IAF is **Arjan Singh**.
- (h) Indian Air Force came into effect in year **1932**.
- (j) **Ashok Chakra** is the highest gallantry award in peace time.
- (k) CAS stands for **Chief of Air Staff**.

2. **Write the Peacetime and Wartime Role of Indian Air Force. (4 Marks)**

During peacetime,
Protect air bases & other vital infrastructure from terrorist attacks,
hostage rescue,
aid during natural calamities and
military tasks in the interest of the nation.

During War time, its role is to
secure Indian airspace and to
conduct aerial warfare during armed conflict.

3. **Write any four airmen ranks in IAF. (2 Marks)**

MWO, WO, JWO, Sgt, Cpl, LAC and AC.

4. **Write any four Group 'Y' trades in IAF. (4 Marks)**

Adm Assistant, Accts Assistant, Medical Assistant, Logistics Assistant,
Environment Support Services Assistant (ESSA), Ops Assistant Meteorological
Assistant, Ground Training Instructor, Indian Air Force (Police) and Musician.

5. Write any four ground duty branches of officer in IAF (4 Marks)

Administration, Accounts, Logistics, Education and Meteorology

6. State True or False (5 Marks)

(a) Reconnaissance UAV provides ground and aerial gunnery a target that simulates an enemy aircraft or missile. **False**

(b) Fly-by-wire (FBW) is a system that replaces the conventional manual flight controls of an aircraft with an electronic interface. **True**

(c) Target and decoy UAV provides battlefield intelligence. **False**

(d) Autopilot permits the aircraft to fly straight and level on a compass course without a pilot's attention, greatly reducing the pilot's workload. **True**

(e) Combat UAV provides attack capability for high-risk missions. **True**

7. Write a note on UAV & Explain its types & Limitation (6 Marks)

The UAV is an acronym for Unmanned Aerial Vehicle, which is an aircraft with no pilot on board. UAVs can be remote controlled aircraft.

Types of UAV:

Target and decoy - providing ground and aerial gunnery a target that simulates an enemy aircraft or missile

Reconnaissance - providing battlefield intelligence.

Combat - providing attack capability for high-risk missions.

Research and development - used to further develop UAV technologies to be integrated into field deployed UAV aircraft.

Civil and Commercial - UAVs specifically designed for civil and commercial applications

Limitations:

UAV survivability is a double-edged sword. Although the reduced radar cross section, low infrared signature, and reduced noise level are strengths of UAVs as noted earlier, they are not invulnerable and one of the major problems with UAVs is the lack of in flight refueling capability

AIR CAMPAIGNS (35 MARKS)

8. Fill in the blanks:-

(10x1=10 marks)

- (a) Operation **Cactus** was carried out in Maldives country.
- (b) Operation Meghdoot was carried out by IAF at **Siachen Glacier**
- (c) **Rafael** fighter aircraft was procured by IAF from France recently.
- (d) Operation Cactus took place in year **1988**
- (e) In year **1971**, Indo-Pak war took place for the liberation of Bangladesh.
- (f) **MiG-21** (Bison) aircraft was flown by Wg Cdr Abhinandan .
- (g) Operation Pawan was carried out in **Srilanka**.
- (h) Indian name of MiG-29 is **Baaz**.
- (j) **ACM PC Lal** was the chief of IAF during 1971 Indo- Pak war.
- (k) In year 2018, IAF carried out Operation **Karuna** in Kerala.

9. Name any three aircrafts used during Kargil war by IAF. (3 Marks)

MiG-21, MiG-27, MiG-29, Jaguar, Mirage-2000 etc.

10. Name any four Humanitarian Assistance Disaster Relief (HADR) mission and the place that was carried out by IAF. (4 Marks)

- (a) Operation Karuna in Kerala
- (b) Operation Rahat in Uttarakhand
- (c) Operation in Siang River
- (d) Op at Zanaskar Valley
- (d) Op at Kullu

11. Write any four wars along with year fought by India post independence. (4 marks)

Indo – Pak war 1947-48, Indo- China war 1962, Indo- Pak war 1965, Indo- Pak war 1971 and Kargil war 1999.

12. Write a short note on Kargil war. (only 4 points) (4 marks)

**Kargil war took place in year 1999.
Name of operation was Safed sagar.
Operation Vijay was given by Army.
IAF used MiG-21,25,27,29, Jaguar, Mirage-2000.
India won the war by occupying Kargil hills.**

13. State True or false: -

(10x1=10 marks)

- (a) First Indo Pak war took place in year 1971. **False**
- (b) Kargil war took place in Jammu & Kashmir. **True**
- (c) Siachen Glacier is under the control of Indian Armed Forces. **True**
- (d) Only five star officer of IAF is NS Sekhon. **False**
- (e) In 2019, Wg Cdr Abhinadan was awarded Param Vir Chakra. **False**
- (f) Sqn Ldr Rakesh Sharma traveled in space along with Soviet cosmonauts. **True**
- (g) Operation Pawan was carried out in Mumbai. **False**
- (h) Operation Cactus took place in year 2020. **False**
- (i) ACM Arup Raha was the chief of IAF during 1971 Indo- Pak war. **False**
- (k) MIAF Arjan Singh was Lt Governor of Delhi. **True**

AERO-ENGINE (15 MARKS)14. Fill in the blanks: -

(11x1=11 Marks)

- (a) The basic Aircraft controls can be classified as **Primary & Secondary**.
- (b) **Oil pump** ensures positive lubrication of the engine.
- (c) **Landing gear** forms the principal support of an aircraft on the surface.
- (d) The rolling movement of an aircraft is achieved with help of **Aileron**.
- (e) There are two types of landing gear are **Fixed & Retractable**.
- (f) **Fuel pump** sends the fuel to the carburetor under positive pressure.
- (g) **Flaps** help in reducing the takeoff and landing distances.
- (h) **Control stick** governs the aircraft's roll and pitch.
- (j) An **elevator** is mounted on the trailing edge of the horizontal stabilizer.
- (k) A tail plane is also known as **horizontal** stabilizer.
- (l) **Fuselage** is an aircraft's main body that holds cargo and crew.

15. Explain induction and exhaust stroke.

(4 Marks)

Induction stroke: - In this stroke, a mixture of petrol and air is introduced into the cylinder.

Exhaust stroke: - In this stroke, the waste products of the combustion are ejected out of the cylinder.

AERO-MODELLING (20 MARKS)

16. Fill in the blanks: - (10x1=10 Marks)

- (a) Heavy power models are made out of **Birch wood**
- (b) Propellers are made out of **Bass wood**.
- (c) **Dope** is a liquid which has celluloid and thinner as basic materials.
- (d) **Rubber bands** are used for making various types of rubber models.
- (e) **Jetex** model illustrates the operation of jet aircraft.
- (f) The compression ratio of petrol engine is **1:6**
- (g) **Tapered needle valve** is used to provide correct air & fuel mixture to the engine.
- (h) **Static models** are the miniature replicas of original aircraft.
- (i) Static models are of **three** types.
- (j) **Dr Thomas Young** was the first person to discover the lifting property.

17. Name any two types of aero models. (2 Marks)

Static, Radio control, Gliders, control line

18. Write any four materials used for construction of aero models. (2 Marks)

Balsa Wood, Spruce, Japanica Wood, Ply wood, Cement, Fast Setting Epoxy, Glue, Metal paste, Dope, Paint and Sand paper

19. Name any six tools required for aero modeling. (3 Marks)

Screw driver, Hand drill, Sand paper and pins, Pliers, Knives with different blades, Files Soldering irons, RC set (Transmitter, Receiver, Servos) etc

20. Name any three types of radio control models. (3 Marks)

- (i) **Radio Control Power**
- (ii) **Radio Control Glider**
- (iii) **Radio control Helicopter**
- (iv) **Jet Powered Model**