

**द्वितीय पत्र (Paper II): Technical Subject**

**Section (A) – 20 Marks**

**1. Aerodynamics and Flight Controls**

- 1.1 International Standard Atmosphere (ISA)
- 1.2 Indicated airspeed and true airspeed
- 1.3 Concept and different types of airfoil, different types of wing, aspect ratio, camber
- 1.4 Fundamental of airfoils, pressure distribution, lift, drag and different types of drag
- 1.5 Laminar and turbulent flow, boundary layer, vortex generators, angle of attack, centre of pressure, lift/ drag ratio
- 1.6 Three axis of rotation
- 1.7 Principle & functions of ailerons, elevators, rudder, flaps, slats and spoilers
- 1.8 Tabs-balance, trim-tabs, buffeting flutter
- 1.9 Basic concept of compressibility and non compressibility flow
- 1.10 Subsonic, transonic and supersonic speed, and Bernoulli equation

**Section (B) – 30 Marks**

**2. Aircraft Structure and Construction**

- 2.1 Types of construction of fuselage , Monocoque & Semimonocoque
- 2.2 Bulkheads, Longerons, stringers, Ribs, spar, etc.
- 2.3 Types of Landing gears, shock strut ( Oleo)
- 2.4 Brakes: types of brakes, brake mechanism, antiskid system, heat dissipation, landing gear doors

**3. Aircraft System**

- 3.1 Principle and functions of hydraulic system
- 3.2 Principal and function of Pneumatic system
- 3.3 Air conditioning system and pressurization system
- 3.4 De-icing and anti- icing system
- 3.5 Basic principal of fuel system and oxygen system

**4. Aircraft Performance**

- 4.1 Relation of Temperature, pressure, density with relation to altitude.
- 4.2 Rate climb, descent, approach & landing,
- 4.3 Centre of gravity, center of pressure, flow separation, vector diagram of lift, drag and total reaction
- 4.4 Concept of airplane STALL and its warning mechanism
- 4.5 Consideration of different weight of airplane (weight and balance)

**Section (C) – 20 Marks**

**5. Gas Turbine Engine**

- 5.1 General turbine engine theory and different propulsive forces
- 5.2 Compressor principles and types of compressor mainly used in engine
- 5.3 Compressor surge and bleed valve
- 5.4 Principles of diffuser, guide vanes, combustion chamber, and types of fuel nozzle
- 5.5 Principle and types of turbines
- 5.6 Basic engine oil system, lubrication system and engine fuel system
- 5.7 Basic principle of engine thrust reverser system

**Section (D) – 30 Marks**

**6. Electrical Power Supply System and Equipment**

- 6.1 A/ C internal batteries
- 6.2 Principle and purpose of DC generators & simple alternators, constant speed drives voltage regulation
- 6.3 Circuit protection mechanism
- 6.4 Electric motors & actuators
- 6.5 Basic principle of engine starting system
- 6.6 Over-heating and engine fire protection system

**7. A/C Instruments & Instrument System**

- 7.1 Basic flight instruments
- 7.2 Purpose and principal of altimeter, airspeed indicator, rate of climb, Mach meter, gyroscopic instruments, turn and slip indicator, directional indicators, pressure, temperature and position indicator, quantity and flow indicators, pitot static system

**8. Radio Stations**

- 8.1 Location and purposes of radio communication
- 8.2 General principle of ADF, VOR/ILS, DME, weather radar
- 8.3 General principle and operation of HF, VHF, ELT, ADF, VOR, ILS and DME
- 8.4 General principle of transponder, radio altimeter, GPS, TCAS, EGPWS & RVSM

**9. Civil Aviation Requirements and Regulatory Rules**

- 9.1 Meaning and concept of: Acceptable Deferred Defects (ADDs), Master Minimum Equipment List (MMEL), Design Deviation Guide (DDG), certificate of release to service, deviation / concession, aircraft maintenance program
- 9.2 Basic feature laid down in Section (B) and section (C) of Nepal Civil Airworthiness Requirement (NCAR) of issue 4, 2009
- 9.3 CAAN approved documents and its terminology for “NCAR (part 145, part 66, part 147 and part 21)” and concept and requirement of Continuing Airworthiness Management and Maintenance Organization Exposition (CAMMOE)
- 9.4 The ICAO annexes relating to “Aircraft Licensing”, “Flight Operation”, “Airworthiness”
- 9.5 Basic concept and definition of Safety Management Systems (SMS), Accountable Manager, and Post holders in any approved maintenance organization

**लोक सेवा आयोग**  
**नेपाल इन्जिनियरिङ्ग सेवा, एरोनोटिकल समूह, राजपत्राङ्कित तृतीय श्रेणी, एरोनोटिकल इन्जिनियर पदको खुला**  
**प्रतियोगितात्मक परीक्षाको पाठ्यक्रम**

प्रथम चरणको लिखित परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र  
लिइने **सामूहिक परीक्षण (Group Test)** को लागि

**सामूहिक छलफल (Group Discussion)**

यस प्रयोजनको लागि गरिने परीक्षण १० पूर्णाङ्क र ३० मिनेट अवधिको हुनेछ जुन नेताविहिन सामूहिक छलफल (Leaderless Group Discussion) को रूपमा अवलम्बन गरिने छ । दिइएको प्रश्न वा Topic का विषयमा पालैपालोसँग निर्दिष्ट समयभित्र समूहबीच छलफल गर्दै प्रत्येक उम्मेदवारले व्यक्तिगत प्रस्तुति (Individual Presentation) गर्नु पर्नेछ । यस परीक्षणमा मूल्याङ्कनको लागि देहाय अनुसारको ३ जना भन्दा बढीको समिति रहनेछ ।

आयोगका सदस्य	-	अध्यक्ष
आयोगका सदस्य	-	सदस्य
मनोविज्ञ	-	सदस्य
दक्ष/विज्ञ (१ जना)	-	सदस्य

**सामूहिक छलफलमा दिइने नमुना प्रश्न वा Topic**

उदाहरणको लागि - उर्जा संकट, गरीबी निवारण, स्वास्थ्य बीमा, खाद्य सुरक्षा, प्रतिभा पलायन जस्ता Topics मध्ये कुनै एक Topic मात्र दिइनेछ ।