Nepal Airlines Corporation

Syllabus for Operations Engineer Grade- VII

Open Competition

A. Stages and Procedure of Examination System

चरण	विषय	अंकभार	परीक्षा प्रणाली	प्रश्न संख्या x अङ्क	समय
प्रथम ८०%	सेवा सम्बन्धी	पुर्णाङ्क १०० उत्तिर्णाङ्क ४०	**Multiple Choice Questions** (वस्तुगत)	५० x २ = १००	४५ मिनेट
द्वितिय २०%	अन्तरर्वाता	२०	मौखिक		

B. Content Material

1. Fixed Wing Flight — **03 Questions**

- Gliders and Aero plane
- Biplane and Mono Planes
- Single Engines & Multiple Engines
- Aircraft shapes for particular purposes.

2. Rotary Wing Flight — **02 Questions**

- Auto Gyros and Helicopters
- General Principles of Rotorcraft.

3. Propulsion — **03 Questions**

- Types of Engines
- Basic Principles of Piston and Turbine Engines
- Ram jets & Rocket Propulsion
- Engine and Propeller propulsion

4. Gas Turbine Engines — **04 Questions**

- General Turbine Engine Theory
- Compressors principle
- Centralized compressors
- Axial Air flow compressors
- Surging & stalling methods alleviation
- Turbine Principle
- Engine oil system
- Fuel system & Engine Fuel supply & controls

5. Power Plant — **03 Questions**

- Fire warning system
- Thrust reversal mechanism
- Engine accessories
- Engine starting system
- Engine parameters
- Ratings

6. Aerodynamics **05 Questions**

- Airfoil
- Wings
- Fluids at Rest
- Fluids at Motion
- Streamlines and Continuity Tubes/ Continuity Equation
- Equation of state
- Fluid Viscosity
- Speed of Sound
- Compressible Bernoulli Equation
- Atmosphere
- Pressure Distribution
- Force Equation
- Airfoil Properties
- Viscosity Effects
- Lift and Drag
- Planform Effect
- High Lift Devices

7. Aircraft Performance **03 Questions**

- Airspeed Measurement
- Altitude and Temperature Measurement
- Airplane and Engine Grid
- Flight Limitations
- Takeoff
- Climb
- Range
- Descent
- Approach and Landing

8. Aircraft Construction **02 Questions**

- Types of construction fuselages and wings material
- Methods of fabrication
- Joining and assembling components
- Landing gear
- Doors and windows

9. Flight Controls **02 Questions**

- Principles and functions of Ailerons, Elevators, rudder, Flaps, Slats, Spoilers and Trimming tabs
- Mechanically operated and power operated flying control system, functions and automatic

10. Weight & Balance **02 Questions**

- Centre of Gravity
- Moment
- Balance point

11. Aircraft System **03 Questions**

- Principles and functions of mechanical Hydraulic,
- Pneumatic,
- Electrical actuating system,
- Air Conditioning & Pressurization System,
- Deicing and anti icing system,
- Fuel system,
- Water and other fluids

12. Safety Equipment **02 Questions**

- Fire Detection and extinguishing Equipment
- Safety Belts and Harness
- Escape hatches and Chutes
- Emergency system
- Floatation equipments

13. Electrical Power Supply System **03 Questions**

- Principles and construction of DC generators and simple alternators
- Constant speed drives voltage regulation
- Types of Regulators
- Cutouts reverse current relays
- Circuit protection
- Transformers and rectifiers
- Aircraft Batteries

14. Electrical Power Consuming System **02 Questions**

- Electric motors and actuators
- lighting and heating circuits
- Remote indicating and actuating circuits
- Radio station power supply

15. Airframe Instruments and Instrument System **06 Questions**

- Basic Flight Instruments
- Altimeter
- Air speed Indicator
- Rate of Climb
- Mach meter
- Gyroscopic Instruments
- Turn & Slip Indicators
- Directional Indicators
- Attitude Indicators
- Pressure, Temperature and position Indicator
- Quantity and Flow Indicators
- Elementary Knowledge of Flight Directors

- Flight Recorders and Automatic Flight Systems
- Pitot Static System

16. Compasses direct reading compasses **03 Questions**

- Construction
- Principle of swinging, remote reading compasses elementary principles only
- Principles of direct reading compass, remote reading compass
- Compass calibration, deviation and compensation
- Correction cards

17. Radio stations **02 Questions**

- Location and purposes only of common radio
- A.D.F, VOR/ILS, DME, radio altimeter, Weather radar, Doppler, Omega, etc.
- Principle of HF, VHF, Receiver, Transmitter. ELT, CVR, FDR, ADF, VOR, ILS, DME, ATC. Transponder, Radio Altimeter, Weather radar, GPS and TCAS.

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