Nepal Airlines Corporation

Syllabus for Senior Engineer Grade- VIII

Aircraft Maintenance Service

Internal Competition

चरण	विषय	अंकभार	परीक्षा प्रणाली	प्रश्न संख्या x अङ्क	समय
प्रथम ८०%	सेवा सम्बन्धी	१००	**Multiple Choice Questions** (वस्तुगत)	४० x १ = ४०	३ घण्टा
			Subjective Questions (विषयगत)	६ x १० = ६०	
द्वितिय २०%	अन्तरवार्ता	२०	मौखिक		

Management (15 Marks Subjective Questions)

History of NAC, Organizational structure of NAC. Organizational behavior, management level and function, managerial roles, importance of management. motivation and leading people(leadership), personnel management.

Quality assurance, quality control, production system and planning, forecasting techniques.

NAC Service rule.NAC staff service bylaw of 2058,about performance, reward and punishment, Leave etc.

NAC Financial rule (By Laws).

Understanding of the rules and authority. Tendering procedures.

Human Factors (15 Marks Subjective Questions)

a) General; Need to take Human Factor into account, incidents attributable to human factor/human error, Murphy's law.

b) Human factor performance and limitations, vision, hearing, information processing; attention & perception; memory, claustrophobia & fear of heights.

c) Social psychology, social environment, responsibility individual & group; motivation and de-motivation, peer pressure, culture issues, team working, management, supervision and leadership.

d) Factors affecting performance: Fitness/health, stress:-domestic and work related, time pressures and deadlines, workload, overload & under load, sleep and fatigue, shift work, alcohol, medication, drug abuse.

e) Physical environment: Noise, fumes, illumination, climate & temperature, motion and vibration, confined spaces, working environment.

f) Tasks: Physical work, repetitive tasks, visual inspection, complex systems

g) Communication: within and between team, work logging and recording, keeping update, currency, dissemination of information.
h) Human error: understanding human error, Error models & theories, Types of error in maintenance tasks: implications of error, avoiding and managing errors.
i) Hazards in the workplaces

j) Summary: Dirty dozen aviation errors (put safety first and minimize 12 common causes of mistakes in the aviation workplace)
k) Hazard identification and Risk Management.
l) Safety Management System.

Aviation Legislation (20 Marks Subjective Questions)

a) Regulatory framework

Role of ICAO/ Role of CAA Nepal (CAAN)
General understanding of CAAN Regulations
Relationship between NCAR Part -145, NCAR-Part 66, NCAR Part-147 and NCAR Part – M
Relationship with other Aviation Authorities

b) NCAR Part 66- Certifying Staff- Maintenance
c) NCAR Part 145 – AMO, CAMMOE, Approved maintenance organization(Continuing Airworthiness Management and Maintenance Organization Exposition)- Organization Structure, management and working procedure- general understanding
d) Commercial Air Transportation Air
operators certificate (AOC)
Operators Responsibility Documents
to be carried on board Aircraft
placarding / Marking.
e) Aircraft certification
   i) General certification rules
   ii) Type certification
   iii) Supplemental type certification
   iv) NCAR Part-21 Design/ Production Organization Approvals Documents:
      - C of A
      - C of R
      - Noise Certificate
      - Weight & Balance
      - Radio station License Approval (RML)
f) NCAR Part-M Detailed understanding of Part M

g) Applicable national and substantial requirements
   - Maintenance Program (CMP) (Customized Maintenance Programme)
   - Maintenance checks and inspection
   - MMEL, MEL, DDG, AD,
     SB, SI, Mods. and repairs
     Maintenance documentation MM, SRM, IPC etc.

h) Continuing Airworthiness

   Test flight, ETOPS, maintenance and dispatch requirements, All weather Ops. Cat 2/3 and minimum equipment requirements, RVSM/ RNAV.

Maintenance Procedures,

Maintenance planning,Modification procedures,Store procedure,Certification release procedure, interface with aircraft operation,Maintenance inspection by QC/QA.Additional maintenance procedure,Control of Timex and life limited parts/components.ECTM,Reliability monitoring.

Aircraft general knowledge (50 Marks Objective Questions)

a) Aircraft flight, theory of flight, general principle, fixed wing & rotary wing advantages & disadvantages
b) Wing design, Aerodynamic and structural requirements, Aspect ratio, plan form, sweep back, Delta wings design of subsonic, transonic & supersonic planes.
c) Engines: Piston Engine, Turbine Engine. Types and their principles
d) Propeller, Fundamentals.

Theory of flight

- Aeroplane aerodynamics and flight control.
- Operation and effect of roll control, ailerons and spoilers.
- Pitch control, elevators, stabilizers, variable incidence stabilizors and canards;
- Yaw control, rudder limiters.

High lift devices: flaps, slats .

Drag inducing devices: spoilers, speed brakes.

Effects of wing fences. Boundary laryer control using, vortex generators, stall wedges or edge devices.

Operation and effect of trim tabs, balance and anti-balance (leading) tabs, servo tabs, spring tabs, mass balance, control surface bias, aerodynamics balance panels.

High speed flight: speed of sound, subsonic flight, transonic flight, supersonic flight, Mach number, critical Mach number, compressibility buffet, shock wave, aerodynamic heating.

Factors affecting airflow in engine intake of high speed aircraft. Effect of sweepback, critical Mach number.

Aircraft Airframe structures: General concepts.

a. Fundamentals of stuctural systems; (Primary, secondary e.t.c.)
b. Zonal and station identification systems.
c. Drain and ventilation provisions.
d. Electrical bonding
e. Lightning strike protection provision.

Fuselage (ATA 52/53/56)

a. Construction and pressurisation sealing.
b. Wings, stabilizer, pylon and undercarriage attachments.
c. Seat installation & cargo loading systems.
d. Doors and emergency exits.
e. Windows and windscreen

Wings (ATA 57)

a. Construction.
b. Fuel storage.
c. Landing gear, pylon, control surface, and high lift/ drag attachments

Stabilizers (ATA 55)

a. Control surface attachment

Flight control surfaces (ATA 55/57)

a. Construction and attachment
b. Balancing- mass and aerodynamics

Nacelles / Pylons (ATA 54) – Construction, firewalls, Engine Mounts.

Air conditioning & cabin pressurization (ATA 21)

a. Air supply – source – engine bleed
   - APU
   - Ground cart

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