



RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

CREDIT BASED GRADING SYSTEM

PROGRAMME NAME : AIRCRAFT MAINTENANCE

Name of Scheme :

Implemented from Session :

Scheme of Studies and Examinations for : FIFTH SEMESTER

COURSE CODE	COURSE TITLE	PAP ER CODE	THEORY COMPONENT								PRACTICAL COMPONENT						TOTAL CREDIT	GRAND TOTAL OF MARKS
			LECTUR ES							THEORY CREDIT	PRACTICAL Hrs. Per Week	CONTI NUOUS EVALU ATION	END OF THE TERM/ SEMESTER EVALUATION			PRACTICAL CREDIT		
Hrs. Per Week	TERM WORK QUIZ, ASSIG NMENT	MID TERM TEST (TWO)		THEORY PAPER			THEORY CREDIT	PRACTICAL Hrs. Per Week	LAB. WORK QUIZ, ASSIG NMENT	PRACTICAL / ORAL EXAMINATION (VIVA)			PRACTICAL CREDIT					
		I	II	NO.	MARKS	DURATION (Hrs)				NO.	MARKS	DURATION (Hrs.)						
501	AIRCRAFT MATERIAL & MATERIAL SCIENCE	7305	03	10	10	10	01	70	3	04	02	20	01	30	3	02	06	150
502	AIRCRAFT SYSTEMS	7306	06	10	10	10	01	70	3	04	02	20	01	30	3	02	06	150
503	AIRCRAFT ELECTRICAL SYSTMS	7307	06	10	10	10	01	70	3	04	02	20	01	30	3	02	06	150
504	AIRCRAFT RULES ®ULATIONS CAR -II	7308	07	10	10	10	01	70	3	04	02	20	01	30	3	02	06	150
505	PROFESSIONAL DEVELOPMENT -V		04	25	25	25												75
	TOTAL		26	65	65	65	04	280			10	80		120		6	26	675

Theory Credits : 16
 Practical Credits : 08
Total Credits : 24

Theory Marks : 280
 Practical Marks : 120
 Quiz, Mid Term, Lab. Work : 275
Total : 675

Minimum Pass Grade in Theory & Practical 'D'



DIPLOMA WING

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

AIRCRAFT MAINTENANCE ENGG (A 07)

SEMESTER -V

COURSE TITLE	:	Aircraft Material and Material Science – II
PAPER CODE	:	7305
SUBJECT CODE	:	501
THEORY CREDITS	:	04
PRACTICAL CREDITS	:	02

UNIT 1. Composite Material -

- Composite, advantages & uses of composite material.
- Reinforcing fibres, type & uses
- Terms : warp, weft, unidirectional, bidirectional, mats, fabric weaves, satin weaves, hybrids, intraply hybrid, interply hybrid.
- Matrix material, system, thermosets, thermoplastic, epoxy resin, system, working with resin & catalysis, adhesive pre-impregnated materials, fillers, metal matrix composites.

UNIT 2. Air-craft Hardware

- Detailed knowledge of identification, terminology, correct use and inspection of Aircraft, nuts, bolts, Studs, Screws, Washers, Locking devices, types of threading of nuts and bolts, Knowledge of their Indian, British and American standards.
- Spring materials : Characteristics and application

UNIT 3. Corrosion and its Prevention

- Factors in the choice of materials in various parts of aircraft. Detection of corrosion, special coating, chemical films, special paints like Abrasive Resistant Paint, Heat and corrosive resistive paints and electroplating.

UNIT 4. High Temperature Materials

- Sensor materials like Heat sensing, Signal sensing.
- Safety precautions in the use of composite material.
- Curing method of curing composite material in brief autoclave, heating blankets, machining cured composites.
- Detection of defects/deterioration in composite and non-metallic materials.

UNIT 5. Metal Joining Processes

- Welding of light alloys, aircraft steels and high temperature materials. Defects in welding, NDT techniques
- Core material, boney-comb, foams styrofoam, urethane, PVC, strux.
- Factores considered for manufacturing cost of composite, manufacturing methods, compression moulding, vacuum bagging, filament winding, way lay-up, lightening protection & painting of composite part.



DIPLOMA WING

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AIRCRAFT MAINTENANCE ENGG (A 07)

SEMESTER -V

COURSE TITLE	:	Aircraft Systems
PAPER CODE	:	7306
SUBJECT CODE	:	502
THEORY CREDITS	:	04
PRACTICAL CREDITS	:	02

UNIT 1. Hydraulic system:

- Advantages and disadvantages, types of circuit, flow through pipes, pumps and motors, static performance, actuators, seals and backup rings, reservoirs, accumulators, contamination control filters, tubings and hose pipes, indicating and warning systems, emergency and redundant systems valves, flow dividers and integrators, cooling systems

UNIT 2. Servo-Control System:

- Stability and response, electro-hydraulic servo systems, position and force feedback, frequency response, principles of automatic control

UNIT 3. Pneumatic Systems:

- Airconditioning and pressurisation systems, de-icing systems, heat loads, plumbing, cold air units, compact heat exchangers, valves, filters, air bottles, capsules and bellows, indication and warnings

UNIT 4. Oxygen Systems:

- Gaseous and liquid oxygen systems, breathing masks, oxygen regulators, oxygen bottles, liquid to gas converters, emergency systems, pressure suits, indication and warnings
- **UNIT 5. Landing Gear Systems:**
- Types of landing gears and their design principles, shock absorbing devices, retracting mechanisms, wheels and brakes, antiskid system, steering systems, indications and warnings.



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AIRCRAFT MAINTENANCE ENGG (A 07)

SEMESTER -V

COURSE TITLE	:	AIRCRAFT ELECTRICAL SYSTEMS
PAPER CODE	:	7307

SUBJECTCODE	:	503
TREORYCREDITS	:	04
PRACTICALCREDITS	:	02

Unit 1-

Electrical Measuring Instruments , General description and types of measuring instruments, Requirement of indicating instrument. Different type of instruments - Moving coil type, Moving Iron type dynamometer type, construction and working. A meter, voltmeter, wattmeter, frequency meter.

Unit 2-

Electrical, Cables and wires and terminals: Nomenclature , Current Capacity; Lacing, Clamping and Routing of wire bundles, Various terminals and constructions; Different types of connectors; Switches. Protective devices : Fuses; Relays; Circuit breaker; Over voltage; Under voltage; Reverse current breaker; Current limiter.

Unit 3 –

Static electricity in aircraft: Corona threshold, P- static-cause and prevention, Bonding; Static discharge wick and null discharges; Shielding. D. C. generators: Different parts; Theory different types and types of armature winding, armature, reaction, magnetic neutral axis angle of lead types of generator and their uses. Inter poles, voltage, regulators, vibrating type, Carbon pile, three unit control panel, Paralleling of generators, Static generator and contraction, repair and maintenance.

Unit 4 –

A. C. generators: Theory, construction, single phase, multi-phase generator, static inverter, types voltage, regulation, magnetic amplifier regulator, transistorized voltage regulator, parallel operation maintenance. Operation and construction of revolving armature and revolving field type of AC generators. Motors : D. C. motors, Theory, Types, A. C. motor; Theory, multi-phase, Induction motor, Starters, Different types of A.C. motors, Induction motors (Single Phase) split phase motor, Repulsion motors, Series motors, Starter motors.

Unit 5 –

Transformers : Types of transformers, Principles of operation construction - Transformer ratio cooling device uses and efficiency. Rectifiers, current transformer, potential xmer, auto xmer. (6 hrs) Aircraft typical electrical system : Aircraft wiring system, Various circuits of aircraft electrical system. Landing gear circuits, Generator circuit, Battery and starter circuits, Flap circuits, Landing light circuits, CHT circuit, O/T circuit, Fuel content, Electrical gauges circuits.



DIPLOMA WING

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

AIRCRAFT MAINTENANCE ENGG (A 07)

SEMESTER -V

COURSE TITLE	:	AIRCRAFT RULES, REGULATIONS AND CAR – II
PAPER CODE	:	7308
SUBJECT CODE	:	504
THEORY CREDITS	:	04

UNIT 1.

- Requirement for flight testing of aircraft.
- Storage of Aeronautical Parts Bonded and Quarantine stores, storage of various aeronautical products including rubber goods, various fluids.
- Operational Requirements of Aircraft Knowledge of various terms such as Certificate of Flight Release, Certificate of Maintenance, Approved Certificates.

UNIT 2

- Installation and maintenance requirement of Air burning, commercial/navigation and radio equipments systems
- Registrations, markings, weight and balance control, load and trim sheets
- Minimum equipments, instruments required for various types of operation

UNIT 3

- Modification, Concession, Airworthiness Directive, Service Bulletins.
- Approval of organisation. Registration markings.
- Documents required to be carried on board. Issue of Type approval. Issue of C of A.
- Physical Environment - Noise and fumes; Illumination; Climate and temperature; Motion and vibration; Working environment.
- Tasks - Physical work; Repetitive tasks; Visual inspection; Complex system.

UNIT 4

- Defects recording, Monitoring, reporting and investigation.
- Requirements of A/c fuels, refuelling of A/c and calibration of a/c fuel tanks
- Communication - Within and between teams; Work logging and recording; Keeping up to date, currency; Dissemination of information.
- Human Error - Error models and theories; types of error in maintenance tasks; Implications of errors (i.e. accidents), Avoiding and managing errors.
- Hazards in the workplace - Recognising and avoiding hazards; Dealing with emergencies

UNIT 5

HUMAN PERFORMANCE

- a. General - The need to take human factors into account. Incidents attributable to human factors/human error. Murphy's Law.
- b. Human Performance and Limitations - Vision, Hearing, Information processing, Attention and perception, Memory, Claustrophobia and physical access.
- c. Social Psychology - Responsibility : Individual and group, Motivation and demotivation, Peer pressure, Culture issues, Team working, Management, supervision and leadership.
- d. Factors Affecting Performance - Fitness/health; Stress : domestic and work related; Time pressure and deadlines; Workload : Overload and underload; Sleep and fatigue, shift work; Alcohol, medication, drug abuse.