RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL
CREDIT BASED GRADING SYSTEM

PROGRAMME NAME : AIRCRAFT MAINTENANCE Name of Scheme OCBC 2020

Implemented from Session

Scheme of Studies and Examinations for : **FOURTH SEMESTER** Exam Code:

COURSE CODE	COURSE TITLE	PAP ER CODE	THEORY COMPONENT								PRACTICAL COMPONENT						TOTAL CREDIT	GRAND TOTALOF MARKS
			LECTURES							THEORY CREDIT	PRACTICAL Hrs. Per Week	CONTINUOUS EVALUATION	END OF THE TERM/ SEMESTER EVALUATION			PRACTCAL CREDIT		
			Hrs. Per Week	TERM WORK QUIZ, ASSIGNMENT	MID TERM TEST (TWO) I	MID TERM TEST (TWO) II	THEORY PAPER NO.	THEORY PAPER MARKS	THEORY PAPER DURATION (Hrs)			LAB. WORK QUIZ, ASSIGNMENT	PRACTICAL / ORAL EXAMINATION (VIVA) NO.	PRACTICAL / ORAL EXAMINATION (VIVA) MARKS	PRACTICAL / ORAL EXAMINATION (VIVA) DURATION (Hrs.)			
401	AIRCRAFT RULES, REGULATIONS AND CAR-I	7301	04	**10**	**10**	**10**	**01**	**70**	**3**	**04**	04	**20**	**01**	**30**	**3**	**02**	**06**	**150**
403	AIRCRAFT INSTRUMENTS	7302	04	**10**	**10**	**10**	**01**	**70**	**3**	**04**	04	**20**	**01**	**30**	**3**	**02**	**06**	**150**
404	AIRCRAFT HARDWARE	7303	04	**10**	**10**	**10**	**01**	**70**	**3**	**04**	04	**20**	**01**	**30**	**3**	**02**	**06**	**150**
402	MAINTENENCE PRACTICE - I	7304	04	**10**	**10**	**10**	**01**	**70**	**3**	**04**	04	**20**	**01**	**30**	**3**	**02**	**06**	**150**
405	PROFESSIONAL ACTIVITY										02	**GRADES TO BE GIVEN**						
	TOTAL		**16**	**40**	**40**	**40**	**04**	**280**		**16**	**18**	**80**		**120**		**8**	**24**	**600**

Theory Credits	: 16	Theory Marks	: 280
Practical Credits	: 08	Practical Marks	: 120
Total Credits	**: 24**	Quiz, Mid Term, Lab. Work	: 200
		Total	**: 600**

Minimum Pass Grade in Theory & Practical 'D'

DIPLOMA WING
RAJIV GANDHI PROUDYOGIKIVISHWA VIDYALAYA, BHOPAL

AIRCRAFT MAINTENANCE ENGG (A 07)

SEMESTER -IV

COURSETITLE	:	AIR CRAFT RULES , REGULATION AND CAR –I
PAPERCODE	:	7301
SUBJECTCODE	:	501
TREORYCREDITS	:	04
PRACTICALCREDITS	:	02

Regulatory Framework

- Role of International Civil Aviation Organization;
- The Aircraft Act and Rules made there under
- Role of the DGCA;
- Relationship between CAR-21, CAR-M, CAR-145, CAR-66, CAR 147
- The Aircraft Rules (Applicable to Aircraft Maintenance and Release)
- Aeronautical Information Circulars (Applicable to Aircraft Maintenance and Release)
  CAR Sections 1 and 2

CAR-66 Certifying Staff – Maintenance

- Detailed understanding of CAR-66.

Aircraft Operations

- Commercial Air Transport/Commercial Operations
- Air Operators Certificates;
- Operators Responsibilities, in particular regarding continuing airworthiness and maintenance;
- Documents to be carried on board;
- Aircraft Placarding (Markings);

Applicable National and International Requirements

- Maintenance Programme, Maintenance checks and inspections;
- Master Minimum Equipment Lists, Minimum Equipment List, Dispatch Deviation Lists;
- Airworthiness Directives; Service Bulletins, manufacturers service information; Modifications and repairs; Maintenance documentation: maintenance manuals, structural repair manual, illustrated parts catalogue, etc.;
- Continuing airworthiness;
- Test flights;
- ETOPS /EDTO , maintenance and dispatch requirements;
- RVSM, maintenance and dispatch requirements
- RNP, MNPS Operations
- All Weather Operations,
  Category 2/3 operations and minimum equipment requirements.

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AIRCRAFT MAINTENANCE ENGG (A 07)

SEMESTER -IV

COURSETITLE	:	AIR CRAFT HARDWARE
PAPERCODE	:	7303
SUBJECTCODE	:	401
TREORYCREDITS	:	04
PRACTICALCREDITS	:	02

Fasteners - Screw threads
- Screw nomenclature;
- Thread forms, dimensions and tolerances for standard threads used in aircraft;

Measuring screw threads;

Bolts, studs and screws
- Bolt types: specification, identification and marking of aircraft bolts, international standards;
- Nuts: self locking, anchor, standard types;
- Machine screws: aircraft specifications;
- Studs: types and uses, insertion and removal;

Self tapping screws, dowels.

Locking devices
Tab and spring washers, locking plates, split pins, palnuts, wire locking, quick release fasteners, keys, circlips, cotter pins.

Aircraft rivets
Types of solid and blind rivets: specifications and identification, heat treatment

Pipes and Unions
Identification of, and types of rigid and flexible pipes and their connectors used in aircraft;
Standard unions for aircraft hydraulic, fuel, oil, pneumatic and air system pipes.

Control Cables
- Types of cables; End fittings, turnbuckles and compensation devices;
- Pulleys and cable system components;
- Bowden cables;

Aircraft flexible control systems.

Corrosion
- Chemical fundamentals;

Formation by, galvanic action process, microbiological, stress;
- Types of corrosion and their identification;
- Causes of corrosion;

Material types, susceptibility to corrosion.

Springs
Types of springs, materials, characteristics and applications.

Bearings
- Purpose of bearings, loads, material, construction;

Types of bearings and their application.

Transmissions

- Gear types and their application;
- Gear ratios, reduction and multiplication gear systems, driven and driving gears, idler gears, mesh patterns;

Belts and pulleys, chains and sprockets.

Electrical Cables and Connectors

- Cable types, construction and characteristics;
- High tension and co-axial cables;
- Crimping; Connector types, pins, plugs, sockets, insulators, current and voltage rating, Coupling, identification codes.

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AIRCRAFT MAINTENANCE ENGG (A 07)

SEMESTER -IV

COURSETITLE	:	MAINTENANCE PRACTICES-I
PAPERCODE	:	7304
SUBJECTCODE	:	401
TREORYCREDITS	:	04
PRACTICALCREDITS	:	02

Safety Precautions-Aircraft and Workshop
Aspects of safe working practices including precautions to take when working with electricity, gases especially oxygen, oils and chemicals. Also, instruction in the remedial action to be taken in the event of a fire or another accident with one or more of these hazards including knowledge on extinguishing agents.

Workshop Practices
- Care of tools, control of tools, use of workshop materials;
- Dimensions, allowances and tolerances, standards of workmanship;
  Calibration of tools and equipment, calibration standards.

Tools
- Common hand tool types;
- Common power tool types;
- Operation and use of precision measuring tools;
- Lubrication equipment and methods.
  Operation, function and use of electrical general test equipment;

Engineering Drawings, Diagrams and Standards
- Drawing types and diagrams, their symbols, dimensions, tolerances and projections;
- Identifying title block information
- Microfilm, microfiche and computerized presentations;
- Specification 100 of the Air Transport Association (ATA) of America;
- Aeronautical and other applicable standards including ISO, AN, MS, NAS and MIL;
  Wiring diagrams and schematic diagrams.

Fits and Clearances
- Drill sizes for bolt holes, classes of fits;
- Common system of fits and clearances;
- Schedule of fits and clearances for aircraft and engines;
- Limits for bow, twist and wear;
  Standard methods for checking shafts, bearings and other parts.

Welding, Brazing, Soldering and Bonding
- Soldering methods; inspection of soldered joints.
- Welding and brazing methods;
- Inspection of welded and brazed joints;
  Bonding methods and inspection of bonded joints.

DIPLOMA WING
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AIRCRAFT MAINTENANCE ENGG (A 07)

SEMESTER -IV

COURSETITLE	:	AIR CRAFT INSTRUMENTS
PAPERCODE	:	7302
SUBJECTCODE	:	401
TREORYCREDITS	:	04
PRACTICALCREDITS	:	02

POSITION TRANSMITTING

AC and DC Ratio Signals
Introduction
Ratio System
Variable Resistance Signals
Control Transformer
Synchros
Direct Torquer Systems
Servo Systems
Differential Synchros
Resolvers
Linear Variable Differential Transformer (LVDTs)
Rotary Variable Differential Transformer (RVDT)

SERVO MOTORS AND TACHO RATE GENERATORS

Servo Loops
Two Phase Servo Motor
Tachometer / Rate Generator

PRESSURE MEASURING INSTRUMENTS

Absolute Pressure Instruments
Gage Pressure Instruments
Burdon Tube
Bellows
Differential Pressure Instruments
Strain Gages
Piezo-Resistive Sensors
Variable Frequency Signals

TEMPERATURE INDICATION

Nonelectrical Temperature Measurements
Temperature Dependant Resistors
Ratio Meter Circuits
Bridge Circuits
Thermocouples

QUANTITY INDICATION SYSTEM

DC Electrical Indicators
Capacitance Quantity System
Digital Fuel Quantity Indicating System

AIR DATA

International Standard Atmosphere (ISA)
Pitot Static Systems
Air Data Sensors
Altimeters
Types of Altitude Measurement
Flight Level, Altitude, Height, and Elevation
Altimeter Indicators
Vertical Speed Indicator
Airspeed Indicators
Speeds
True Airspeed Indicators

TEMPERATURES

Altitude versus IAS/Mach
Overspeed Warning
Mach Meter
Combination Airspeed Indicator
Air Data Computer
Examples of Air Data Systems

GYROS

Rigidity in Space
Precession
Different Gyros

VERTICAL GYRO

Attitude Indicator
Erection of Vertical Gyros
Remote Artificial Horizon Indicator
Electrical Erection of VG

DIRECTIONAL GYRO

Directional Gyro Indicator
Slaving of Directional Gyro
Drift of Gyros

RATE GYRO

Turn and Slip Indicator
Turn Coordinator Indicator

GYRO INSTRUMENT POWER SYSTEM

Electric Motors
Pneumatic System

COMPASS

Earth Magnetic Field
Inclination
Variation
Magnet Compass
Slaved Gyro Compass
Flux Valve

COMPASS SYSTEMS

Light Aircraft
MD-80 Compass System
New Technology

COMPASS ERRORS

Deviation and its Compensation
Error Compensation and Error Chart
Compass Errors Overview

FLIGHT DATA RECORDING

Typical Flight Data Recording System

ADAS - AIDS – ACMS