(C.1) Maintenance & Production Stream (Mechanical)

PSM1:MAINTENANCEOFPOWERPLANTANDSYSTEMS

Piston Engines : Two and four stroke engines. Efficiency, factors affecting engine performance. Knowledge of the function and construction of various parts and accessories of the engine including induction, exhaust and cooling system, engine mounting. Engine fire detection and protection systems.

Propellers : Knowledge of purpose and functioning of parts of constant speed, variable pitch and feathering propellers and associated control system components.

Engine fuel and Oil System : Construction, features of carburettors, engine fuel and oil systems. Characteristics of aviation fuel and oil, common sources of contamination, methods of checking contamination.

Ingition and starting systems : Magnetos and ignition system components, various types of engine starters.

Engine Instruments : Principle of operation. Superchargers-constructional features and principles of operation and function of various types of superchargers and its related component.

Gas Turbine : Principle of operation, general constructional details and function of various type of gas turbine engines such as turbojet, turbo fan and by-pass engine. Theory of gas turbine engines, advantages and disadvantages of each type. Induction, exhaust and cooling systems, anticing of engine, engine mountings, thrust augmentation. Compressor surge and stall, bleed control system. Principles of operation, general constructional details and functions of fuel and oil systems, ignition and starting systems and their components. Engine controls of various types, including Full Authority Digital Electronic Control Engine instruments. Power augmentation devices, thrust reversers and auxiliary power units.

Engine Maintenance : Piston/Gas Turbines: Periodical servicing procedures, engine installation checks, control rigging, ground running checks, priming, bleeding and performance checks. Engine on condition maintenance. Trouble shooting and rectification. Inspection after shock landing. Crack detection. Procedure for long and short terms storage of engine and accessories, engine preservation and depreservation.

Text Books and Reference Books :

1. E Mangham and A Peace, Jet Engine Manual, Himalayan Books
2. Jet Engines, Rolls Royce Ltd. 1992
3. Casamassa and Bent, Jet Aircraft Power Systems, Tata McGraw Hill
4. Civil Aircraft Inspection Procedures (CAP 459), Himalayan Books
5. Pratt and Whitney, Gas Turbine Engine
6. Michacl J. Krose Thomas W.Wild, Bent, Aircraft Power Plants, McGraw Hill 1994
7. H Cohen, G F C Rogers and H I H Sarvanmutto, Gas Turbine Theory, John Wiely
8. Irvine Treager, Aircraft Gas Turbine Engine Technology, Tata McGraw Hill 1997