AMMV21 MARINE SYSTEM AND MACHINERY DESIGN

UNIT-1 SLIDING AND ROLLING CONTACT BEARINGS

1.1 Journal bearings, thrust bearings, friction in journal bearings, bearing loads, bearing design using various equations.

1.2 Thermal Equilibrium. Rolling bearing -Load ratings, types of radial ball bearings, selection of bearings, lubrication of ball and roller bearings, methods of failure.

UNIT-2 SPUR, HELICAL BEVEL AND WORM GEARS

2.1 Basic design principles of spur gears, helical gears, dynamic tooth loads, design for strength and wear.

2.2 Lewis and Buckingham equations.

2.3 Basic design principles of bevel gears and worm gears,

2.4 Lewis formula, thermal rating of worm gears.

UNIT-3 IC ENGINE PARTS

3.1 Piston, connecting rod with bearings,

3.2 Crankshaft, flywheel and rocker arms.

UNIT-4 VALVES & LIFTING DEVICES

4.1 Valves, safety valves and reducing valves

4.2 Crane hooks, lifting chains, chain blocks, E.O.T. Crane.

UNIT-5 DESIGN CRITERIA FOR MARINE SYSTEMS

5.1 Water cooling systems for diesel engines and steam plants. Lubricating oil systems for propulsion and auxiliary engines.

5.2 Electro hydraulic steering gear system including rudder, rudderstock, tiller, rams.

5.3 Marine Diesel Engine air starting system including air receiver, compressors and air starting valves.

5.4 Marine Diesel Engine Scavenge and Exhaust systems.

5.5 Marine diesel Engine fuel injection system including fuel pumps and fuel injectors.

5.6 Power transmission system including thrust blocks, intermediate shaft and tail end shaft. Steam turbine plants.

5.7 Gas turbine plants.

References Books:

1. Indian Register of Shipping Part 1 to Part 7, “Rules and Regulations & Classification of steel ships” 1st Edition, Mumbai, 1999.
2. Sam Had Dad, Neil Watson, “Design and Application in Diesel Engines”, 1st Edition, Ellis Horwood Limited, London, 1984.