

2.17 30219 SHIP REPAIR ENGINEERING

UNIT-1

Ship repair facilities Docking systems, description, comparison, Docking plan details and significance, services to ships in dock. Supporting repair shops, nature of jobs involved in ship repairs. Procedure for docking / undocking.

UNIT-2

Hull repairs (Above water & Underwater areas) Hull surveys, types of defects, methods of gauging, limits of acceptance, areas of maximum wastage, areas susceptible to erosion, buckling, dents, cracks, etc. Preparation for hull repair, cleaning, gas freeing, ventilation, access, staging, additional supports, removal of blocks. Procedure for repairs, sequence of gas cutting, fitting and welding. Fitting doubles and inserts. Marking, use templates for odd size and shape. Temporary repairs, cement box. Testing of repaired areas and compartment.

UNIT-3

Repairs of underwater equipment. Withdrawal of propeller and tail end shaft. Propeller drop measurement. Inspection and repairs of propeller, shaft, seals, stern tube and A-bracket bearings, Static balancing of propeller. Rudder drop and bearing clearance measurement. Rudders removal, repairs and refitting. Repairs of Rudder stock, pintles, bushes. Trials in dry dock. Ranging anchors and cables - Inspection, gauging, acceptable levels, rearrangement. Repair of chain links, shackles and anchors. Sea chest and connections. Underwater fittings. Anodes cathodic protection. Dry docking survey.

UNIT-4

Repair of hull fittings and equipment's Load line survey and repairs. Hatch covers, watertight doors, tank manholes, scuttles, air pipes, freeing ports, railing, bulwark. Testing water tightness of closing appliances. Masts, ventilators, hawse pipe, scuppers, derricks, cargo gear inspection, repairs and testing. Deck pipe line repairs. Use of blanks and spectacle flanges. Making template and Fabrication of pipe. Expansion joints, clamps, pipe testing. Insulation of pipes.

UNIT-5

Hull protection and insulation Method of descaling. H.P. water wash, sand blasting, chipping Standards of surface finish. Painting scheme for underwater hull, shipside, deck, cargo hold, ballast tank, F.W. tank, and superstructure. Deck sheathing, flooring deck composition, bulkhead insulation, and paneling.

UNIT-6

Repair and maintenance of main engines and auxiliaries. Maintenance schedule. Understanding the functions of main engines and auxiliary machinery & equipment's. Appreciation of engineering requirements for general maintenance and repairs of the Main Engine, Auxiliaries such as Generators, Boilers and Boiler mountings, steam condenser, steam heater, fresh water generator, air compressor, centrifugal pump, reciprocating pump, gear pump, heat exchangers.

UNIT-7

Maintenance of safety equipment's Safety equipment surveys. Annual inspection procedure, boat and fire drill. Repairs of fibre glass boats, inflatable life rafts and life buoys. Renewal of wire ropes and cordage's. Testing and recharging fire extinguishers of various types. Weighment and Servicing CO2 bottles. Testing CO2 system by compressed air. Maintenance and testing of fire mains, hydrants, hoses and nozzles.

UNIT-8

Office procedure and costing Defect list, quotation, job order and work done certificate. Records of repairs and maintenance, shell expansion and structural plans. History sheet for machinery maintenance. Gauging, calibration, tests and trial reports. Costing, cost components. Estimation of material, manpower and time requirement. Direct and indirect cost. Subcontract. Bill preparation.

UNIT-9

Safe Working Practices in ship repairs.

Reference book:

1. Principles of Naval Architecture BY Edward V. Lewis

