

Appendix 4B - Syllabus for AMSA Oral Examination, Certificates of Competency, Engineer Watchkeeper

Boilers

- Water gauge
- local
- remote
- Manhole doors
- Feed check V/Vs
- Blowdown V/Vs
- Safety Valves
- Operations
- Furnace purging
- Uptake fires
- Superheater fires
- Raising steam
- Shutting down
- Water testing
- Water hammer
- Priming and foaming
- Construction arrangement
- Automatic controls
- Combustion
- Associated Systems & Equipment

Diesel Propulsion

- Operation
- Crankcase explosion
- Scavenge fires
- Air line explosion
- Manoeuvring
- Emergency
- Warming through
- Shutting down
- Parameters
- Fuel consumption
- Combustion
- Associated Systems & Equipment
- Slow, Medium and High speed
- Manoeuvring controls
- Protection devices
- Construction
- Combustion

- Timing
- Lubrication
- Alignment
- Automation
- Clutches
- Gear boxes
- Vibration dampers
- Thrust bearing
- Turbo chargers
- Diesel electric
- Diesel alternators
- Water treatment

Steam Propulsion

- Operation
- Warming through
- Shutting down
- Manoeuvring
- Emergency
- Parameters
- Turbines
- Protection devices
- Thrust bearing
- Gland steam
- Flex coupling
- Manoeuvring V/V
- Automation
- Protection devices
- Lubrication
- Impulse, reaction
- Gear boxes
- Turbo electric
- Turbo alternators
- Operation and construction
- Associated Systems & Equipment

Water Treatment

- Evaporators
- Distillers
- Ion exchange
- Reverse osmosis
- Testing
- Chemicals

Feed Systems

- Arrangement
- Feed pumps
- Deaerators and heaters
- Air ejector
- External pumps
- Condenser
- Water testing
- Auto controls

Steering Gears & Rudders

- Emergency Operation
- Construction
- Control
- Lubrication

Air Compressors

- Safety devices
- Compressor
- Receiver
- Air line
- Operation
- Lubrication
- Starting air
- Service and control air
- Receivers
- Automation

Fire

- Prevention
- Extinction
- Hoses, extinguishers
- BA sets
- Procedures
- Fixed installations
- Detection
- Sensors, systems

- UMS requirements
- Structural fire protection

Pumping Systems

- Fire main
- Oily water separator
- Bunkering
- Bilge and ballast systems
- Salt water system
- Fresh water cooling
- Sewage plant
- Fuel oil system
- Diesel oil system
- Inert gas system
- Lubricating oil system
- Cargo system
- Sanitary system
- Purifiers, clarifiers
- Heaters
- Pumps: positive displacement, etc

Refrigeration Systems

- Safety
- Direct and indirect expansion
- Air conditioning
- Compressors

Materials

- Properties
- Destructive & non-destructive Testing

Propellers & Thrusters

- Fixed pitch
- Controllable pitch
- Operating system
- Stern tube bearing
- Screw shafts
- Cross thrusters
- Fixed and CP prop
- Voith Schneider, etc
- DP systems

Dry Docking

- Supply of fire fighting water
- Supply of electrical power
- Stability
- Ship's structure

Tanks

- Safety precautions
- Entering

Stability

- Free surface
- Damage control

Electricity

- Emergency generators
- Operation
- Testing
- Fault detection
- AC generators
- Operation
- Construction
- Control equipment
- Fault detection
- Protection devices
- DC generators
- as per AC
- Distribution
- Isolation
- Electric shock
- Protection devices
- Fault detection
- Main switchboard
- Emergency switchboard
- Distribution boards
- Flame proof
- Drip proof
- Intrinsically safe
- Transformers
- Two wire
- Non-earthed and earthed neutral

- Motors
- DC: series, shunt, compound
- AC: single and three phase

Deck Machinery

- Davits
- Winches
- Windlass
- Cranes
- Derricks
- Hatches
- Other

Automation & Control

- Bridge control
- UMS
- Fault detection
- Transfer from manual to auto
- Measuring devices
- Testing
- Calibration

Machinery Records

- Oil Record Book
- Log books
- Trend recording
- Official records

Maritime Law

- MARPOL
- International Convention for the Safety of Life at Sea (SOLAS)
- Marine Orders
- International Shipping Management (ISM) Code
- Other

Management

- Training of Engine-room staff
- Management and organisation of Emergency Response staff/dept