Revision one-liners for student's examination preparation

The following one-line questions will act as an aid to examination preparation. They are similar in effect to using mental arithmetic when preparing for a mathematical examination.

Elements of these questions may well appear in the written papers, coursework or in the oral examinations. Should you have temporally forgotten, a quick recap of the appropriate chapter notes will remind you of the answer ... Good luck!!

List four items of information given by the owner to the builder for a new ship.
What is the air-draft on a ship?
List the items in the lightweight of a ship.
List six items in the deadweight of a ship.
Give the formulae for C_B and C_D.
What is a balance of weights table for a vessel?
Discuss briefly the development of Alexander's formulae for a ship's C_B.

For steel weight prediction, discuss the Cubic Number method.
For steel weight prediction, discuss the Method of differences.
What will be the percentage for length provided 30% for depth, 55% for breadth.
List the items within the Wood and Outfit weight for a ship.
In future years, why will the Wood and Outfit weight decrease for new ships?
List some non-ferrous metals used for ship structures.
Why are there two formulae for the Admiralty Coefficient (A_C)?
Why are plastics used on ships?
Give the formula for M_W for approximating Diesel machinery weight.
Give the formula for M_W for approximating Steam Turbine machinery weight.

What is the link between Moulded Capacity and Grain Capacity?
What is the link between Grain Capacity and Bale Capacity?
What is the relationship between Moulded Capacity and Insulated Volume on a 'Reefer'.

How is the capacity depth D_C evaluated?
At SLWL the C_B is 0.800. What is the approximate C_B at 85% Depth Mld?
On Oil Tankers, what exactly is the length L_t?
On Oil Tankers, what exactly is the depth D_t?
Discuss and give the modification coefficient for hull form on Oil Tankers.
Discuss and give the modification coefficient for hull form on Bulk Carriers.

For C_B at any draft below the SLWL, what is the value of 'x'?
Give the formula for predicting the C_B at any draft below the SLWL.
Give three formulae for evaluating the value KB.
What are the formulae for the transverse and longitudinal inertia coefficients?
What is the Metacentre KM_T and what is the Metacentric height GM_T?
What are the formulae for WPA and TPC?
Give typical GM_T values for three ship types when in fully loaded condition.

List the four components of total ship resistance R_T.
What is W. Froude's formula for frictional resistance R_f?
What are the 1991 formulae for f_m and f_s?
What is the Froude's speed–length law?
What is a Froude's No.?
R_f varies as L^x for geosim ship models. What is the value of x?
How do residual resistances vary with length?
R_f varies as L^x for geosim ships. What is the value of x?

Define the speeds V_T, V_S and V_a.
What are apparent slip and real slip?
What is a wake fraction weight?
Give a range of values for apparent slip and real slip.
If C_B is 0.722, then estimate the corresponding W_t value.

Which two powers are located at the thrust-block?
Use a sketch to show the positions of six powers along a propeller shaft.
What is the naked effective power (P_{NE})?
Give typical formulae for ship's hull efficiency and engine's mechanical efficiency.
What are the formulae for thrust power and delivered power?

Why are power coefficients, as used by Naval Architects?
Give two formulae for the QPC.
Which power coefficient links effective power and power located at the thrust-block?
V = 158 kt, P_B = 495 and W = 14 400 tonnes. Calculate the A_C.
W = 16 125 tonnes, V = 23 kt and P_S = 13 610 kW. Calculate the A_C.

List the information shown on a B_p propeller chart.
What is a propeller's BAR?
What is the formula for B_p in terms of N, P_D and V_a?
Of what significance is the optimum pith-ratio line on a B_p chart?

Suggest a range of efficiencies for a ship's four-bladed propeller.
What is propeller cavitation?
How is the rudder value A_R calculated?
What is the rudder value K for an Oil Tanker?
Rudders perform two functions. What are they?
Sketch a Mariner-type rudder.
Whereabouts is a rudder horn?
What is the formula for the rudder force F_t in newtons?

Ship Trials can be split into four groups. Name each group.
What is a typical difference in value between trial speed and service speed?
How many metres form a nautical mile?
What is the true speed for a ship after four runs spaced equal time apart?
Sketch a graph of RPNM against time of day in middle of run.
Sketch two graphs to illustrate slack water conditions for a tide.
List four items of information measured on Consumption Trials.
What is a typical fuel in kg/kW-h for Steam Turbine machinery?
What is a typical fuel in kg/kW-h for Diesel machinery?
W = 232.000 tonnes, V = 15.1 kt, P_B = 25 125 kW. Estimate fuel consumption/day in tonnes.

Give the fuel consumption coefficient F_C for Steam Turbine machinery.
List three procedures carried out on Manoeuvring Trials.
What is the 'overshoot' in a Zig-zag Trial?
In terms of LBP, what can be the value of the turning circle diameter (TCD)?
On Crash-stop manoeuvres, why do Diesel engines give the better results?
List three precautions to be considered prior to taking a ship on trials.
What answer does (N × 60)/Nm give?
How may the time on the measured mile be measured?
Give one reason why a new vessel may not obtain her predicted trial speed.

What exactly is ship squat?
Why has ship squat become so important in the last 40 years?
List four signs that a vessel has entered shallow waters.
What is a blockage factor?
Give the overall formula for predicting maximum ship squat in metres.
Give two shortcut formulae for predicting maximum ship squat in metres.
What are the advantages of being able to predict maximum ship squat?
In the study of ship squat, to what does H/T refer?
What is the Width of Influence (F_B) and what is the depth of influence (F_D)?
What are the modern formulae for F_B and F_D?
Whereabouts will the maximum squat in shallow waters occur, if a vessel when static has trim by the stern?
What is the best way of reducing ship squat in shallow waters?

What exactly are 'Interaction' effects?
Define with the aid of a sketch, a ship's domain.
What are pressure bulbs around a moving vessel?

List the possible Interaction problems as two ships cross in a narrow river.
Show how Interaction can cause a small vessel to be bowled over by a larger vessel.
List three methods of decreasing the effects of Interaction in a narrow river.

In a vibrating mass, what are nodes, anti-nodes and modes?
What is resonance or synchronisation?
Give the other name for 'entrained water'.
List three causes of vibration on ships.
List three methods for reducing vibration on existing ships.
Give the 2NV mode frequency in cycles/min formula suggested by F. Todd.
Give the 2NV mode frequency in cycles/min formula suggested by Todd and Marwood.
With regard to ship vibration, what does '3 mm out to out' mean?

List the differences between a Kort nozzle and a Kort rudder.
List the advantages of fitting a bulbous bow to a ship.
Why are double-skin hulls fitted on Oil Tankers?
What are activated stabilising tanks?
At what ship speed is a transverse thruster most efficient?
What are Grouthues–Spork spoilers?
Suggest the best method for reducing excessive rolling of a ship at sea.
Why may a Tee-duct be fitted in a Fore Peak Tank?
In ship propulsion mechanisms, what are azimuthing pods?
Suggest three areas for future research into ship-handling or propulsion mechanisms.