

سازمان بنادر و دریانوردی
اداره امتحانات و اسناد دریانوردان
Exam Code :mmss - ۹۴۴

تاریخ: ۱۳۹۴/۶/۱۱

زمان: ۳ ساعت

نام آزمون: تعادل و ساختمان کشتی

درجه: فرمانده کمتر از ۳۰۰۰ - سفرهای نزدیک به ساحل

(Pass mark : ۶۰)

Q.1) - A Ship of 2100 tons displacement $KG=3.90m$, $KM=4.60m$ floating in salt water, has a double bottom tank $12 \times 6 \times 1$ and is partially filled with bunker of relative density 0.75. Find the virtual loss of GM due to the free surface of the bunker and the final GM? (20M)

Q.2) - A Ship of 2890 tons displacement has $KG = 4m$ and she proceeds to load the following cargoes:

80 tons, $kg = 5m$,500 tons, $kg = 3m$ 200 tons, $kg = 4m$

She then discharge 150 tons of ballast $kg=0.4m$. Find how much deck cargo of $kg=7m$ can be loaded so that the ship may sail with positive GM of 0.5m?

The final load $KM = 5.5m$. (20M)

Q.3) - From the information given below, calculate the amount of ballast to take in the fore peak tank in order to bring ship to an even keel draft.

$L=260$ m, Initial draft ۸.۳۴ m fwd, ۸.۷۹ m aft, fore peak tank ۲۵۲ m forward of Aft

Perpendicular (AP), $CF=۱۳۷.۵$ m fwd of AP, $TPC=۴۴$ and $MCTC=۳۵۶$ tm, (۱۰M)

Q.4) - Draw a cross section through the top side wing tank and double bottom of a bulk carrier showing & naming all parts. (15M)

Q.5) - Define following surveys;

a) – Annual survey

b) – Periodical survey

c) – Additional survey

(5 Marks each)

Q.6) - Explain the following welding processes used in shipbuilding:

a) - T.I.G

(1•M)

b) - M.I.G

(1•M)