MERCHANT SHIPPING SECRETARIAT
GOVERNMENT OF SRI LANKA
CERTIFICATE OF COMPETENCY EXAMINATION

GRADE : OFFICER IN CHARGE OF A NAVIGATIONAL WATCH ON SHIPS OF
500 GT OR MORE (UNLIMITED)
SUBJECT : GENERAL SHIP KNOWLEDGE
DATE : 25th April 2024   Time: 0900

Time allowed **THREE hours**	Total marks : 120
ANSWER ALL QUESTIONS	Pass marks : 50%

Formulae and all intermediate steps taken in reaching your answer should be clearly shown.
You may draw sketches wherever required. Electronic devices capable of storing and retrieving
are **not** allowed.

1. a) With the aid of a sketch, explain racking stress and how it is caused.   (08 marks)

    b) Draw a cross section of a transversely framed ship naming its parts.   (12 marks)

2. a) Briefly explain Panting and Pounding.   (04 marks)

    b) With a labelled diagram, show the panting arrangement of a ship.   (08 marks)

    c) Explain with a simple suitable sketch, Hogging and Sagging.   (08 marks)

3. a) With a simple sketch explain the purpose of bilge keel.   (10 marks)

    b) Draw an Unbalanced rudder naming its parts.   (10 marks)

4. A ship with a displacement of 7799 T   KG 6.942 m   KM 8.84 m, carries out the
following operations.

Loads No.1 TD	601 T	KG 11.17 m
Loads No.3 Hold	1520 T	KG 1.7 m
Loads No,5 Hold	420 T	KG 6.91 m
Pumps out fore peak tank	106.1 T	KG 6.31.m
Pumps out No.4 (P & S) Tanks	261.2 T	KG 0.68 m

If the FSC is 0.155 m, calculate the GM Fluid.   (20 marks)

5.   A ship of 180 m in length, MCT 1 cm 350 tm.   TPC 35

Centre of flotation 3 m aft of midships

Present drafts: F 6.8 m   A 8.8 m

Calculate the final drafts after carrying out following operations.

        Load   5000 T   25 m aft of CoF

        Load   2500 T   45 m forward of CoF

        Disch. 1200 T   35 m forward of CoF

        400 T saltwater run into AP tank 80 m aft of CoF   (20 marks)

6. a)   A vessel floating in DW density 1.014 with her winter load line 80 mm below the
Water line on port side and 160 mm below water line on stbd side .

        FWA is 180 mm.   TPC 20 summer load draft 9.0 m

Find the Deadweight available.   (12 marks)

 b)   Derive the formula FWA mm = Displacement/4 TPC   (08 marks)