

Name: _____

Index No.: _____ (marks)

1504/204
NAVIGATION
Oct./Nov. 2015
Time: 3 hours

Candidate's Signature: _____

Date: _____



THE KENYA NATIONAL EXAMINATIONS COUNCIL
CRAFT CERTIFICATE IN NAUTICAL SCIENCE

MODULE II

NAVIGATION

3 hours

INSTRUCTIONS TO CANDIDATES

Write your name and index number in the spaces provided above.
Sign and write the date of examination in the spaces provided above.
You should have Drawing instruments for this examination.
This paper consists of **THREE** sections; **A, B** and **C**.
Answer **THREE** questions in section **A**, **ONE** question from section **B** and **ONE** question from section **C** in the spaces provided in this question paper.
Maximum marks for each part of a question are as shown.
Candidates should answer the questions in English.

For Examiner's Use Only

Section	Question	Maximum Score	Candidate's Score
A		20	
		20	
		20	
B		20	
C		20	
TOTAL SCORE			

This paper consists of 20 printed pages.

Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

SECTION A: TERRESTRIAL & COASTAL NAVIGATION

Answer **THREE** questions in this section.

1. (a) With the aid of a labelled sketch, illustrate small circles and great circles. (8 marks)
- (b) Differentiate between longitude and latitude. (6 marks)
- (c) Indicate the length of each of the following:
- (i) international nautical mile;
 - (ii) cable;
 - (iii) shackle. (6 marks)
2. (a) List **four** common properties of a nautical chart. (8 marks)
- (b) Outline **four** types of chart projections. (4 marks)
- (c) Explain the use of each of the following chart scales as classified:
- (i) sailing charts; (3 marks)
 - (ii) coastal charts; (3 marks)
 - (iii) harbour charts. (2 marks)
3. (a) Define each of the following terminologies:
- (i) course;
 - (ii) track made good;
 - (iii) course of advance;
 - (iv) course over ground;
 - (v) track;
 - (vi) heading;
 - (vii) bearing. (14 marks)
- (b) Differentiate between Estimated Position (EP) and Dead-Rockening (DR). (6 marks)

4. (a) List **ten** kinds of events which are entered on the ships log book. (10 marks)
- (b) Explain each of the following terminologies as used in tide work:
- (i) spring tide;
 - (ii) neap tide;
 - (iii) high water;
 - (iv) low water;
 - (v) secondary port;
 - (vi) stand port. (6 marks)
- (c) Explain the basic principles of Global Positioning System (GPS). (4 marks)

SECTION B: METEOROLOGY

Answer ONE question from this section.

5. (a) Discuss the following meteorological instruments used on board a ship:
- (i) Barometer;
 - (ii) Thermometer;
 - (iii) Hygrometer;
 - (iv) Anemometer. (12 marks)
- (b) With the aid of a labelled sketch, explain 'temperature inversion'. (6 marks)
- (c) Define an 'isobar'. (2 marks)
6. (a) Describe any **four** types of clouds. (12 marks)
- (b) Explain the formation of , 'advection fog and frontal fog'. (6 marks)
- (c) With the aid of labelled sketch, explain a 'col'. (2 marks)

SECTION C: WATCH KEEPING PRACTICE

Answer *ONE* question from this section.

7. (a) Explain each of the following terminologies as used in the regulations for preventing collision at sea (COLREG):
- (i) vessel;
 - (ii) vessel engaged in fishing;
 - (iii) vessel not under command;
 - (iv) vessel restricted in its ability to manoeuvre;
 - (v) vessel constrained by her draught;
 - (vi) restricted visibility. (12 marks)
- (b) List **four** factors which may be considered in determining safe speed. (4 marks)
- (c) Describe the conduct of vessels when faced with a head on situation. (4 marks)
8. (a) Explain each of the following terms as used in lights and shapes of ships:
- (i) masthead light;
 - (ii) sidelights;
 - (iii) stern light;
 - (iv) towing light;
 - (v) all round light;
 - (vi) flashing light. (12 marks)
- (b) State the manoeuvring signals listed below.
- '•'
 - '• •'
 - '• • •'
- (6 marks)
- (c) List **two** duties of a lookout. (2 marks)