



**MASENO UNIVERSITY**  
**UNIVERSITY EXAMINATIONS 2016/2017**

**FOURTH YEAR FIRST SEMESTER EXAMINATIONS FOR THE  
DEGREE OF BACHELOR OF SCIENCE IN FISHERIES AND  
AQUACULTURE AND BACHELOR OF SCIENCE IN AQUATIC  
RESOURCES CONSERVATION AND DEVELOPMENT WITH  
INFORMATION TECHNOLOGY**

**MAIN CAMPUS**

**AFN 413: SEAMANSHIP, NAVIGATION AND FISHING  
TECHNIQUES**

Date: 30<sup>th</sup> November, 2016

Time: 8.30 - 11.30 am

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**INSTRUCTIONS:**

- This paper has TWO sections, Section A and B.
- Answer ALL questions in SECTION A and in SECTION B answer question 9 and any other THREE questions.



**Section A: Answer ALL questions in this section (40 marks)**

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1. a) Define the term navigation (2 marks)  
b) Distinguish between Ocean navigation and Coastal navigation (3 marks)
2. Outline any **FIVE** causes of accidents in marine vessels (5 marks)
3. a) Explain the term compass error in navigation (2 marks)  
b) Calculate the compass error in the following scenarios  
i. Compass variation of 8°E and Deviation of 5°E (1 marks)  
ii. Compass variation of 2°W and Deviation of 3°E (1 marks)  
iii. Compass variation of 8°E and Deviation of 25° W (1 marks)
4. a) List any **FOUR** navigation equipment other than compass (2 marks)  
b) Outline any **THREE** International Maritime Organization Conventions that govern navigation (3 marks)
5. a) Explain the following terminologies in reference to a vessel (3 marks)  
i. Freeboard  
ii. Draught  
iii. Loadline  
b) Define the term Dead Weight as used in navigation (2 marks)
6. Use a sketch to illustrate the following parts of a vessel (5 marks)  
i. Right Aft  
ii. Right Fore  
iii. Portside beam  
iv. Portside bow  
v. Starboard beam  
vi. Starboard bow
7. Outline any **FIVE** factors that affect the safe-speed of a sea-bound vessel (5 marks)
8. a) Define the term fishing gear (2 marks)  
b) Outline **SIX** factors that influence the choice of a fishing method (3 marks)

**Section B:**

Answer Question No. 9 and any other **THREE** questions from this section (30marks)

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- 9 a) Using a labelled diagram, explain the structure of a typical mid water trawl gear (5 marks)  
b). Explain how mid-water trawl net is kept open during operation by a single boat (2 marks)  
c). Comment on bottom trawling with regard to environmental impacts (2 marks)
- 10 a) Distinguish between variation and deviation as used in navigation (2 marks)  
b) Use a labelled sketch diagram to distinguish between longitudes and latitudes (2 marks)  
c) Two vessels Q and R steams on a course which lies between North and West. Vessel A makes a difference of  $1220^{\circ}2'N$  and  $542^{\circ}1'W$  while vessel B makes difference of  $1019^{\circ}6'N$  and  $433^{\circ}7'W$ .

Calculate the final positions of each of the vessels given initial positions as follows;

Vessel Q:  $30^{\circ}15.2'S$  and  $03^{\circ}21.3'E$ , Vessel R:  $30^{\circ}05.3'S$  and  $01^{\circ}21.7'E$  (3 marks)

- 11 a). Use a labelled diagrams to distinguish between Admiralty anchor from Danforth anchor (3 marks)  
b). Describe the forms and causes of ocean tides (4 marks)
- 12 a) Distinguish between monofilament twine and multifilament twine (2 marks)  
b) Distinguish between trammel net and a gill net (2 marks)  
c) Use a sketch diagram to illustrate the structure of a 16 ply twine (3 marks)
13. a) List any **FOUR** materials used in construction of fishing vessels (2 marks)  
b) Explain the factors considered in the choice of material for constructing a fishing vessel (3 marks)  
c) Outline the categories of fishing vessel accessories (2 marks)