

B.Sc. (NAUTICAL SCIENCE)

Term-End Examination

December, 2015

00561

BNA-022 : NAVIGATION – IV

**(ADVANCED – BRIDGE EQUIPMENT, WATCH
KEEPING, METEOROLOGY AND OCEANOGRAPHY)**

Time : 2 hours

Maximum Marks : 70

*Note : All questions are compulsory. Ships weather code
is allowed. Use of calculator is permitted.*

SECTION A

(Bridge Equipment and Colregs)

1. (a) Describe the basic working principle of GPS including various controls and settings.
- (b) Explain various limitations of Radar. $2 \times 5 = 10$
2. List four entries each which are required to be made in the following logs : $3 \times 2 = 6$
 - (a) Compass Error Log
 - (b) GPS Log Book
 - (c) Garbage Log Book

3. (a) List the factors to be taken into consideration in determining safe speed with operational Radar.
- (b) Describe the watch keeping duties of the Duty officer when the ship is at anchor. $2 \times 5 = 10$
4. (a) List the circumstances under which the Master should be called.
- (b) Explain what is meant by risk of collision. $2 \times 4 = 8$
5. (a) With reference to Rule 10 "Traffic Separation Scheme", define the following :
- (i) Separation Lane
- (ii) Separation Zone
- (b) With reference to Rule 10, list the requirements for vessels with regards to the following :
- (i) Navigation in areas near the termination of TSS
- (ii) Anchoring $2 \times 4 = 8$

SECTION B

(Meteorology and Oceanography)

6. Define the following : 3×2=6
- (a) Visibility
 - (b) Frost
 - (c) Dew
7. (a) Explain land and sea breeze.
- (b) List the two types of fronts and draw neat sketches for the same. 2×4=8

8. Explain the formation of the tidal streams and its effect on normal navigation of a ship. 5

9. Code the following ship's report : 9

Ship : VHAN, position 00°05' N 46°58' E, course made good past three hours : 170° at 10 knots, GMT : 16 d 00 h 20 m, wind 052° estimated at 10 knots.

Visibility : 500 metres, Pressure 1008.8 mb, Tendency +3.6 mb, Barograph trace : /

Temperature : Dry 28.5°C, Wet 23.0°C, Dew pt. 20.8°C, Sea 20.6°C.

Clouds : Sky overcast with a few blue patches.

Low clouds 4 oktas, base 600 metres above sea,

Cu of strong vertical extent, Ac in chaotic sky,

Cc.

Present weather : Visibility poor due to dust in suspension in the air, not raised by wind at or near ship.

Past weather : Thick haze, thunderstorm

Sea : Period 04 seconds, height 0.4 metres

Swell : From 270°, period 08 seconds, height 0.4 metres.
