

DIPLOMA IN NAUTICAL SCIENCE

Term-End Examination

December, 2006

BNA-022 : NAVIGATION IV

Time : 2 hours

Maximum Marks : 70

Note : Answer **all** questions in each section. Ship's Weather Code is allowed. Use of calculator is allowed.

SECTION A

(Bridge Equipment & COLREGs)

1. What is Doppler Effect and describe the operation of a Doppler Log ? 8

2. Explain briefly how a Gyro Compass works and how it is different from a Magnetic Compass. 7

3. What considerations shall be taken into account to determine if risk of collision exists ? 5

4. Define the following : 5
 - (i) Mast head light
 - (ii) Stern light

5. (a) What do you understand by the term
- (i) Give way vessel $1\frac{1}{2}$
 - (ii) Stand on vessel $1\frac{1}{2}$
- (b) Write in detail when and what action should be taken by stand-on vessel. (Reference Rule 17) 7

SECTION B
(Meteorology & Oceanography)

6. (a) Define Precipitation. $2\frac{1}{2}$
- (b) Name and describe at least five principal forms of it. $2\frac{1}{2}$
7. (a) What are the warning signs of the presence of a Tropical Revolving Storm ? 2
- (b) What action will you take when an approach of TRS is confirmed ? 2
- (c) What action will you take if you are in the path of the TRS in the Northern Hemisphere ? 3
8. Write short notes on :
- (a) Advection Fog 4
- (b) Radiation Fog 4
9. Describe briefly what causes variations in the colour of the sea. 7
10. Code the following message of VVXX : 8
- Position : $16^{\circ} 35' N, 72^{\circ} 10' E$
course made good not reportable as vessel was coasting.
Speed made good 180° at 16 knots.
GMT : 09 d 18 h, Wind : 264° estimated at 18 knots
Visibility : 10 km, Pressure 1004.2 hPa.
Air temperature : $17.0^{\circ} C$

Sea temperature : 20·8° C

Clouds : Covering 6/8 of sky.

Nimbostratus and altostratus visible, but high clouds not visible. Height of base of lowest cloud 1000 metres.

Present weather : Heavy continuous rain

Past weather : Continuous rain

Sea : Period 06 seconds, height 0·5 metres.

Swell : From 265°, period 07 seconds, height 4·5 metres.